COMPACT EDITION

THE SPIDERS OF GREAT BRITAIN AND IRELAND

PART 1 – TEXT

Michael J. Roberts

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THE SPIDERS OF GREAT BRITAIN AND IRELAND

PART 1 – TEXT

(*comprising Volumes 1 and 2 of the three-volume edition with an Appendix of Addenda & Corrigenda*)

by **Michael J. Roberts** MB, ChB, FZS

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Compact Edition

The Spiders of Great Britain and Ireland

Part 1 (Text)

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Preface to the Compact Edition

Since 1987, when the final volume of this work was first published, there has been a considerable increase in the recording of spiders in the British Isles. In 1987, a new Spider Recording Scheme was launched by the British Arachnological Society in association with the Biological Records Centre. The aim is that, in 1997, at the end of ten years of fieldwork and other types of recording, enough information will be available to publish a provisional atlas, probably based on the 10km squares of the Ordnance Survey National Grid, illustrating and as far as possible accounting for the distribution of spider species in the British Isles. At the time of writing, there are five years left and, although there is still a lot of ground to cover, already there have been very many interesting new records throughout the country and several new species have been discovered.

The opportunity has been taken, with this *Compact Edition*, to produce an Appendix which details recent changes in nomenclature and contains the descriptions of recently discovered species. In some cases, the discovery of these new species will entail some extra work for the Spider Recording Scheme as earlier collections may have to be re-examined and records amended.

I feel sure that many arachnologists, and general naturalists, will feel considerable gratitude to Harley Books for having had the courage to take on the publication of this work. The reader may be amused by the fact that in 1991, one publisher, who had earlier rejected the work as unviable and was quite unaware of its subsequent publication, actually made their misjudgement an entry for a competition entitled 'The Oddest Publisher's Reject' in *The Bookseller*! This *Compact Edition* should help bring the work within the reach of even more amateurs, upon whom we depend so much for the recording of spiders.

My grateful thanks go to Miss S. I. Baldwin (Royal Museum of Scotland, Edinburgh), Mr C. Hambler, Mr P. R. Harvey, Mr P. Hillyard (Natural History Museum, London), Mr R. D. Jones, Mr M. Linfield, Mr R. Ruffell, Mr R. Snazell (Institute of Terrestrial Ecology), Mr J. A. Stewart, Dr K. Thaler, Dr C. J. Topping, Mr S. A. Williams, Mr J. Wright and Herr J. Wunderlich for the loan of specimens used in preparing the Appendix.

Burns Farm, Cornhill, Banffshire MICHAEL J. ROBERTS

January, 1993

THE SPIDERS OF GREAT BRITAIN AND IRELAND

VOLUME 1

Atypidae to Theridiosomatidae

The Plan of the Work

The Spiders of Great Britain and Ireland

Volume 1

Introduction; Classification and Nomenclature; Key to the Families; Description of Species – Atypidae to Theridiosomatidae

Volume 2

Description of Species – Linyphiidae; Check list of the British species

Volume 3

The Colour Plates: Atypidae to Linyphiidae

Volume 1: Contents

Foreword

One of the more gratifying experiences in having lived since the beginning of this century has been to watch the enormous spread and increase in human knowledge; not so much that stored in books and computers, but conscious knowledge in the heads of living people, knowledge acquired for its own sake, for the pleasure it gives. Obviously there is no hard and fast line at which this merges with professional knowledge, academic or applied, but for whatever purpose it is acquired it is the stuff of culture and civilization. In arachnology this has been as true as elsewhere. The great works of the last century were known to a very small proportion of the populace anywhere. In this country only two books of significance were written, Blackwall's 'Spiders of Great Britain and Ireland' (1861–64) and O. Pickard-Cambridge's 'Spiders of Dorset' (1879–81). The illustrations of the former were remarkably good considering the printing techniques then available and are still useful, but 'The Spiders of Dorset' has few illustrations and it is interesting to speculate on what progress arachnology might have made in this country if the author had used illustrations of the kind he had already provided for his numerous papers on spiders. As it was, the absence of a single illustrated work describing all the known British species deterred any but a few naturalists from taking up the study of spiders, which were generally regarded as a 'neglected group'. A. R. Jackson had intended to write such a book but died in 1944 before he could find the time to set about the task. O. Pickard-Cambridge had intended to write a supplement to Blackwall's work, but he never did this. It was to be illustrated by the beautiful pictures done for the purpose by A. T. Hollick, which still exist and one of which was used in the first volume of 'British Spiders' by G. H. Locket and A. F. Millidge. This latter work, with its third volume in collaboration with P. Merrett, was intended to serve the purposes of those wishing to identify the British species and has undoubtedly caused many to take up the study of spiders who would not otherwise have done so. W. S. Bristowe's introductory chapter gave an account of the most notable contributions by British arachnologists up to that time and it is with this background that the present work comes on to the stage, and it is the work of an artist. There is an indefinable difference between the drawings of an animal, however accurate and meticulous, by an ordinary scientific worker and those by certain artists who can somehow make even dead material come alive and seem about to move. It is thus an event of importance that there has been found in one person such an artist and an experienced and successful arachnologist.

Dr M. J. Roberts has written papers on spiders illustrated by drawings which are immediately recognised as those of one who sees and conveys the whole subject of the picture and imbues it with a freshness which not only makes it attractive but surely conveys its essential meaning. For some time he has been experimenting with much needed drawings of whole spiders and the pictures presented in this book will not easily be surpassed, embodying as they do a meticulous knowledge and an artist's perception. But this is a great deal more than a picture book, for the author has examined a very large number of specimens when making the accompanying drawings of the genitalia of each of the British species. The resulting work is an authoritative text-book for identification which it is a privilege to recommend to anyone working on this group.

Stone Allerton, Somerset — G. H. Locket
November, 1984

Preface

British arachnology really began with the work of John Blackwall (1788–1881). Before this, although about fifty British species were recognized by the Latin names given by continental workers, none had been adequately described. Blackwall's book, *A History of the Spiders of Great Britain and Ireland* was published in two volumes by the Ray Society in the 1860s and was the first comprehensive work dealing with the identification of the British species. Blackwall continued to publish papers on spiders until 1875, by which time the number of recognized British species had risen to over three hundred. The published works of O. Pickard-Cambridge, W. Falconer, J. E. Hull, A. R. Jackson and others, further increased this number resulting in the need for a revisionary work on British spiders even as early as 1900. Naturalists had to wait another fifty years before this need was fulfilled, the British list by then exceeding five hundred and sixty species.

G. H. Locket and A. F. Millidge's masterly work *British Spiders*, volumes I and II, was published by the Ray Society in 1951 and 1953, providing students with a new, illustrated identification guide to the British species. In 1958, the appearance of W. S. Bristowe's classic volume *The World of Spiders*, in Collins New Naturalist Series, further stimulated general interest in the group. These two works were complementary and undoubtedly led to an upsurge in the numbers of arachnologists, both amateur and professional.

Closely following this literary milestone in British arachnology was the formation, in 1958, of a small working group to study British spiders – the Flatford Mill Spider Group. This original group, of eleven individuals, grew steadily, became the British Spider Study Group in 1964 (with fifty members), and finally the British Arachnological Society (B.A.S.) in 1969 (with one hundred and twenty members). Membership of the B.A.S. is now over six hundred.

Volumes I and II of *British Spiders* were reprinted in 1968, much to the relief of a growing number of students, and in 1974 volume III of *British Spiders*, by G. H. Locket, A. F. Millidge and P. Merrett, was published, revising the earlier volumes, and adding descriptions of new species and county distribution maps.

The present work is an attempt to make the identification of British spiders a little easier – for established arachnologists, for beginners, and also for those 'occasional arachnologists' who may need to identify these animals during the course of other zoological or ecological studies. A further volume, in preparation, will describe, and illustrate the genitalia of, the Linyphiidae and will contain a check list of the British species. It will also include corrections or changes in nomenclature and subsequent new species (there are already four as this work goes to press).

There are still relatively few active arachnologists in this country and our knowledge of spider distribution remains rather poor. Knowledge of spider biology and ecology is also relatively poor and there are many exciting advances to be made by applying modern technology to the study of spider taxonomy, physiology, behaviour, communication, etc. This book can make no attempt to deal with these issues but hopefully will help and encourage others to do so.

Discussions with Mr G. H. Locket, Dr A. F. Millidge, Dr P. Merrett and Mr F. Wanless have been of great help with questions of nomenclature, but they are not necessarily responsible for the views expressed in this work. A number of individuals have been of great assistance in providing fresh and preserved specimens of some of the rarer species and also comparative material for the assessment of variability in the commoner species. Dr P. Merrett (Institute of Terrestrial Ecology) provided live specimens of a considerable number of the rarer southern species illustrated in the colour plates as well as loaning many other preserved specimens and

giving valuable advice over the years. Mr G. H. Locket has given much encouragement and sound advice as well as loaning specimens from his collection and that of the late Mr A. A. D. La Touche which is in his care. Mr J. Crocker has been very helpful in discussions on spider taxonomy and biology over the years as well as giving practical advice on publishing, providing numerous specimens from his collection and generally acting as a sounding board for ideas. The following, amongst others, have also given considerable assistance with specimens: Mr E. L. Bee, Mr R. B. Coleman, Dr E. Duffey, Mr P. Hillyard (British Museum, Natural History), Mr C. A. Howes (Doncaster Museum), Monsieur M. Hubert (Muséum d'Histoire Naturelle, Paris), Mr R. Jones, the late Mr R. Leighton, the late Mr D. W. Mackie, Dr A. F. Millidge, Mrs F. M. Murphy, Mr J. Murphy, Mr D. R. Nellist, Mr J. R. Parker, Dr M. J. Scoble (Hope Dept., University Museum, Oxford), Mr C. J. Smith, Mr R. Snazell, Mr E. Taylor, the late Mr A. A. D. La Touche, Mr F. Wanless (British Museum, Natural History) and Herr J. Wunderlich.

To all of these, and to the trustees and authorities of the various museums mentioned, I wish to convey my grateful thanks. Dr P. M. Merrett, Mr A. Rodger Waterston and Mr L. G. Swash all gave valuable editorial help with the book during the production stage, the latter also preparing the index. I am also indebted to Mr Basil Harley for the great care and interest he has shown over the publication of this work, and to my wife, Deborah, for her support and encouragement.

Sheffield — MICHAEL J. ROBERTS

November, 1984

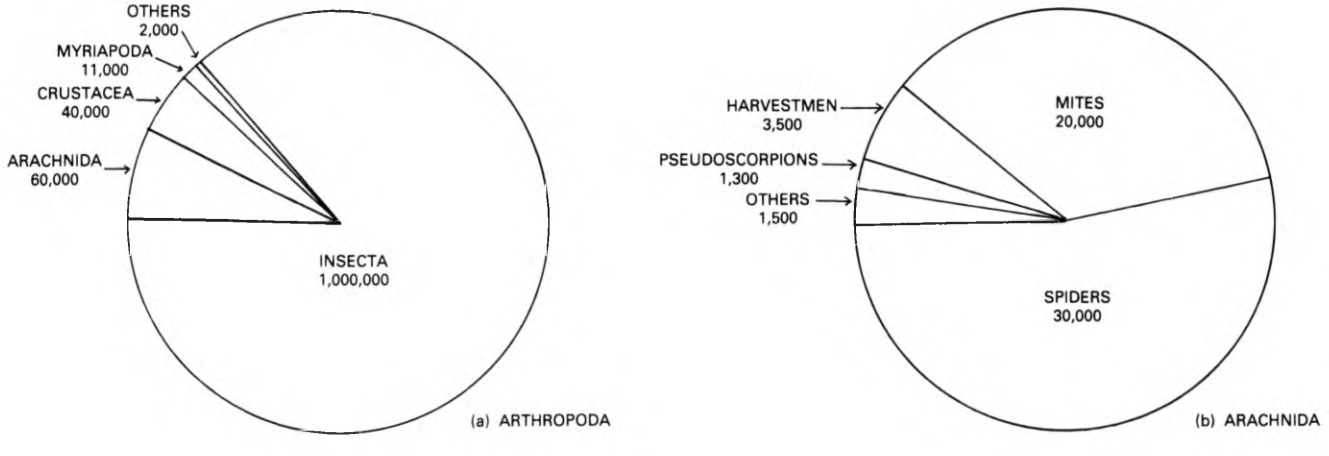
I. AN INTRODUCTION TO SPIDERS AND ARACHNOLOGY

(a) Spiders and related Arthropods

Spiders are members of the phylum Arthropoda, the largest group of animals, all of which possess jointed legs and a hard exoskeleton. The relative numbers of known species in some of the arthropod groups are very roughly as shown in Text Fig. 1a. The Arthropoda may be considered as falling into two groups, the Mandibulata and Chelicerata. The subphylum Mandibulata comprises animals which have mandibles that work against each other, and antennae, and includes the classes Insecta (insects, having three body regions; three pairs of legs), Crustacea (crabs, barnacles, shrimps, woodlice), Chilopoda (centipedes), Diplopoda (millipedes), Pauropoda and Symphyla (small animals related to centipedes and millipedes). Members of the subphylum Chelicerata have chelicerate jaws (sometimes modified into pincers or piercing stylets) and comprise the large class Arachnida and a small marine group, the Merostomata (king crabs). Sea spiders are usually placed in a separate phylum, the Pycnogonida, and are not closely related to the Arachnida.

The class Arachnida includes those animals with four pairs of legs, no antennae or wings and only two body regions (fused in some orders). It comprises the orders Araneae (spiders), Acari (mites and ticks), Opiliones (harvestmen) and the smaller orders of scorpions, pseudoscorpions, whip-scorpions (Uropygi), tailless whip-scorpions (Amblypygi), micro-whip-scorpions (Palpigradi), wind-scorpions (Solifugae), Schizomida and Ricinulei. The relative numbers of known species in the class Arachnida are roughly as shown in Text Fig. 1b; the total number of existing species is probably at least four times greater for some orders such as spiders and mites. As mites are small, often microscopic and difficult to study, the number of species may well be larger than that of spiders. Numbers of named, recognized species do not of course reflect the relative abundance of the animals in the various orders; in this respect, mites far outstrip the other arachnids.

Three distinct suborders of spiders are recognized: Mesothelae, Orthognatha and Labidognatha. The Mesothelae (Liphistiidae) are the only spiders to have a segmented abdomen and are known only from East Asia. The Orthognatha have chelicerae which project anteriorly and move up and down, with the fang opening parallel to the long axis of the body; they also have



Text Figure 1 Diagrams showing approximate number of known species in Arthropoda and Arachnida

four book lungs. Included are some of the largest spiders known, mainly from the tropics, and only one British representative – *Atypus affinis* Eichwald (Plate 1: Vol. 3). The Labidognatha have chelicerae, attached under the head, which open sideways or obliquely; almost all have only two book lungs. The majority of spiders, and all the other British species, belong to this suborder.

(b) External Morphology of Spiders

The external features of a spider are shown in Text Figs 2 and 3. The body of a spider consists of two main parts, the *cephalothorax* (*prosoma*) and the *abdomen* (*opisthosoma*) which are joined by a narrow *pedicel*. The cephalothorax (which contains the central nervous system, stomach and poison glands) is protected dorsally by the hard chitinous *carapace* and ventrally by the *sternum*. The carapace is usually seen to comprise two distinct areas – *cephalic* and *thoracic* – which are delineated by a narrow groove, the *cephalo-thoracic junction*.

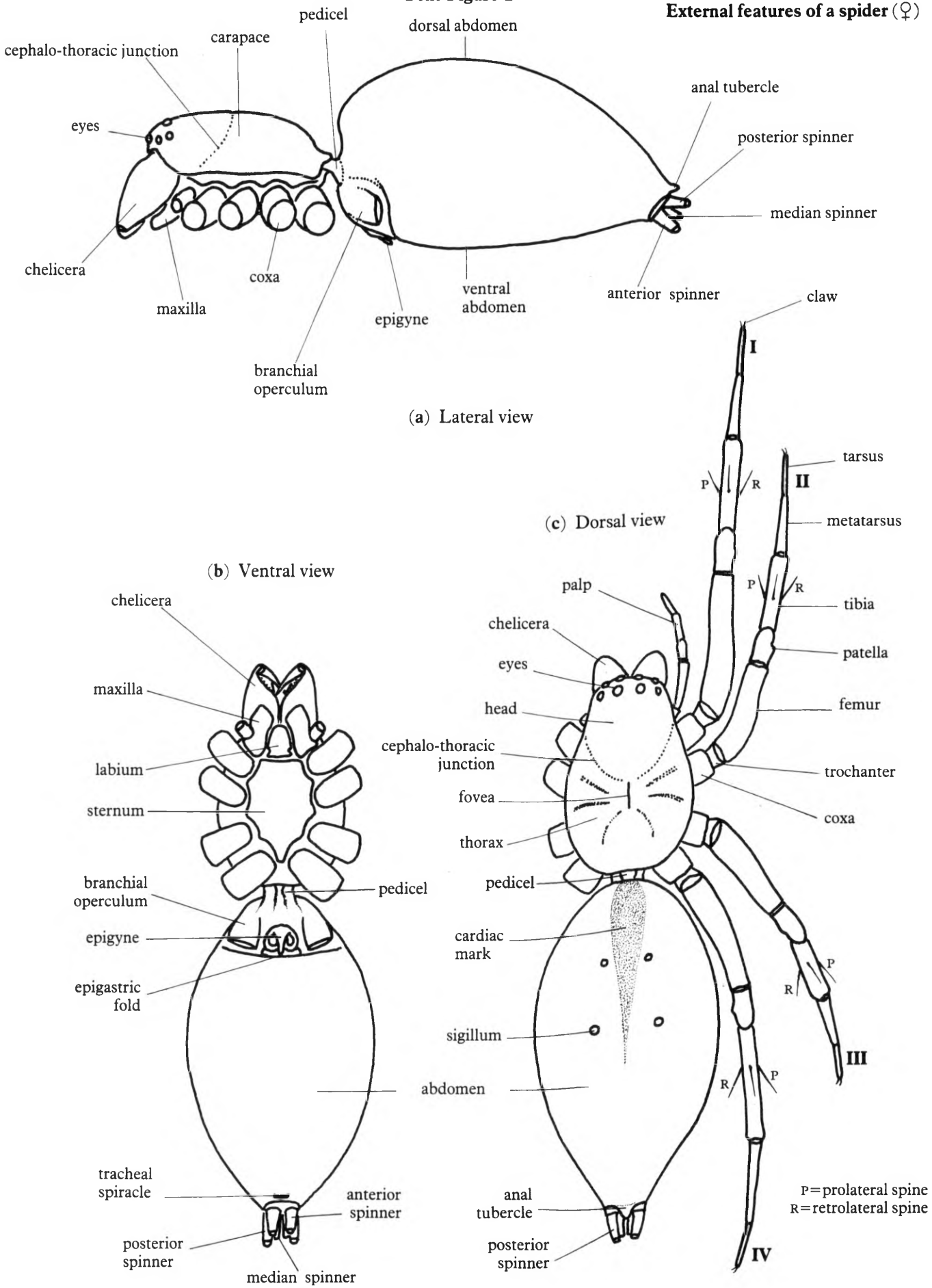
The cephalic portion of the carapace bears the eyes, usually eight but sometimes six in number. The eyes are simple and their relative size and arrangement variable and frequently of use in classification. For descriptive purposes the eyes are always considered as forming two rows; an anterior row (with *anterior median* and *anterior lateral* eyes) and a posterior row (with *posterior median* and *posterior lateral* eyes). The rows of eyes may be more or less straight or curved; in the latter case the rows of eyes may be described as *procurved* or *recurved* depending on whether the curvature is concave anteriorly or posteriorly when viewed from above (Text Fig. 3a). Frequently the eyes are circled with black pigment and in some species they are raised on tubercles. Adult males of some spiders have the cephalic region of the carapace modified. Sometimes this takes the form of slight attenuation; in other species it may be greatly enlarged to form lobes or other projections carrying a pair of eyes (e.g. Linyphiidae). The region between the anterior eyes and the anterior edge of the carapace is the *clypeus*.

The thoracic portion of the carapace often bears a narrow median groove, the *fovea*, which marks the internal attachment of muscles running to the powerful sucking stomach. Other radiating striae, representing internal muscles, can also often be seen through the carapace. A pair of *chelicerae* are attached under the anterior margin of the carapace; each consists of a large basal portion and a *fang*. The fang articulates with the basal portion and folds into a groove on its medial aspect, the borders of which are sometimes equipped with rows of *cheliceral teeth*. The rows of cheliceral teeth, when present, are referred to as *anterior* and *posterior* (Text Fig. 3b). The fang has a small opening near its tip which connects with a duct leading to the poison gland. The size and shape of the chelicerae vary considerably in different species; some have a swollen boss or *lateral condyle* proximolaterally, and others have a series of horizontal ridges laterally – the *stridulating ridges* – which are of some use in classification (Text Figs 11d,e, p. 44).

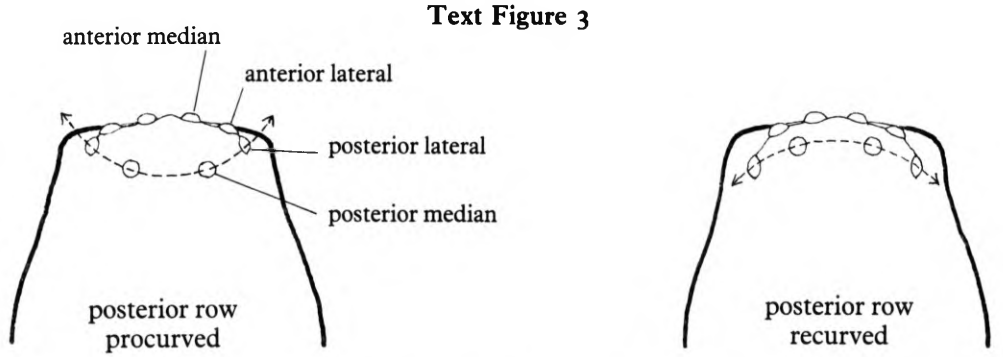
Underneath the cephalothorax is the *sternum*, a heart-shaped or oval plate usually indented opposite the coxa of each leg. Attached to the anterior border of the sternum is the *labium*. In many species, the distal margin of the labium is paler and somewhat swollen; in others (Theridiidae) it is a flat sclerite with no distal thickening. On each side of the labium are the *maxillae*, used in crushing and filtering food, which bear hairs and rows of denticles distally. Morphologically, the maxillae are the enlarged modified coxae of the *palps* (palpi). Each palp (palpus) (Text Fig. 3b) consists of six segments: *coxa*, *trochanter*, *femur*, *patella*, *tibia* and *tarsus*. The tarsus of the female palp often has a claw distally. Male spiders have the palpal tarsi greatly enlarged and modified as secondary sex organs. They are used to take up sperm, exuded from the genital orifice in the epigastric region on to a small web, and to transfer it to the female *epigyne* (see below). Frequently the male palpal tibia, patella, femur and coxa are also modified. Male palpal structure is dealt with later. Behind the palps, and attached laterally between the carapace and sternum, are four pairs of walking *legs*. In the descriptions the legs are referred to as legs I, II, III and IV, being numbered from the front. Each leg (Text Fig. 2c) consists of seven

Text Figure 2

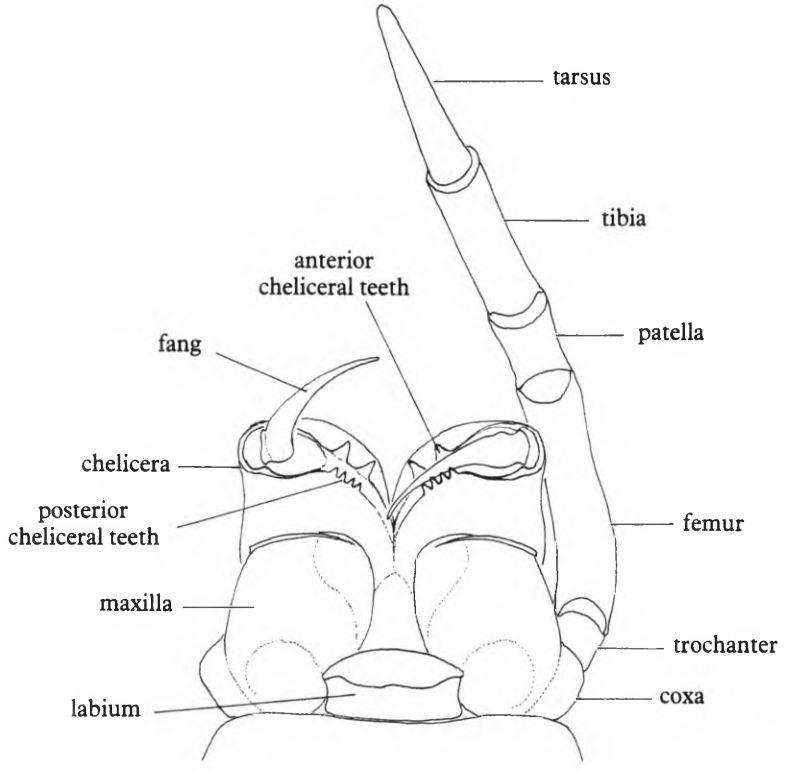
External features of a spider (♀)



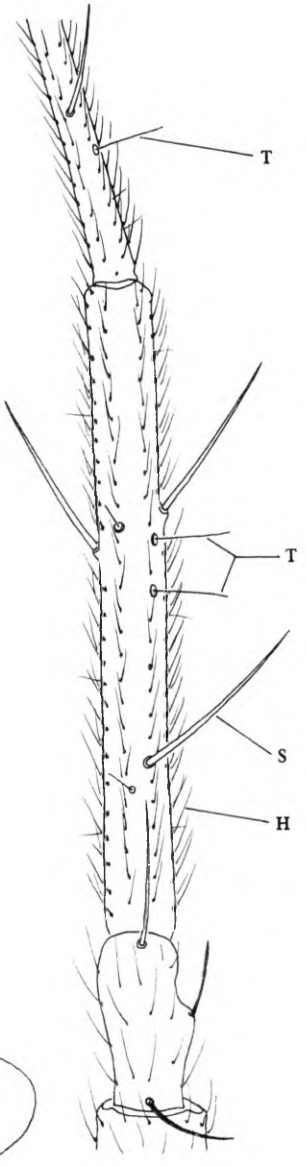
Text Figure 3



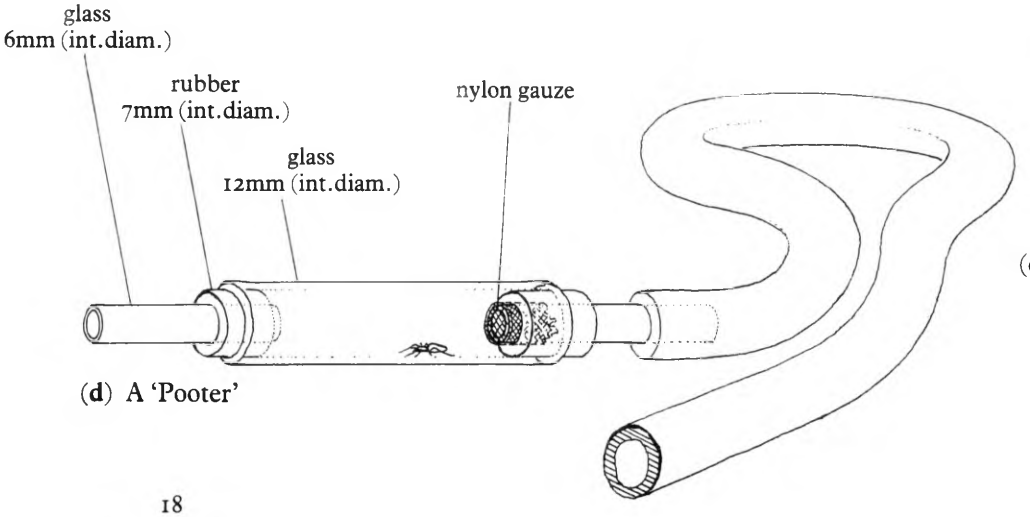
(a) **Eyes** dorsal view



(b) **Chelicerae, maxillae, labium and palp**
♀ spider, ventral view



(c) Part of leg showing **trichobothria** (T), **spines** (S) **and hairs** (H)



(d) A 'Pooter'

segments: *coxa*, *trochanter*, *femur*, *patella*, *tibia*, *metatarsus* and *tarsus*. The leg tarsi bear *foot-claws* distally which vary in size and number (Text Figs 9a–j, p. 42). Spiders that spin webs and walk on silk threads have three foot-claws – a pair of upper claws, often toothed, and a smaller median claw. In addition there may be hairs which are greatly modified to form *auxiliary foot-claws*; these are used, with the median claw, to hold silk threads. Many hunting spiders and others which do not spin webs have only two foot-claws, the small claw being replaced by a tuft of hairs. This *claw tuft* adheres to the film of water covering most surfaces and allows the spider to grip and walk on smooth areas, even vertically or upside-down. In some species there is also a ventral brush of thickened hairs running longitudinally along the length of the tarsus (and sometimes metatarsus) which is referred to as a *scopula*. In the Pholcidae the leg tarsi are divided into false segments and are flexible (Text Fig. 5f, p. 38).

The legs and palps are often furnished with *spines*, in addition to the normal fine *hairs* (Text Fig. 3c). The length, thickness and number varies between different spider families; some have many large spines whereas others may have very few which are scarcely thicker than hairs. In the descriptions the positions of the spines are referred to as if the legs were held out straight and at right angles to the long axis of the body. Thus, spines may be *prolateral* or *retrolateral* (on the side, directed forwards or backwards respectively) or *dorsal* or *ventral* (on upper or lower surfaces respectively). In addition to normal hairs and spines, some spiders have hairs on the legs and the body which may be *squamiform* (scale-like), *clavate* (club-shaped), *spatulate* (flattened club-shaped), *plumose* (feathery) or *serrated* (with saw-like edge). Sometimes the hairs are white, pigmented or iridescent, forming patterns which may reinforce or obscure the pattern of the underlying integument. Another distinct type of hair is the *trichobothrium*, a fine, erect hair arising from a distinct circle on the surface of the limb (Text Fig. 3c). The function of these hairs is to detect air vibration and currents; they may occur singly or in groups on various parts of the limb and frequently are of great use in the identification of spiders.

The *abdomen*, connected to the cephalothorax by the pedicel, varies greatly in shape, colour and markings in different species and is generally relatively smaller in adult males than females. It becomes more distended after feeding or when eggs are developing. Within the abdomen are the heart, lungs, respiratory tracheae, digestive tract, reproductive organs and silk glands. On the ventral side of the abdomen are the entrances to the respiratory organs. Anteriorly there is a pair of plates, the *branchial opercula*, which are sometimes light or orange in colour. At the posterior margin of each there is a slit-like opening leading to the *book lungs*. The latter are gill-like structures with the blood-filled leaves being kept apart by spines to allow air circulation. *Atypus affinis* Eichwald is the only British species to have two pairs of book lungs. In the midline of the ventral side of the abdomen is the *tracheal spiracle*, single or paired, which leads to paired tracheae. This opening is usually situated immediately anterior to the spinners and is difficult to see, but in some families (Anyphaenidae, Argyronetidae, Hahniidae) it is placed more anteriorly (Text Figs 6a,b,c,f, p. 39; 7a,b, p. 40). In the Dysderidae and Segestriidae the paired tracheal spiracles are immediately behind the lung spiracles.

Posterior to the branchial opercula is the *epigastric fold*, in the midline of which lies the genital opening (Text Fig. 2b). This is inconspicuous in most male spiders but in the majority of adult females is differentiated to form a more or less complicated chitinous structure called the *epigyne* (see below). The *spinners* are arranged in three pairs, *posterior*, *anterior* and *median*, at the posterior end of the abdomen and extrude the silk strands through tiny spigots. Anterior to the spinners there is sometimes a sieve-like plate, the *cribellum* (Text Figs 4a–j, p. 34) which produces fine flocculent silk. Those species which have a cribellum also have a *calamistrum* (Text Figs 4k–m) on metatarsus IV which is used to pull and comb out the silk. The presence or absence of cribellum and calamistrum is of importance in the classification of spiders. In some spiders there is also, just in front of the anterior spinners, a small tubercle called the *colulus* (Text Fig. 76d–l, p. 173) which is generally believed to be derived from an ancestral pair of

anterior spinners. It is of importance in the classification of spiders in the Theridiidae. Posterior (or dorsal) to the spinners is the *anus* which may open via a small *anal tubercle*. The dorsal surface of the abdomen has a pattern in many species. In the anterior midline there is frequently a lanceolate mark which overlies the primitive heart and is sometimes called the *cardiac mark*. Usually there is also a series of paired, depressed spots or *sigilla*, often reddish in colour, which mark the internal attachments of muscles. The abdominal pattern may, in some species, be made up of a series of chevrons; in others there may be longitudinal or horizontal stripes. In many species there is a broad, leaf-like abdominal pattern with clearly defined edges which is referred to as the folium. The pattern itself may be made up of numerous subcutaneous pigmented 'cells' (white or coloured guanin) which can, on expansion or contraction, cause considerable alteration in appearance in some species. This change, in living spiders, may on occasions be used in camouflage and could conceivably have a thermoregulatory function in some species. In preserved specimens these pigmented cells often contract, giving a more reticulated appearance to the abdomen as the darker abdominal contents show through the interstices. Superficial to this there may also be colouring or markings within the integument itself. Some species may have, on the dorsal and sometimes ventral aspects of the abdomen, a hard sclerotized plate or *scutum* (Text Fig. 87a, p. 197). The abdominal surface is usually clothed with hairs which in some species may be fine and sparse. In Lycosidae and Salticidae species the hairs may be dense and pigmented or iridescent and be themselves arranged to form a pattern which, in the living spider, obscures the underlying integument. In these cases the appearance of the specimen in alcohol often differs substantially from its appearance in life. The abdominal pattern, when present, is often more clearly defined and contrasting in males where the abdomen is relatively smaller.

The *length* of spiders is measured from the front of the carapace to the posterior end of the abdomen and that given for each species in this work is for adult specimens.

Male palps

As mentioned earlier, adult male spiders have the palp modified as an intromittent sex organ of varying complexity. *The form of the palp is the most important character for the final identification of male spiders and it is illustrated for each species described in this book.* In a few species (e.g. *Segestria*, Text Figs 20f–h, p. 63) the tarsus of the palp is scarcely modified and the attached palpal organs comprise a simple bulb (containing a sperm reservoir and ducts) which tapers to a fine tip, the *embolus*, through which the ejaculatory duct opens. In most species however, the tarsus is enlarged and hollowed out to form the *cymbium* which partially contains the sexual organs. The latter vary enormously in complexity. The palps of *Tetragnatha* (Text Figs 11a, p. 44; 89a–f, p. 201) are relatively simple; the tarsus is split into two parts, *cymbium* and *paracymbium* and the bulb of the palp tapers with increased complexity to the embolus which is itself supported and coiled around an additional structure, the *conductor*. Most other species have a more complex palpal structure, the detailed discussion of which is beyond the scope of this book. However, in addition to the increased number and complexity of palpal sclerites, these palps also possess a distensible structure, the *proximal haematodocha*. This consists of a balloon of elastic connective tissue and is situated at the base of the palpal organs. During mating it becomes distended with blood so as to expand and push out the palpal organs. Some spiders (e.g. *Araneus* spp.) have an additional *distal haematodocha* nearer the tip of the palpal organs. The palps of preserved spiders can be made to expand in a similar way by soaking them for a short time in hot lactic acid, and this technique is often essential for detailed taxonomic studies. The unexpanded palp is illustrated throughout this work and, whereas the majority of specimens collected will be in this state, some males – especially those collected from pitfall traps – may be found with expanded palps. The various views of the palp are described and illustrated as if the structures were held out straight in front of the spider and are *dorsal*, *ventral*, *mesal* and *ectal* (meaning viewed from

above, below, inside and outside respectively). The left palp is illustrated for each species, mostly from an ectal view but from a ventral view in some groups. Palps of related species are drawn from similar comparative angles and to the same scale. Because of their complex structure, male palps may appear quite different if viewed from even a slightly different angle. Therefore, when examining palps and comparing them with the illustrations, care should be taken to view the structures from a comparable position. Male palps are usually lighter and less sclerotized in specimens that have recently moulted. In subadult males the palpal tarsus is normally swollen but is undifferentiated and lacks the complex arrangement of sclerites seen in the adult.

Epigynes

The form of the epigyne is the most important single character for the final identification of most adult female spiders. There is no epigyne in ten of the British species, belonging to the Atypidae, Oonopidae, Dysderidae, Segestriidae and Scytodidae, and in the genera *Tetragnatha* and *Pachygnatha* (Tetragnathidae) the epigyne is very simple. In all other species the epigyne is a more or less complex chitinous structure in which the genital openings are located. In some the epigyne is a simple opening with sclerotized margins; in others the opening may be divided by a median septum. Often the structure has a variety of more complex sclerotized parts and some epigynes have a tongue-like process or *scape* in the midline. Frequently the internal genitalia are partially visible through the epigyne and integument, but this depends somewhat on the amount of superficial pigmentation and sclerotization and often varies considerably between specimens of the same species. The internal structures can be seen more easily if the specimen is 'cleared' in clove oil (see below) with or without dissection. Generally, a pair of ducts, leading from openings in the epigyne, pass to a pair (sometimes two pairs) of sacs, the *spermathecae*, the function of which is to store the sperm introduced by the male. Issuing from the spermathecae are the *fertilization ducts* through which the sperm is eventually passed during egg-laying. These internal structures (ducts and spermathecae) are collectively referred to as the *adnexae* and are illustrated for a small number of species in this work (Plate C, p. 191; Text Figs 14, p. 51; 15a–c, p. 53; 19e,f, p. 61), where the appearance of the epigyne alone is insufficient for precise identification. The illustrations of epigynes in this book were made from a position vertically above and those of related species are to the same scale, as indicated. In some species the epigyne, or its scape, may protrude to a variable degree, thus altering the angle of view needed for accurate comparison with the illustrations. Females which have recently moulted generally have paler, less sclerotized epigynes and there is often considerable intraspecific variation in depth of colour. The general form and outline of the structures shows less variation. The epigastric region of subadult females often shows a vaguely defined epigynal structure, but this is quite different from that seen in the adult state.

(c) Courtship, Mating and Growth

Prior to courtship, the male spider deposits a drop of sperm, from the epigastric genital opening, on to a small web from which it is then drawn up into the palps. A female has then to be located and in this respect the male may follow strands of silk laid down by mature females and also be influenced by pheromones. On finding a female, the correct approach has to be made. In those spiders with poor eyesight this often takes the form of plucking the web and then continuously tapping and stroking the female. Spiders with good vision (e.g. Salticidae and Lycosidae) engage in courtship displays which may be elaborate and involve a dance with a waving of legs and palps. Sperm is then transferred to the female, by applying the palps to the epigyne, and is stored in her spermathecae. After an interval, sometimes a week or so, the female lays her eggs, which are fertilized in transit by the stored sperm, and deposits them in a

silken sac. Females of some species may store sperm for very long periods of time and use it to fertilize several batches of eggs.

Some species lay hundreds of eggs in one sac; those that provide special care for their eggs and young lay fewer. The eggs hatch directly into tiny spiders; there is no larval stage or pupation as occurs in insects. The young spiderlings emerge either a few weeks later or, in some cases, the eggs may lie dormant over the winter and the young emerge the following spring.

Growth of the spider requires periodic shedding *(ecdysis)* of its exoskeleton and this may happen 4–12 times before maturity is reached. The number of ecdyses required varies between species and obviously partly depends on the eventual adult size. However, within the same species the food supply and many other factors will influence the frequency and number of ecdyses taken to reach maturity and affect the size attained by adults. Occasionally, a leg or palp may be lost during moulting. Limbs lost in this and other ways may subsequently be partly or completely regenerated. As indicated earlier, the structure of the female epigyne and male palp does not appear differentiated until the spider becomes adult. In some species there is a vaguely defined epigynal structure after the penultimate moult and most males have the palpal tarsus swollen but undifferentiated before the final moult.

(d) Silk

Silk is produced by pseudoscorpions, spider mites, most centipedes, some millipedes and by the caterpillars of many moth species, but only for mating or for egg-chambers and cocoons. Some caddis-fly larvae are known to use silk for snaring prey under water. Spiders use silk in many ways. Silk is a fibrous protein, insoluble in water, with a high tensile strength and is extruded from the spigots of the spinners as a liquid, hardening immediately as it is pulled out. Several different types of silk are produced by different glands within the abdomen: woolly cribellate silk, web-frame silk and drag lines, sticky viscid silk, egg-sac silk, etc. Most spiders make silken egg cases of various types and *Pisaura mirabilis* (Clerck) uses silk to construct a nursery tent. Many species construct silken tunnels or retreats which may be in the ground, under bark and stones, or between leaves. Silk is also used by some species to wrap prey. Most spiders, as they wander about, lay down drag lines of silk, anchored at intervals, which may serve in retracing a path or as safety lines, or be marked with pheromones.

The snares of web-spinning spiders are perhaps the most conspicuous use to which silk is put and the various species have evolved different methods of catching prey. These include the irregular cribellate webs, cobwebs, sheet webs, funnel webs and orb webs, the detailed construction of which is beyond the scope of this book. Some of the Linyphiidae make very small sheet webs over depressions in the ground or on bark, and it is possible that these serve to maintain a stable microhabitat for the spider, with regard to temperature and humidity, rather than acting purely as snares.

Many adults of the smaller Linyphiidae and spiderlings of other species use silk in 'ballooning'. This is a very effective dispersal mechanism in which the spider climbs to the top of a post, branch or stem, stands 'on tiptoe', raises the spinners and releases silk. As the silk threads lengthen they are caught by convection currents and the wind, the whole animal being lifted, often to great heights, and carried over large distances. At certain times, especially in the autumn, masses of ballooning threads may be seen and are known as gossamer. Ballooning spiders have been collected by aircraft at altitudes of 5000 feet.

(e) Spider Communication

Spiders, in common with other arthropods, communicate with one another in various ways. These include the use of vision, acoustic/vibratory mechanisms and pheromones. Much

interesting research is being done in this field. Salticid spiders have highly developed visual acuity which is used in predation and in courtship displays. Many spider species have a stridulating apparatus of 'file and scraper' type which may be variously located on the chelicerae, palps, legs, abdomen and carapace. Others employ percussive tapping of limbs or body on the ground, on webs or even on the surface of water. It is also well known that spiders use pheromones, particularly in courtship. Research into the molecular structure of pheromones and their sites of production and chemoreception is just beginning.

As well as having great ecological importance, research on spider communication may have considerable implications taxonomically in the case of cryptic sibling species. The latter may be difficult or impossible to separate reliably using morphological characters, but communication (particularly in courtship) may function effectively as a species isolating mechanism in these cases. Thus our traditional 'morphospecies' may be further subdivided into 'ethospecies' or 'biospecies'.

(f) Spider Bites and Poison

None of our native British spiders can give a bite which is poisonous to man and spiders rarely bite even if provoked. To the spider human skin is merely another substrate; however, an inert but vibrating tuning fork often does provoke a response. Some of the larger species – *Dysdera crocata* C. L. Koch, *Segestria florentina* (Rossi), *Scotophaeus blackwalli* (Thorell), *Argyroneta aquatica* (Clerck), *Agelena labyrinthica* (Clerck), *Coelotes atropos* (Walckenaer) and *Araneus diadematus* Clerck – can bite and pierce human skin and on occasions this may be painful and cause minor irritation. There have been similar reports concerning the small linyphiid spider, *Leptorhoptrum robustum* (Westring).

In warmer parts of the world there exist a number of dangerously poisonous spiders, the best-known being the black widow, *Latrodectus mactans* (Fabricius), also known in some countries as the red-back spider. It occurs in most warm parts of the world, and a number of closely related species and geographical races are described. Only the females bite and they measure 10–12mm and are black with a red hour-glass mark on the ventral side of the abdomen and sometimes red patches dorsally. The bite itself is insignificant but within a few minutes pain appears in the regional lymph glands, which become swollen. Overall muscle spasm and rigidity follows and this may affect all parts of the body and usually also produces severe abdominal pain. In addition there may be excess sweating and salivation, swelling of the eyes, difficulty in breathing and later there may be renal changes and skin rashes. Initial treatment is directed to relieving the painful muscle spasm by intravenous calcium gluconate or methocarbamol, followed by antivenin. Occasionally the condition may prove fatal.

The brown spiders (*Loxosceles* spp.) of South America can also cause serious illness and the smaller *Loxosceles* species in the U.S.A. can produce ulcerating wounds which are slow to heal. Unpleasant local wounds and generalized illness can be caused by some species of *Cheiracanthium* occurring in Europe, U.S.A. and in other parts of the world. A species of *Phoneutria* from Southern Brazil has a painful neurotoxic bite and the Australian mygalomorph spiders *Atrax robustus* Cambridge (the Sydney funnel-web spider) and *A. formidabilis* Rainbow are very dangerously poisonous and have caused several deaths. Other hairy mygalomorphs (Theraphosidae, commonly called tarantulas) can give an unpleasant bite which may be toxic, especially in those species that frequently catch vertebrates such as lizards, snakes, frogs, and small birds. Most, however, are not poisonous to man, their bite being relatively no worse than a bee sting. Some species have urticating hairs on the abdomen which may be shed or even rapidly brushed off the abdomen by the hind legs and cause irritation of human skin and eyes; if inhaled they may cause a cough or breathing difficulties.

(g) Collection of Spiders

Spiders can be found in almost every conceivable type of surrounding and at all times of the year. They occur on the inside and outside of houses and buildings in various situations, in gardens, rubbish tips, fields, woods, under bark, logs and stones, amongst dead leaves and other detritus, on bushes, trees and other vegetation, amongst grass tussocks and the roots of plants, in moss and sphagnum in swampy areas, by the side of rivers and lakes, by the seashore and on mountain tops. Several methods may be employed to collect spiders from these different habitats. Many species can be found readily by the webs they build and this is probably a good way to begin the study of spiders as one simultaneously learns about the habitat and web-structure of the species captured. Some species run about on the ground (e.g. *Pardosa* spp.) or on walls (e.g. *Salticus* spp.) and with practice are easily spotted. Some hide in crevices by day and are more active at night, either sitting in their webs or moving about on the ground or on walls. Night collecting with a powerful torch is often very profitable and is usually easier if the torch is worn on the forehead like a miner's lamp. Apart from the conspicuous nocturnal web species, many other spiders will be found, wandering about. The eyes of some, such as wolf spiders (Lycosidae), actually reflect the light as greenish pin-points.

By far the easiest way of capturing any spiders encountered is to use a 'pooter' (Text Fig. 3d, p. 18) which can be made easily of glass, rubber tubing and a piece of nylon stocking, the latter preventing the specimen from being drawn up into the mouth. Having been sucked up, the specimen can then be blown into a container. Spiders may be taken home alive, in which case only one specimen should be placed in each container due to the risk of cannibalism but several species from one locality can be placed directly in a tube containing alcohol.

Further collecting may be done by looking under stones and logs, etc., being careful to examine the underside of the stone as well as the ground, and then replacing the stone so that the habitat is not destroyed. Spiders may also be found under loose bark but it is preferable not to remove this as it usually cannot be replaced; artificial bark traps (see below) are better in this respect. A vibrating tuning fork can be used to attract some species out of their retreats into their webs. Other species hide in silken cells between leaves or in rolled up leaves and these can be carefully opened. Generally grubbing around at the roots of trees and plants or in moss also yields many species. Dense vegetation, such as grass tussocks, can be uprooted and taken apart over a sheet. A survey of a spider population can be made more quickly and thoroughly if various other methods are adopted such as:

(i) *Sweeping with a net*

Although an insect sweep net may be used, these are not usually robust enough and it is probably better to make one with cotton sheeting or canvas for the net itself. A net with a folding or detachable handle is easier to carry around and an anglers landing net can usefully be converted by replacing the netting with a cotton bag. Grasses, low plants, bushes and trees can then either be swept, or shaken with the net underneath. A fine-mesh nylon net may occasionally be needed for collecting the water spider, *Argyroneta aquatica* (Clerck), from amongst pondweed.

(ii) *Beating*

For this a sheet is placed on the ground at the base of bushes or under branches of trees, which are beaten with a stick or shaken to dislodge any spiders. Thick, light coloured polythene sheeting (such as that used for cheap garden-pool liners) has several advantages; a blue or beige colour is better than white, being less dazzling in sunlight.

(iii) *Sieving*

Leaf-litter, moss and any other detritus may be placed in a sieve and shaken over a sheet. Metal sieves with ¼–½-inch mesh are available from hardware shops; alternatively a collapsible

lightweight sieve can easily be made using half-inch rigid plastic netting and stitching canvas sides to it. Another alternative is to use a chip-pan basket. Spiders falling on to the sheet (both in beating and sieving) frequently exhibit catalepsy, the protective response of lying motionless with the legs drawn in. Sometimes they remain like this for two or three minutes and are difficult to spot until they resume movement.

(iv) *Pitfall traps*

A jam jar buried flush with the ground surface and containing a small amount of ethylene glycol (and detergent to reduce surface tension) will trap spiders and other animals moving on the ground. On fairly soft ground it is quicker to use plastic cups or cream or yoghurt cartons, a neat hole being made quickly and easily with a bulb planting tool which removes a plug of earth equal in size to the carton. Traps should be emptied weekly. Male spiders collected in this way often have the palps partially or completely expanded and can be difficult for the novice to identify. Propylene phenoxytol (see below) could also be useful in pitfall traps. As the catch is indiscriminate, co-operation with other naturalists makes best use of the animals caught.

(v) *Bark traps*

Corrugated cardboard can be wrapped round tree trunks and left for a few weeks; then removed, taken home in a polythene bag and examined by peeling off the outer layers of cardboard.

(vi) *Litter collection*

If weather conditions are unfavourable or only a little time can be spent in the field, moss and leaf-litter can be taken home in polythene bags and sorted at leisure. Litter brought home in the winter should be left to warm up for a few hours, the spiders then being more active and easily spotted. Whilst Tullgren funnels are useful for separating many small animals from litter, with spiders I have not found them to have any advantages over sieving and sorting litter by hand.

(h) Preservation and Examination of Spiders

Spiders are killed and preserved in 70–80 per cent ethyl alcohol. They cannot ordinarily be preserved in a dry state as they shrivel up into unidentifiable husks, but they may be satisfactorily freeze dried; this is sometimes done in museums for display purposes. The main disadvantage of alcohol is that it readily evaporates and specimens may be lost if tubes in the collection are not periodically checked and topped up. Traditionally, tubes containing separate species are plugged with cotton wool and stored with others in a larger jar of alcohol. This is often an inconvenient arrangement particularly with regard to reference specimens which need to be readily accessible. The use of polythene closures for tubes partly overcomes the problem; corks are unsatisfactory as they easily allow evaporation and rubber bungs often spoil the specimen with a sulphurous precipitate.

The risk of losing specimens through evaporation of alcohol, and the fire risk of alcoholic collections, can be obviated by using a solution of one per cent propylene phenoxytol in water. It is important to note that this substance is a bactericide and fungicide and *not* a fixative; specimens need to be properly fixed (e.g. in alcohol or formalin) before being stored in it. One can either collect and fix the specimens in alcohol, or in a mixture of one per cent propylene phenoxytol and ten per cent formalin, and later transfer them to one per cent propylene phenoxytol for storage.

Labelling of specimens is most important and should include the date, habitat, locality, map reference and collector's name. The label may be in pencil in the field, but should be replaced by an indian ink or typed label placed *inside* the tube with the specimen. Printed record cards are available for the recording of spiders by the 10km grid system.

Detailed methods of organizing and storing a spider collection cannot be given here and in any case most people gradually evolve their own system. Discussion with other arachnologists is valuable in this respect as it also is for techniques of collecting and examining spiders. Broadly speaking, one needs a reference collection containing, for each species, a number of specimens of each sex for comparative purposes. The rest of the material can be placed in the general collection where each tube contains all the species collected from one locality on one date. Notebooks and a system of indexing are necessary for the collection to be usable. It should be possible not only to have easy access to reference specimens but also to be able to retrieve specimens of any given species from the general collection if the need arises, as for example in assessing intraspecific or geographical variation or for comparison with any difficult new specimens.

For the examination and identification of spiders a microscope is necessary and many different models are currently available. The best for arachnological work is a stereoscopic microscope with a wide field of view and variable (zoom) magnification. It is usual to have a graticule with a scale (0–100mm) inserted in one eyepiece for the comparative measurement of structures. For the amateur, the type of instrument will often be dictated by finances, but the cost of a good microscope compares favourably with that of essential equipment for other hobbies such as photography, fishing or golf.

Spiders are best examined in alcohol or phenoxytol in a shallow container such as a petri dish, and can be held in any desired position if a layer of fine sand or glass beads is placed in the bottom. Glass beads of approximately 80 mesh size, of the kind used in gas chromatography and in glass-bead sterilizers, are available from laboratory suppliers. Under the microscope, specimens need to be illuminated from above and a high intensity lamp will be necessary; several models are available.

Male palps can be examined by placing the specimen on its side and moving the legs out of the way. Alternatively the whole palp can be detached for easier examination and then kept in its own microvial with the specimen. Expansion of the palp is easily carried out by placing it in a stoppered vial of lactic acid and heating the latter in boiling water for a few minutes. The palp may also be subsequently cleared in clove oil in order that the ducts may be traced.

The epigyne is examined with the specimen on its back, the legs being moved out of the way if necessary. If the epigyne has to be cleared to show the adnexae, this is done by transferring the specimen from the 70–80 per cent alcohol to 100 per cent alcohol to extract all water, and then placing it in clove oil. With some species this is all that is required. After examination the specimen can be returned to the 100 per cent alcohol to remove the clove oil before it is put back into the 70–80 per cent alcohol for it to assume its normal state. In some cases the adnexae cannot be seen clearly even when the whole spider has cleared, being obscured by deeper, often darker intra-abdominal structures. It may then be partially or completely dissected away from the specimen. Alternatively, a small longitudinal slit may be made to the side of the epigyne and a small piece of aluminium (kitchen) foil pushed inside, behind the adnexae, to act as a reflector. This procedure requires a little practice but avoids undue damage to the specimen.

When comparing the male palp or epigyne of a specimen with the illustrations in this book, one should get into the habit of looking at the *whole structure*. Most people will have seen the paired cartoons in newspapers where one differs from the other and the reader has to 'spot the differences'; the perceptive approach needed for this is also the best approach when examining spider genitalia. In many works which illustrate spider palps, only a part of the structure is shown, or the reader's attention is directed to one particular aspect of the organ as being *the* diagnostic feature. Whilst this may in the short term sometimes be helpful, and occasionally is necessary, it can be misleading and discourage observation of other structures. As it is, many experienced arachnologists, when identifying specimens, spend their time looking at palps and epigynes and scarcely look at the whole animal. If this is taken a stage further one can be led into

just looking at the tibial apophyses of the palp in one genus, or the conductors in another. In this situation, any new species cropping up may be missed if the differences in its palpal structure do not occur in the appropriate conventional diagnostic area. Also, in a broader sense, any new species of spider which is very similar in general appearance to a well-known ubiquitous species, is likely to go unnoticed because, first, it is less likely to be collected and, secondly, it is likely to receive only perfunctory examination. It should of course be borne in mind that individual animals within any species do show some variation both in general appearance and in the genitalia, the latter tending to show less intraspecific variation than other characters in spiders. Specimens examined may therefore sometimes differ considerably (in colour, markings, abdominal distension, etc.) from each other and from the colour plates, the genitalia being much more reliable.

Another rather obvious but important consideration in identification is the size of the spider being examined. This is shown on the colour plates and the range given in the text. Note should also be taken of the scale lines on the genitalia drawings and the relative sizes of genitalia.

Spiders killed in alcohol usually contract the legs and palps up to the body and become relatively fixed in this state. It may then be necessary to move the legs and palps slightly in order to obtain a good view of structures. Usually this presents few problems. Specimens may, if desired for display, be set out with the legs extended. This should be done immediately after the animal has been killed in alcohol, and before hardening has taken place. One easy method is to cut a circle of tissue paper to fit inside the bottom of a petri dish, and moisten it with alcohol. The limp, freshly killed spider can then be arranged on this with legs outstretched and then a very little more alcohol added so that the specimen is moist but not quite covered. The tarsal claws grip the tissue and this, together with the film of alcohol, keeps the legs extended. The dish is left covered overnight and the specimen should then be fixed with legs outstretched.

The nature of this book means inevitably that it is concerned mainly with corpses and genitalia. Live spiders are fascinating animals both to observe in the field and to keep in captivity. Many interesting observations can be made concerning web spinning, moulting, capture of prey, mating and egg laying; and subadult specimens may be reared to maturity.

(i) Occurrence and Distribution of British Spiders

As already stated, spiders may be found virtually anywhere and at all times of the year. A few species may also be found *adult* throughout the year. Adults of species from the majority of families are mature in spring and early summer. The numbers of adults encountered diminishes somewhat during the summer, when eggs are hatching and many immatures of other species are likely to be collected. The latter will mature in late summer and autumn. Many spiders of the Linyphiidae are also mature during the autumn and through the winter. Very little is known of the life cycles of many individual species; in some cases this may well vary and depend on latitude and local climatic differences.

Consideration was given as to whether the distribution of British spiders should be dealt with in the present work. Distribution maps prepared by Merrett were given by Locket, Millidge *et al.* (1974) and additional information is published from time to time in the Bulletin of the British Arachnological Society. Because there are still relatively few people working on spiders, it can be argued that our present knowledge of spider distribution partly reflects the distribution of active arachnologists. It is hoped that the present work will stimulate further interest in spiders and an increasing number of records from individual collectors. The known distribution patterns might then be altered somewhat and could form the subject of a separate publication.

An indication, based on current knowledge, that a species is rare or occurs only in the south could be disconcerting for an inexperienced arachnologist faced with several specimens collected in the north. It might even cause the find to be disbelieved and thus go unrecorded.

For this reason, any broad references to the known distribution or rarity of species, given in this book, should not be allowed to influence careful, critical identification of specimens.

Finally, I have avoided giving precise locations for rare species recorded or of any localities which are known to have a rich spider fauna. Experience shows that this can result in overworked areas being trampled still further and underworked areas remaining so.

(j) The British Arachnological Society

One of the most notable and constant features of arachnology in the British Isles has been the fine example of co-operation between amateur and professional workers and the willingness shown by the experienced in helping those beginning the study of spiders. A flourishing British Arachnological Society now promotes the study of spiders, harvestmen, pseudoscorpions and scorpions and provides a further means by which interested people may communicate with each other. The B.A.S. is well worth joining for anyone, amateur or professional, with an interest in this group of animals. Bulletins and a newsletter, published three times a year, contain scientific papers and up-to-date information on the many and diverse aspects of arachnology, both in this country and abroad. The Field Studies Council also organizes field courses on spiders, led by various members of the B.A.S. The Society has a large library of arachnological papers available on loan to members, and a photographic slide library. Information on important aspects of collecting equipment, techniques, choice of microscope and lighting is available.

(Further details from the Membership Secretary, B.A.S., Dept of Extra-Mural Studies, University of Manchester, Manchester M13 9PL)

(k) Literature

(i) *Specialist Identification Works on British and European Spiders*

Some of these titles are currently available; others are out of print or rare. Many of these otherwise unobtainable works on European spiders, and other key works on spider systematics, were published on microfiche by Oxford Microform Publications in 1977.

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II. CLASSIFICATION AND NOMENCLATURE

To suggest that an identification guide, such as this, should be bound loose-leaf and supplied with self-adhesive stickers would perhaps be to overstate the instability of spider nomenclature. Nevertheless, there are considerable problems and those interested chiefly in the identity and natural history of species often find repeated changes in nomenclature profoundly irritating. Many amateur naturalists also find it confusing but will find the basic principles of animal classification set out in most standard zoological works.

It has to be remembered that the British spider fauna has, very roughly, only a quarter of the number of species known in Europe. Furthermore, the latter represents maybe one-fifteenth of the known species in the rest of the world; the spiders of many parts of the world have hardly been studied and we perhaps know only a quarter of the likely total world species. Any system of classification has to evolve to accommodate new discoveries and, as the study of spiders is less advanced than that of many other orders, the nomenclature is still relatively unstable. Our present nomenclature would be radically different if the science of arachnology had begun in the southern hemisphere.

Any system of classifying animals may be based either on purely arbitrary criteria 'imposed' on the animals or on natural affinities which await discovery. The former method is sometimes temporarily useful, purely for identification purposes, but becomes less useful as additional species become known and stretch the criteria of the filing system. A classification based on natural affinities is obviously better, but cannot be fully implemented until the full range of species is known. Although classification based on superficial similarity is arbitrary and subjective, at least the means of arriving at it are objective. A phylogenetic classification is ideally objective, but the means of arriving at it can be subjective and sometimes wildly speculative. The compromise is to produce a classification which is orderly and convenient and makes use of all known natural, phylogenetic affinities.

As taxonomic research progresses and new species are discovered, problems in nomenclature continue to arise. Many of the basic principles on which supraspecific taxa are based have been shown to be unsound and inconsistent in the light of modern phylogenetic taxonomy. Some of the characters used may be the result of convergent evolution rather than reflecting phylogeny and a great deal of future rearrangement of spider classification is inevitable, from generic to suborder level. My overall view is to regard frequent minor changes, particularly in genera, as being unnecessarily disruptive and to resist any such change unless it has broad implications and has received general acceptance. This usually takes time, but at least spares non-taxonomists the confusion of shuffling genera and families. Related genera should ideally be separated by a clear gap. Undue splitting of genera and families is often unhelpful and can obscure relationships. The continued informal use of 'species groups' within genera and 'subfamilies' within families serves a similar purpose but does not overburden the nomenclature.

The nomenclature used in this book closely follows the scheme adopted by Locket, Millidge *et al.* (1974), but a number of changes have been made. These, and other proposed changes not implemented here, are discussed as and when they occur in the main body of the text.

There can be further difficulties at specific and infraspecific levels. In spiders the genitalia are complex, and with a good microscope and a keen eye for detail it is usually fairly easy to distinguish between 'morphological' species. However, in common with most other animals there also exist cryptic 'sibling species', 'subspecies', 'geographic races' or 'ethospecies' within

some spider species. A number of species have a wide geographical distribution, sometimes across several continents, such as *Latrodectus mactans* (Fabricius) and *Achaearanea tepidariorum* (C. L. Koch). They frequently exhibit slight morphological differences across a geographic range (geocline) or range of habitats (ecocline). Many species are able to adapt to a remarkable variety of environmental situations sometimes within a small geographic area. Well-known examples of this include *Erigone arctica* (White) occurring in Scandinavian mountains and on salt-marshes and beaches in Britain; *Leptorhoptrum robustum* (Westring) on European mountains and in sewage filter-beds; *Clubiona phragmitis* C. L. Koch in reed beds, coastal sand-dunes and under stones on the shore line; *Tibellus maritimus* (Menge) in marshes and sand-dunes. Spiders from these different regions and habitats sometimes exhibit slight differences, some species or genera being more prone to such variability than others. Holm (1956) showed that *Erigone arctica* can be divided into a number of distinct subspecies and Levi (1959) dealt with similar problems in *Latrodectus* by lumping many species together on the basis of similar genitalia. However, some genitalic features, colour variations and biological differences were overlooked and, almost twenty-five years later, Levi (1983) writes that his earlier conclusions on the genus *Latrodectus* were wrong.

The breadth of habitat used by a species clearly depends on the behaviour of its members. On the one hand each individual may be capable of general habitat use or alternatively the species may comprise a number of divergent individuals each with more specialized habitat use. Van Valen (1965) suggests that if different groups of a population or species are adapted to their specialized habitat then polymorphism will be promoted in populations or species which are capable of broad habitat use. This niche variation hypothesis suggests that species with broader habitat ranges should be more variable than those confined to narrow niches because of the action of disruptive selection. Such polymorphism has been artificially induced in *Drosophila* subjected to disruptive selection for numbers of sternopleural chaetae (Thoday & Boam, 1959).

In a highly variable species, examples taken from the extremes of the range may appear sufficiently different to be given separate species status or at least subspecies status. Subsequent study of larger collections often reveals many intermediate forms and the taxonomist is faced with the problem of either creating many new species or subspecies (and burdening the nomenclature with an unlimited number of names) or considering that there is but one highly variable (polytypic) species. The latter course more usefully emphasizes the great variability of populations within the species and promotes study of the distribution of these variable characters without any artificial, often confusing additions to the nomenclature.

Take the case of *Achaearanea simulans* (Thorell) which appears identical with *A. tepidariorum* (C. L. Koch) in genitalia and general morphology but is smaller. Many minor discrepancies in morphology could easily be attributed to allometric growth and might also be shown to occur in other spider species. Minor differences in biology might similarly be shown in an adaptable species occurring in different environments. Many animals are capable of such adaptation which may be reversible if the environment changes. The considerable discussion as to whether *A. simulans* should be regarded as a separate species, or as *A. tepidariorum simulans*, a subspecies of *A. tepidariorum*, is summarized on page 181. It is arguable whether these two forms are or are not biologically separate species: the 'species' unit has always been notoriously difficult to define. However, the taxonomist primarily describes morphological *types* which, in the majority of cases, happen also to be *biologically distinct* species. Taxonomy should ideally reflect relationships in a balanced way. If this spider is called *A. simulans*, the difference between it and *A. tepidariorum* is given as much weight, taxonomically, as that between it and, say, *A. lunata*. Furthermore, the very close affinity between the two forms is obscured for anyone looking through a list of species. In this situation a trinomial system is useful, provided there is little overlap between the two. However, in those species where there are many intermediate forms, the formal naming of these races, clines, hybrids, etc., becomes a rather cumbersome exercise.

It should be possible to devise a system where these are catalogued separately until such time as their status is determined.

In the future, simple microscopic examination for separating species may be supplemented by other modern methods such as electron microscopy, comparative physiology, cytology and genetics, serology and consideration of ecology, spider communication and geography. This would cause problems for those without access to an electron microscope or equipment for electrophoretic enzyme studies but promises to be of great use in ecological studies. Some recent work uses ethological methods to discover or create new taxa which are described as 'biospecies' or 'ethospecies'. These species are almost identical morphologically, may overlap in distribution and can be made to hybridize. Apparently, they usually maintain species genetic integrity by virtue of sexual communication differences functioning as a species isolating mechanism (see Stratton & Uetz, 1983). These methods of 'ethotaxonomy', although fascinating, seem currently to have a rather uncertain basis and could present considerably more problems than traditional 'morphotaxonomy'. There might be little value in formally naming new 'ethospecies' which most other arachnologists could not reliably identify.

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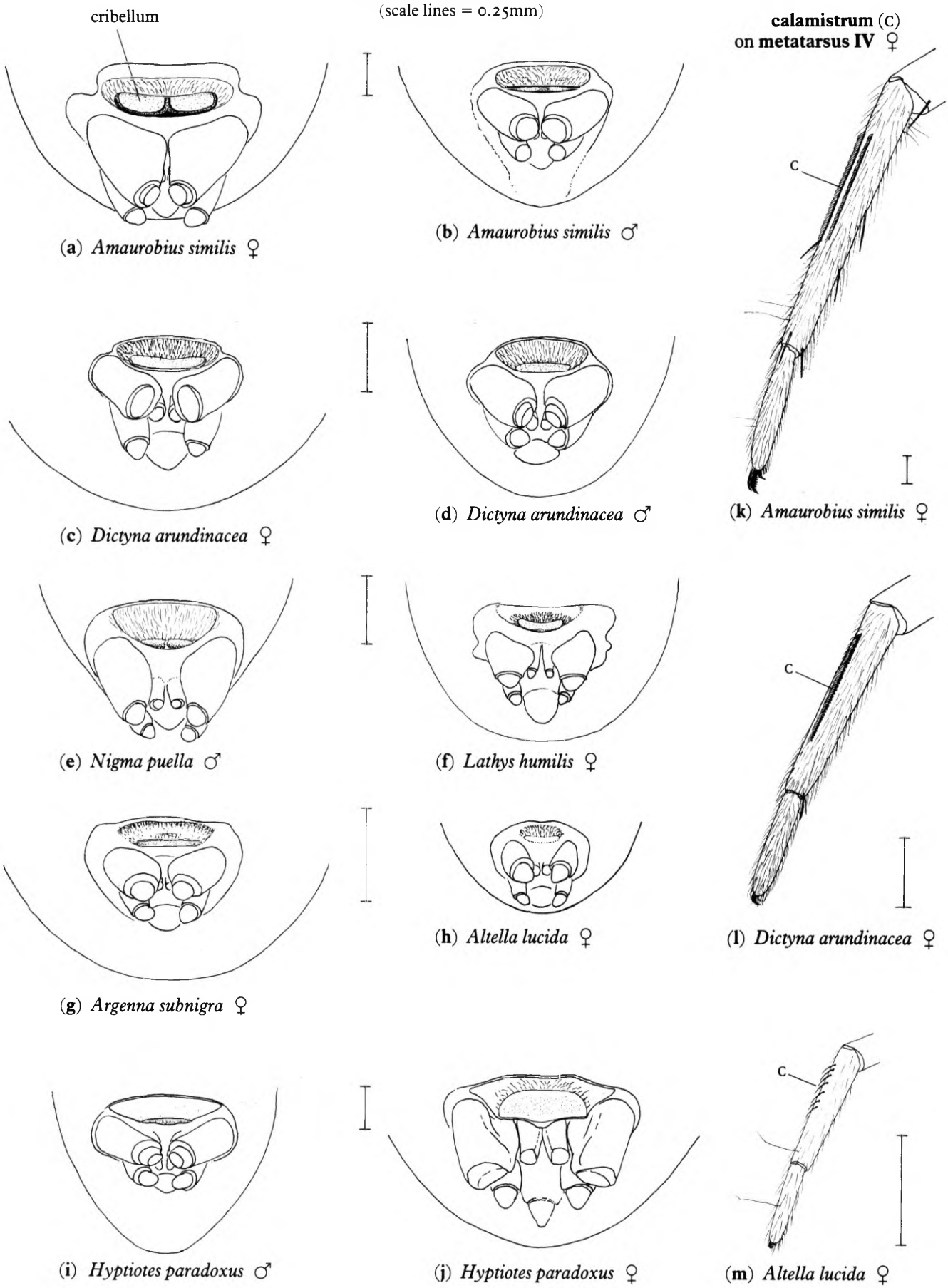
Text Figure 4

spinners with cribellum

(scale lines = 0.25mm)



III. KEY TO THE FAMILIES OF BRITISH SPIDERS

This key is constructed for use with British species and is not fully applicable to the continental or world fauna. As with the subsequent generic keys, it makes use of characters which can be easily seen and interpreted unambiguously and is intended as an introductory guide for anyone beginning a study of spiders. A strictly dichotomous key, using taxonomic minutiae, would be difficult to use without prior arachnological experience.

The majority of spiders can be identified to species level only by examination of the female epigynes or the male palps of *adult* specimens. Immature specimens are frequently collected and it is better to ignore these, at least until one has become familiar with the group. Whilst examination of the male palp readily shows whether a specimen is mature or not, adult females of a few species have an ill-defined or absent epigyne. If a female lacks an epigyne and has only six eyes, follow the key from number 5; if it has eight eyes, check the families Atypidae and Tetragnathidae. If it is none of these, the specimen is immature. Subadult females of some species may have a vaguely defined epigynal structure but this is unlike that of adults.

1 Chelicerae massive, projecting in front of the carapace, articulated for upward and downward movement, the folded fangs lying parallel to the long axis of the body. Posterior spinners with three segments (Plate 1; Text Fig. 12, p. 47). Suborder ORTHOGNATHA (Mygalomorphae). One British representative ..... ATYPIDAE (p. 46)

– Chelicerae, large or small, attached under the anterior border of the carapace and, although sometimes projecting forwards, articulated for inward and outward (or oblique) movement. Posterior spinners never with more than two segments. Suborder LABIDOGNATHA (Araneomorphae) 2

2(1) Cribellum present anterior to spinners (reduced in ♂) (Text Figs 4a–j). ♀ with a calamistrum on metatarsus IV (degenerate in ♂) (Text Figs 4k–m) 3

– Cribellum and calamistrum absent 5

3(2) Three rare CRIBELLATE spider species (two families) are recognizable instantly by general appearance:
(i) Plate 2; Text Fig. 12b, p. 47 ..... ERESIDAE (p. 46)
(ii) Plates 11, 12; Text Figs 17a,b, p. 57 ..... ULOBORIDAE (p. 56)

– Not as above 4

4(3) Fairly large cribellate spiders, 5–15mm in length. Calamistrum of ♀ having a double row of bristles (Text Fig. 4k). Tarsi with several trichobothria ..... AMAUROBIIDAE (p. 48)

– Smaller cribellate spiders, less than 4mm in length. Calamistrum of ♀ with a single row of bristles (Text Figs 4l,m). Tarsi with a single trichobothrium, or none ..... DICTYNIDAE (p. 48)

5(2) Spiders with six eyes, all easily seen from above, in a fairly compact group (Text Figs 5a–d, p. 38). Adult ♀ without an epigyne. ♂ palpal organs with a simple bulb attached to the tarsus, which is little modified. (Text Figs 18–20, pp. 59, 61, 63) (HAPLOGYNE Spiders) 6

– Spiders with eight eyes, sometimes together, sometimes widely separated and not always easily seen initially. Adult ♀ with an epigyne of varying complexity. ♂ palpal organs more or less complex and partly contained within the hollowed out modified tarsus (cymbium) (ENTELEGYNE Spiders) 7

6(5) Spider marked clearly on carapace, abdomen and legs with black pattern on pale yellow background. Carapace humped up posteriorly; legs slender; chelicerae small. Single British species has a distinctive appearance (Plate 14). Eyes as in Text Fig. 5a, p. 38 ..... SCYTODIDAE (p. 58)

– Small spiders (adults 1.5–2mm). Uniformly pale yellow or pinkish-red in colour. Chelicerae small (Plate 13). Eyes as in Text Fig. 5b, p. 38 ..... OONOPIDAE (p. 58)

– Larger spiders (adults 5–22mm). Chelicerae larger and projecting anteriorly (Plates 15–17). Eyes as in Text Fig. 5c, p. 38 ..... DYSDERIDAE (p. 60)

– Eyes as in Text Fig. 5d, p. 38 ..... SEGESTRIIDAE (p. 62)

7(5) (Spiders with eight eyes but lacking cribellum and calamistrum)

A Carapace roughly circular, as wide as long, with eyes as in Text Figs 5e,g, p. 38 (Plates 18, 19; compare Plate 126). Legs extremely long (leg I four to five times body length). Tarsi with flexible false segments (Text Fig. 5f, p. 38) ..... PHOLCIDAE (p. 64)

B Carapace square-fronted with four large eyes on the front, the median pair being particularly large (Text Figs 5h–k, p. 38). Two smaller pairs of eyes dorsolaterally ..... SALTICIDAE (p. 115)

C Spinners in a transverse row and tracheal spiracles ⅓–½ way from spinners to epigastric fold (Text Figs 6a–c, p. 39). Small spiders ..... HAHNIIDAE (p. 168)

D Eyes arranged as in Text Fig. 6d, p. 39 (note the very small anterior medians which may not be visible from above). Legs with very long spines (Text Fig. 6e). The single British species is rare ..... OXYOPIDAE (p. 130)

E Tracheal spiracles just behind epigastric fold (Text Fig. 6f, p. 39). Carapace with a median line of *short*, dark hairs (Text Fig. 6g). The single British species, the water spider, almost entirely aquatic ..... ARGYRONETIDAE (p. 154)

F Tracheal spiracles easily visible midway between spinners and epigastric fold (Text Figs 7a,b, p. 40). Distinctive mark on dorsal side of abdomen of the single British species (Text Fig. 7c) ..... ANYPHAENIDAE (p. 94)

G Eyes as in Text Figs 7d–g, p. 40. An anterior row of four small, equal-sized eyes (not always seen from above) and a posterior row of larger equal-sized eyes which are strongly recurved forming a trapezium. An imaginary line through the posterior lateral and posterior median eyes crosses the midline ahead of the anterior margin of the carapace ..... LYCOSIDAE (p. 132)

H Eyes as in Text Figs 7h–i, p. 40. An anterior row of small, equal-sized eyes, always easily visible from above, and a posterior row of larger equal-sized eyes which are fairly strongly recurved. (NOTE. In *Textrix* (Agelenidae) the recurved posterior row has eyes *unequal* in size.) An imaginary line through the posterior lateral and posterior median eyes crosses the midline on or behind the anterior margin of the carapace ..... PISAURIDAE (p. 154)

I Eyes as in Text Fig. 7j, p. 40. The eyes in the posterior row are equal in size but those in the anterior row have the medians distinctly larger than the laterals. Carapace yellowish with chocolate markings ..... ZORIDAE (p. 94)

J Legs I and II, when viewed from above, show a series of prominent curved spines on metatarsus and tibia (Text Fig. 8a, p. 41). Small curved spines are set at regular intervals between them. When viewed laterally, the metatarsi appear markedly curved ..... MIMETIDAE (p. 170)

K Posterior spinners larger than anteriors *and* of two segments (Text Figs 8b–g, p. 41), median spinners easily visible. (Terminal segment of posterior spinners not always visible in *Cryphoeca* (Plates 94, 96b) where it may be obscured by long hairs.) Three tarsal claws present ..... AGELENIDAE (p. 156)

L Eyes black (occasionally dark blue-grey) with both rows recurved to a greater or lesser degree (Text Figs 8h–m, p. 41). Most (but not all) species have crab-like stance with legs I and II longer and stouter than III and IV ..... THOMISIDAE (p. 97)

– Description not covered by *A* to *L* 8

8(7) Tarsi with three claws, easily visible, the paired ones usually furnished with teeth (Text Figs 9a–d, p. 42) 10

– Tarsi with only two claws which may be partly hidden by tufts of hair (Text Figs 9e–j, p. 42) 9

9(8) Anterior spinners cylindrical, slightly longer than posteriors and separated so that median spinners are easily visible (Text Figs 9k–n, p. 42). Posterior median eyes oval in most genera. (NOTE. In *Micaria* (Text Fig. 9n) the anterior spinners are *not* separated but the posterior eyes are distinctly oval; *Scotophaeus*, and occasionally *Zelotes*, although having entirely characteristic spinners (Text Figs. 9l,m), have circular posterior median eyes) ..... GHAPHOSIDAE (p. 64)

– Anterior spinners cylindrical or conical, and close together so that median spinners are not visible. Posterior spinners usually a little longer and occasionally of two segments (Text Figs 10a–d, p. 43). Posterior median eyes circular ..... CLUBIONIDAE (p. 80), EUSPARASSIDAE (p. 96)
(NOTE. The single British species of the Eusparassidae (*Micrommata virescens* (Clerck), Plate 39) is unmistakable, ♀ being entirely green and ♂ having three longitudinal scarlet bands on abdomen.)

10 Tarsi IV with a comb of serrated bristles ventrally, difficult to see in very small species (Text Fig. 10e, p. 43). Labium no swollen distally (Text Fig. 10f). (Occasionally swollen in *Euryopis*, *Theonoe* and *Robertus*; but note, also *not* swollen in *Pachygnatha*, Tetragnathidae.) Posterior margin of chelicerae usually lacking teeth. ♂ palp lacking distinct paracymbium which is often only a very small hook near the distal margin of cymbium (Text Fig. 10g). Web composed of irregular criss-cross strands, only very occasionally forming a sheet .... THERIDIIDAE (p. 172)

– Tarsi IV with a comb of serrated bristles ventrally (easily visible). Labium swollen distally (Text Fig. 10h, p. 43). ♂ palp with large paracymbium (Text Fig. 10i). Web composed of irregular criss-cross strands ..... NESTICIDAE (p. 196)

– Tarsi IV without serrated bristles ventrally. Small spider (1.5–3mm). Both ♀♂ of the single British species have a globular abdomen marked with silver (Plate 157) ..... THERIDIOSOMATIDAE (p. 222)

– Tarsi IV without serrated bristles ventrally. Labium swollen distally (Text Figs 11a,c–e, p. 44) *except* in *Pachygnatha*, Tetragnathidae. Posterior margin of chelicerae with one to several teeth. ♂ palp with a paracymbium (Text Figs 11a–e). Spinners of sheet-like webs or orb webs (often with haphazard strands above and below) 11

11(10) Maxillae distinctly longer than broad (Text Figs 11a–c, p. 44). (As the maxillae project ventrally they may need to be viewed slightly from behind to see this.) Some species have elongate chelicerae. ♀ epigynes simple. ♂ palps with an elongate paracymbium, sometimes branched (Text Figs 11a–c). Most species spin orb webs ..... TETRAGNATHIDAE (p. 198)

– Maxillae not, or scarcely longer than broad (Text Figs 11d,e, p. 44) 12

12(11) Chelicerae usually with stridulating ridges laterally (Text Fig. 11e, p. 44) and without a lateral condyle. Tarsi with three claws but no auxiliary foot-claws (Text Figs 9b–d, p. 42). Spinners of sheet webs ..... LINYPHIIDAE Volume 2; Volume 3, Plates 158–237

– Chelicerae without stridulating ridges and usually with a lateral condyle (Text Fig. 11d, p. 44). Tarsi with three claws and auxiliary foot-claws (Text Fig. 9a, p. 42). Spinners of orb webs..... ARANEIDAE (p. 205)

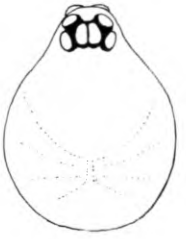
Text Figure 5

I SPIDER FAMILIES WITH SIX EYES **carapaces**

SCYTODIDAE

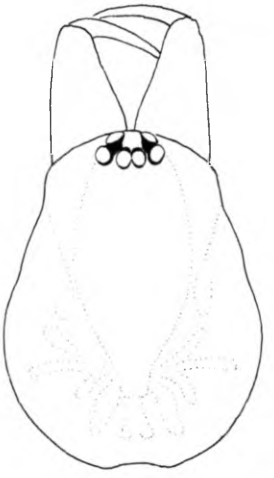
(**a**) *Scytodes*

OONOPIDAE



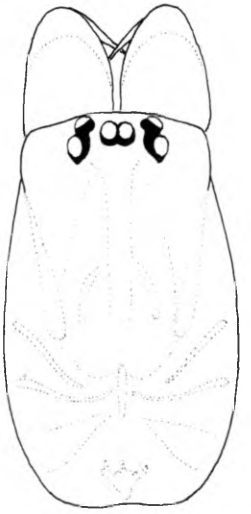
(**b**) *Oonops*

DYSDERIDAE



(**c**) *Dysdera*

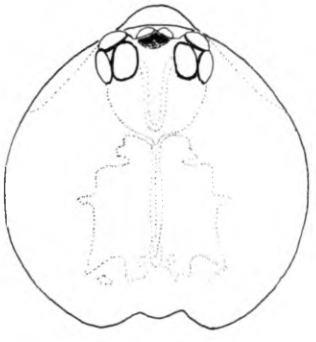
SEGESTRIIDAE



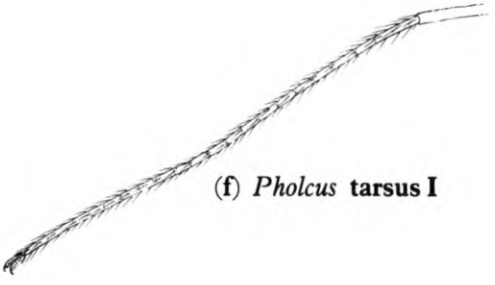
(**d**) *Segestria*

II SPIDER FAMILIES WITH EIGHT EYES **carapaces**

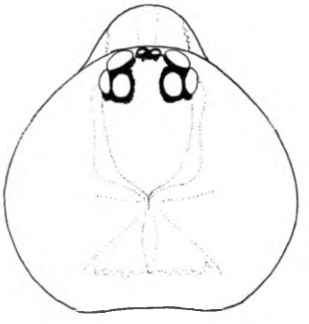
PHOLCIDAE



(**e**) *Pholcus*

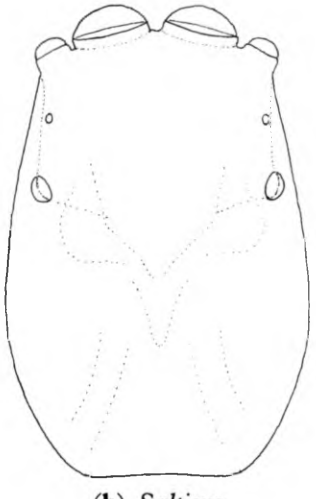


(**f**) *Pholcus* **tarsus I**

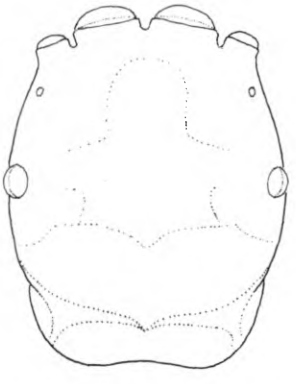


(**g**) *Psilochorus*

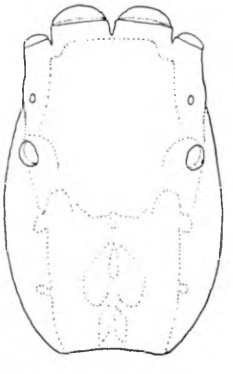
SALTICIDAE



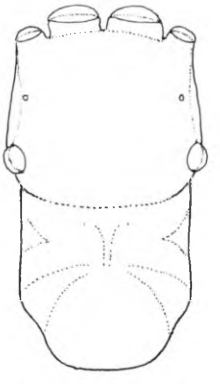
(**h**) *Salticus*



(**i**) *Ballus*



(**j**) *Marpissa*

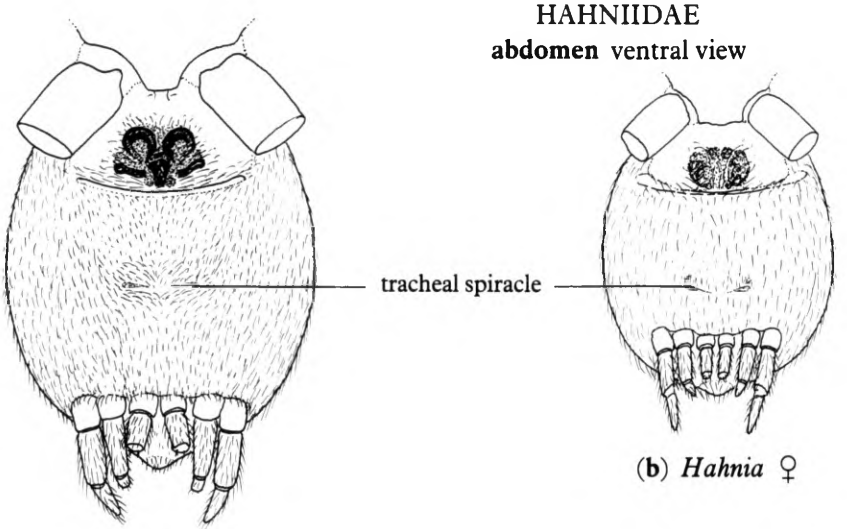


(**k**) *Myrmarachne*

Text Figure 6

HAHNIIDAE

abdomen ventral view

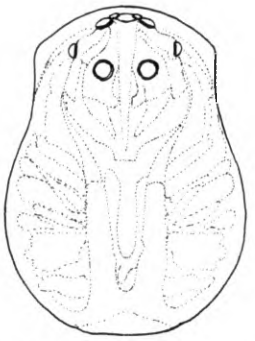


(**a**) *Antistea* ♀

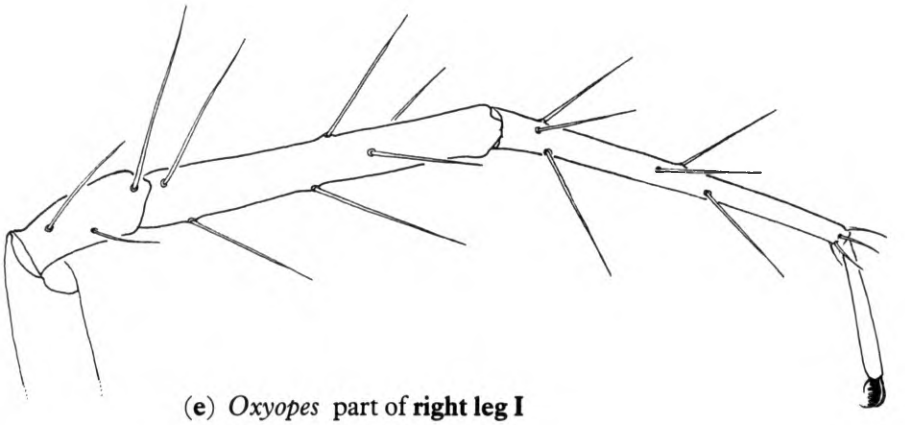
(**b**) *Hahnia* ♀

(**c**) *Hahnia* ♂

OXYOPIDAE

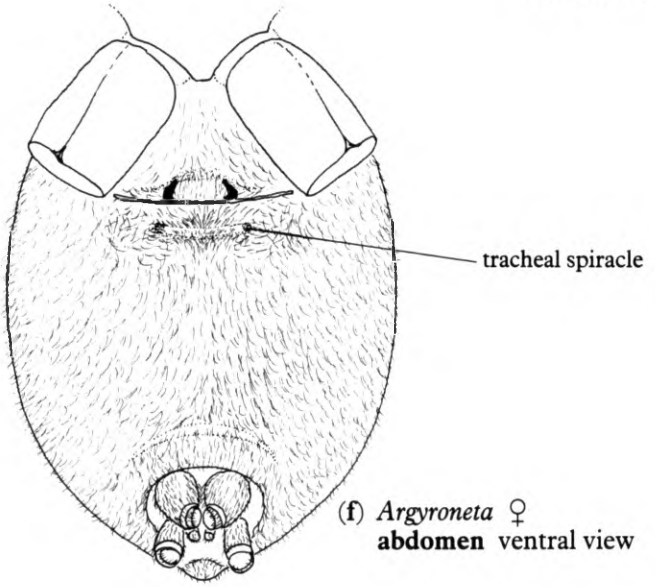


(**d**) *Oxyopes* ♀ **carapace**

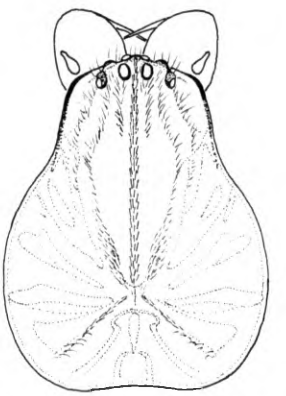


(**e**) *Oxyopes* part of **right leg I**

ARGYRONETIDAE

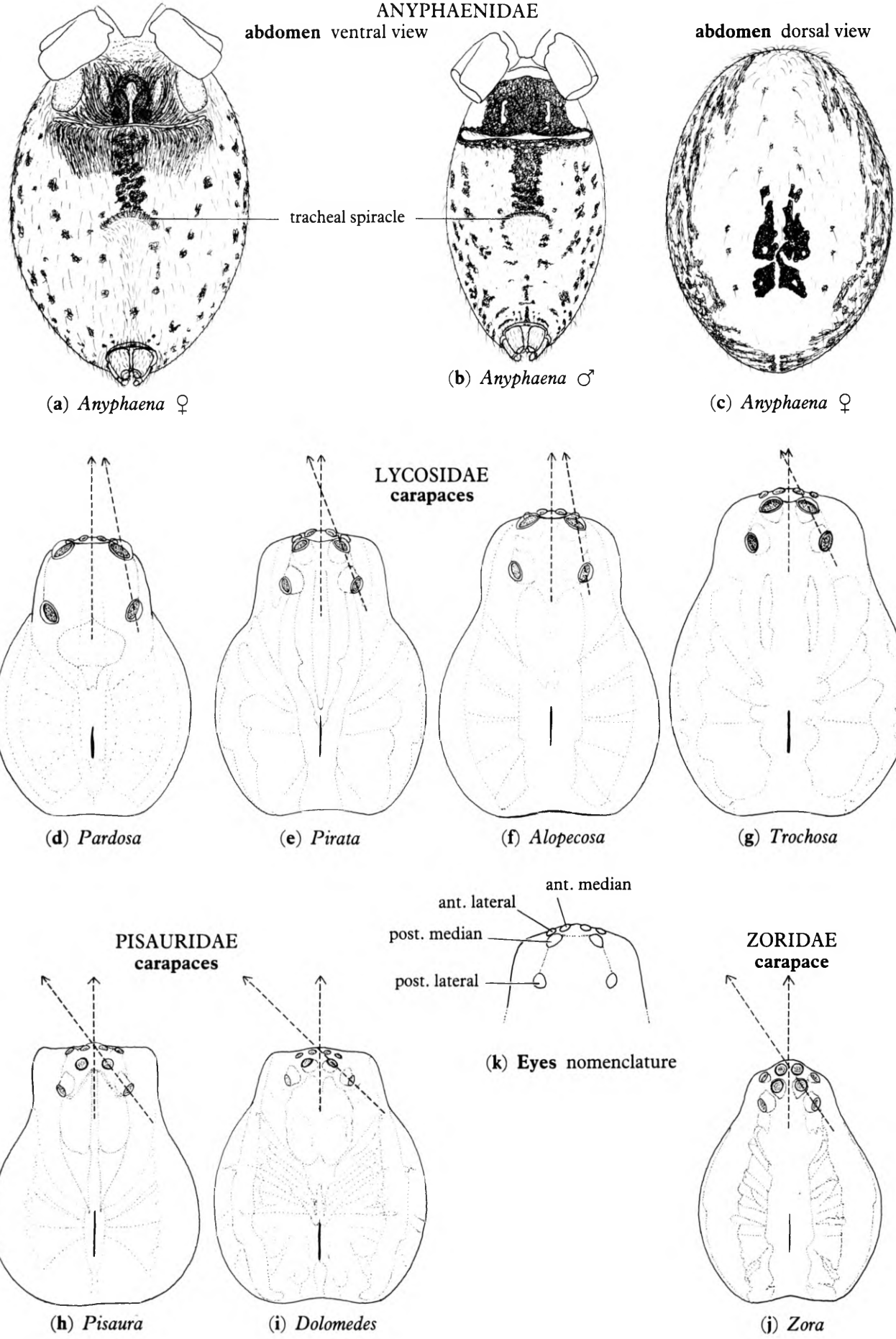


(**f**) *Argyroneta* ♀
abdomen ventral view

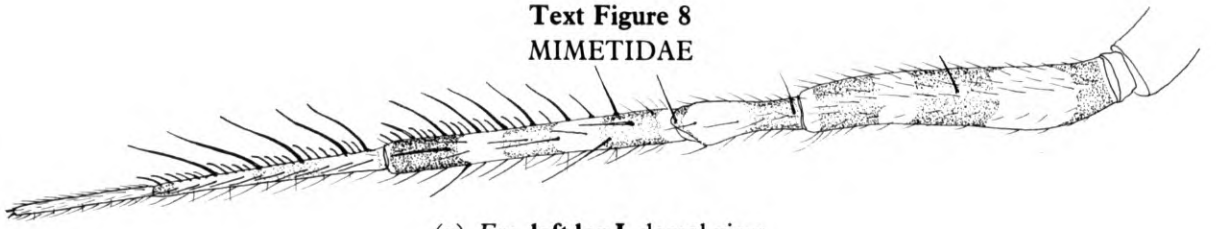


(**g**) *Argyroneta* ♀ **carapace**

Text Figure 7



Text Figure 8
MIMETIDAE

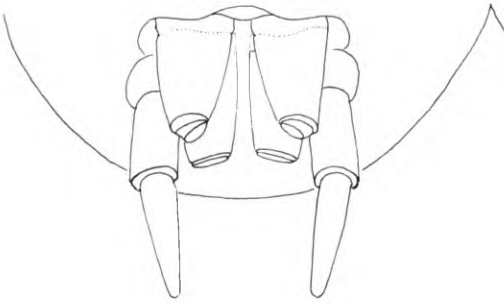


(**a**) *Ero* **left leg I** dorsal view

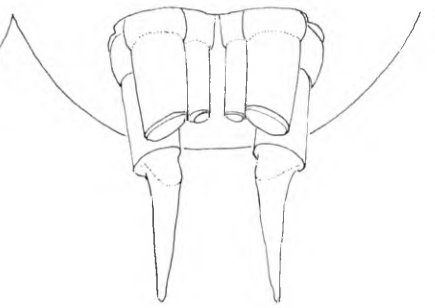
AGELENIDAE

spinners ventral view

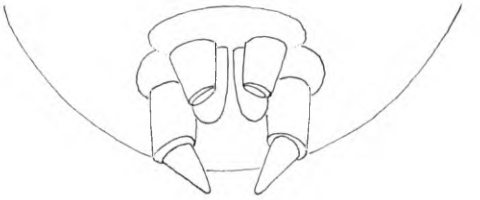
(**b**) *Tegenaria*



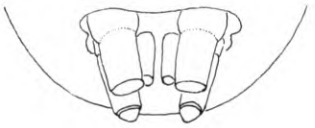
(**c**) *Textrix*



(**d**) *Coelotes*

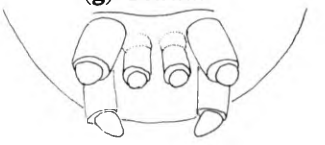


(**e**) *Cryphoeca*



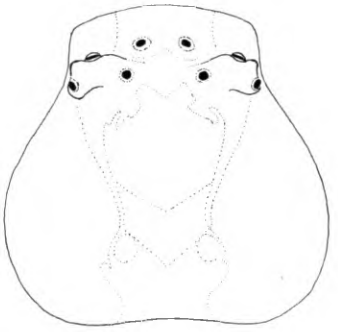
(**f**) *Cicurina*

(**g**) *Tetrilus*

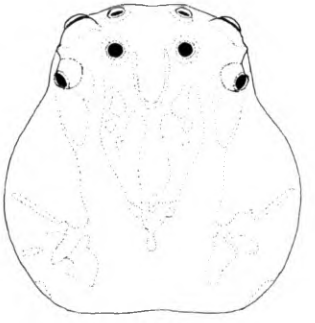


THOMISIDAE

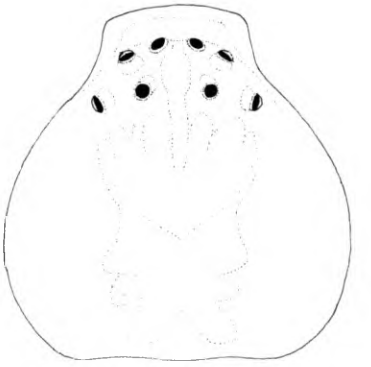
carapaces



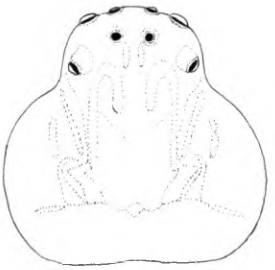
(**h**) *Thomisus*



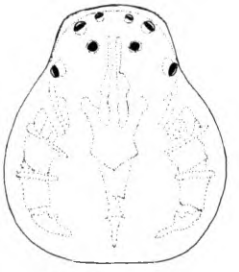
(**i**) *Xysticus*



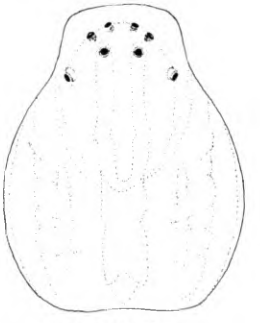
(**j**) *Philodromus*



(**k**) *Oxyptila*



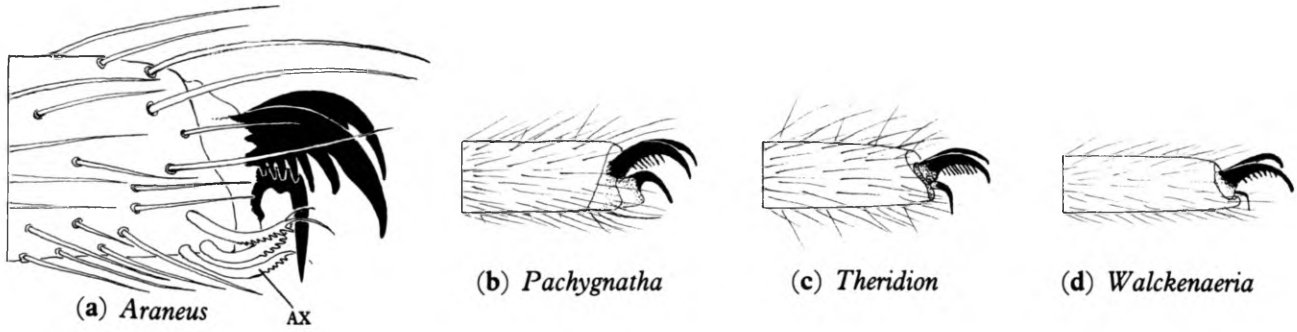
(**l**) *Thanatus*



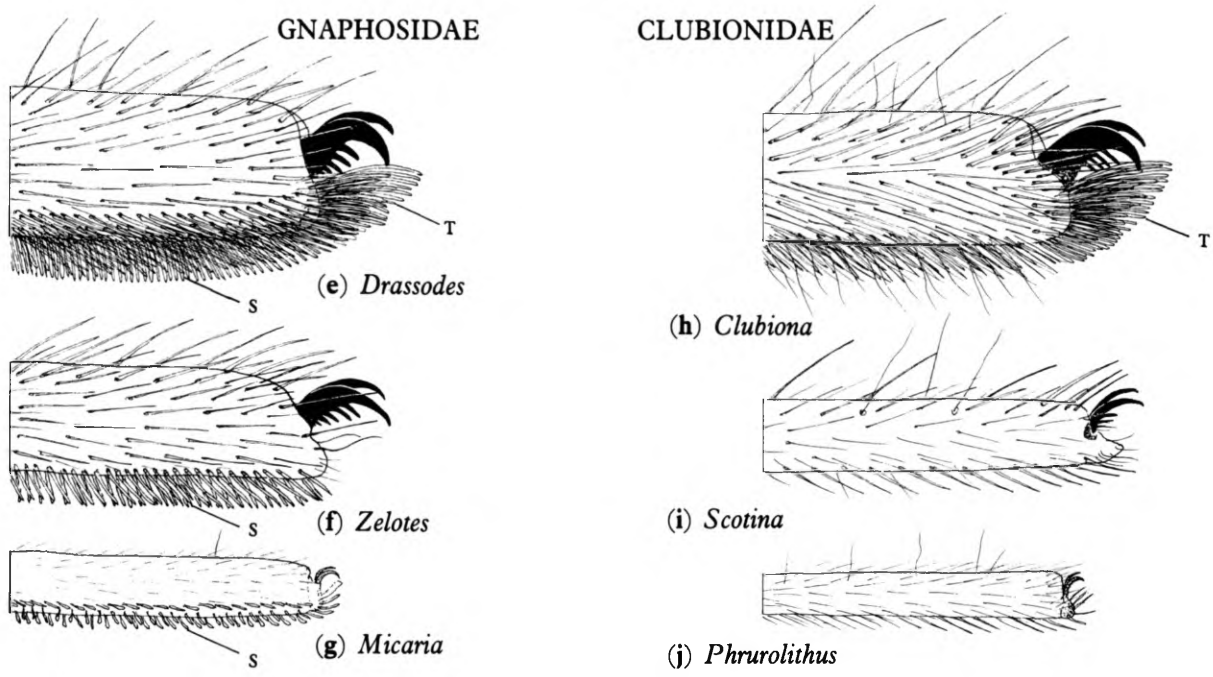
(**m**) *Tibellus*

Text Figure 9

Examples of **tarsi with three claws** and sometimes **auxiliary foot claws** (AX)

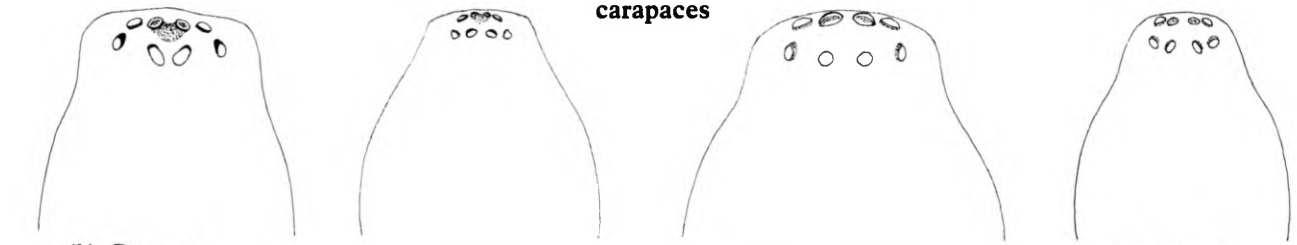


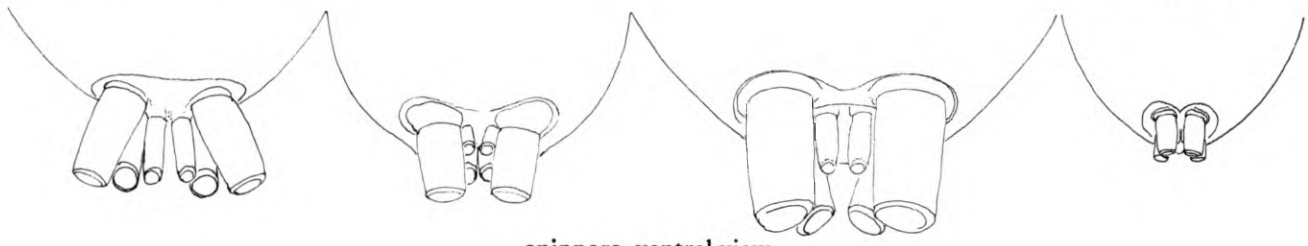
Examples of **tarsi with two claws** and sometimes **claw tufts** (T) and **scopulae** (S)



GNAPHOSIDAE

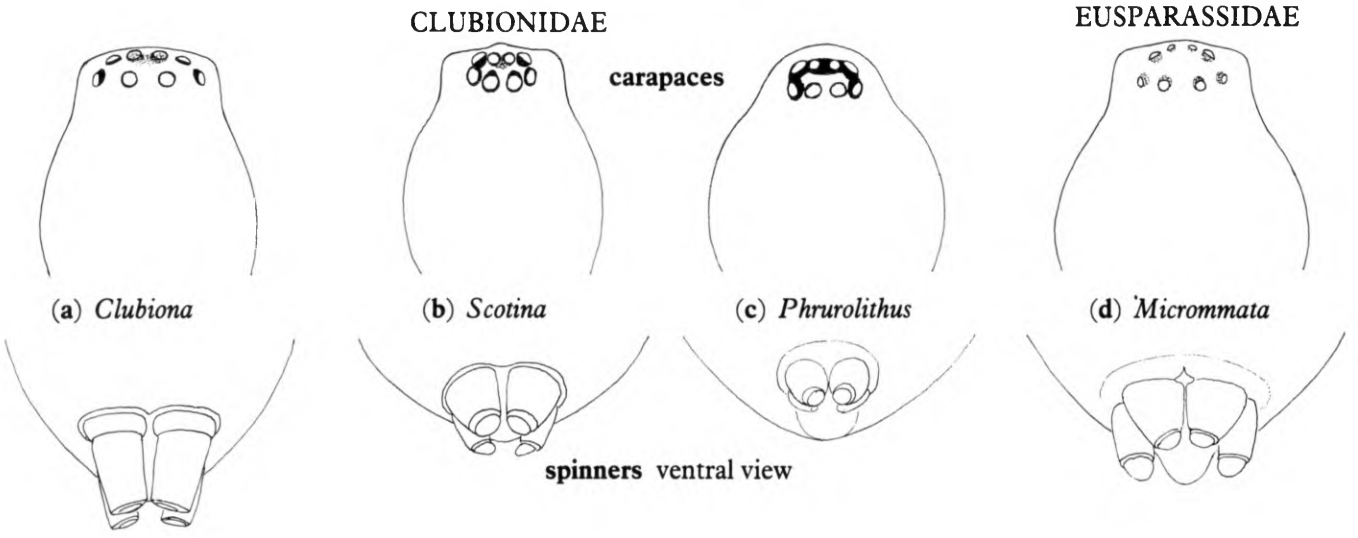
carapaces

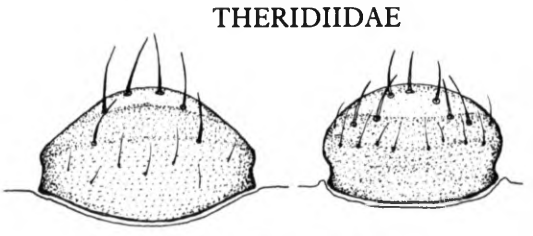


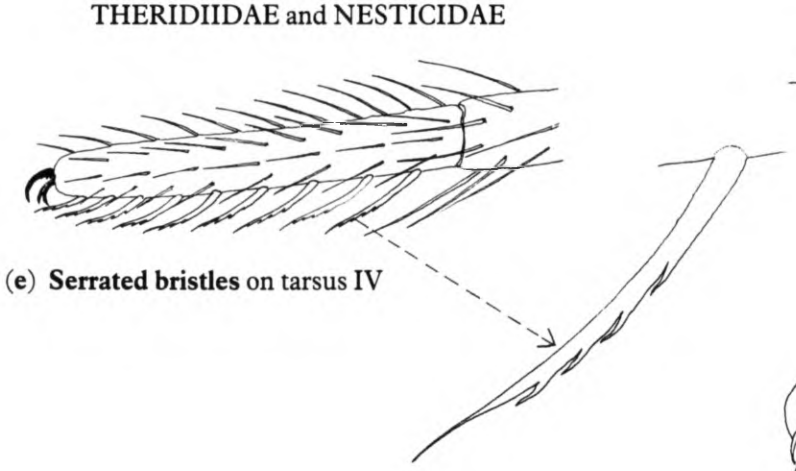


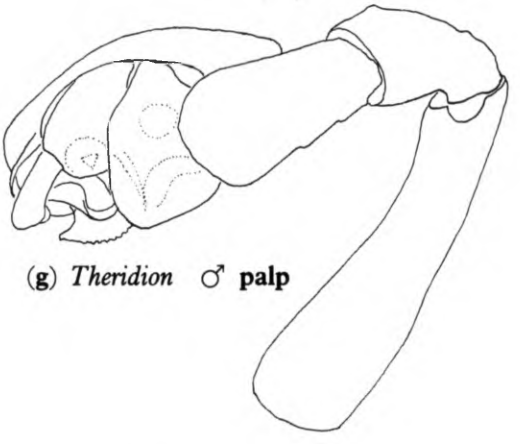
spinners ventral view

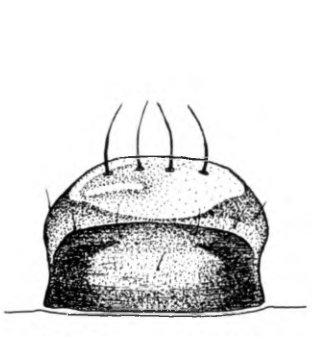
Text Figure 10

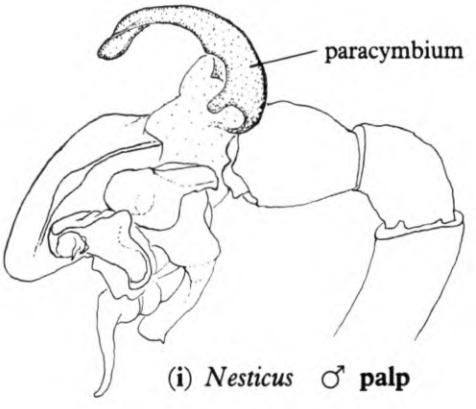












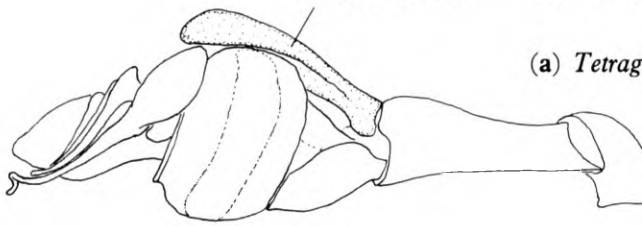
Text Figure 11

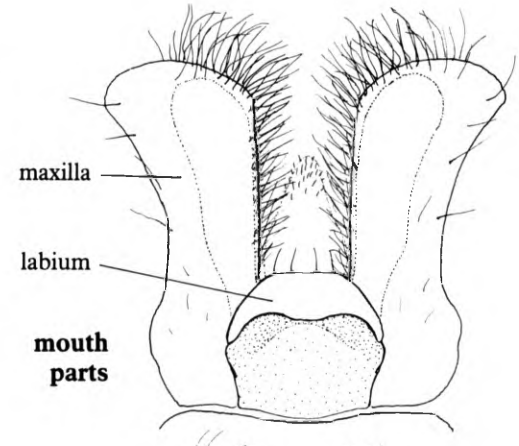
♂ **palps**

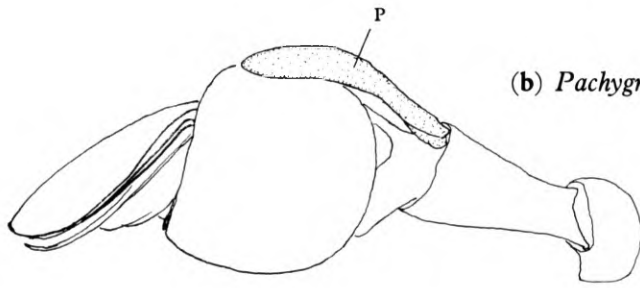
P = paracymbium

TETRAGNATHIDAE

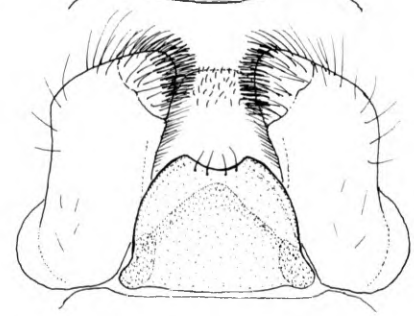
(**a**) *Tetragnatha*

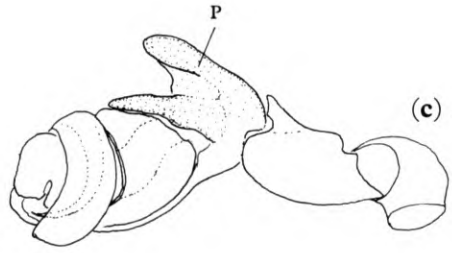




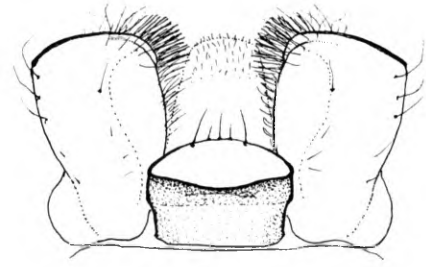


(**b**) *Pachygnatha*



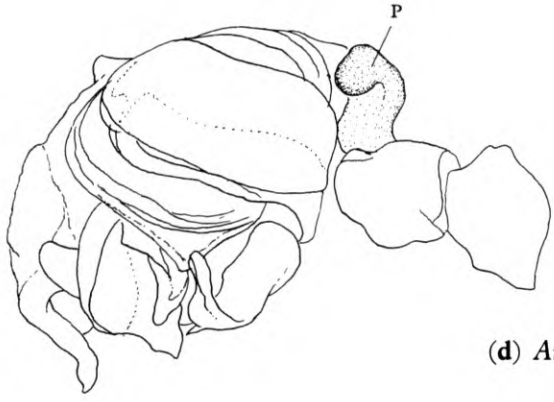


(**c**) *Meta*

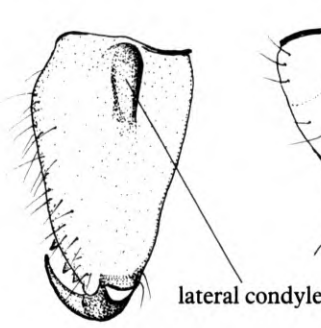


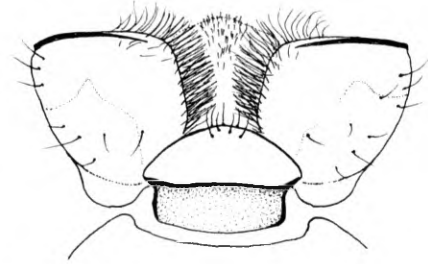
ARANEIDAE

chelicerae (left)

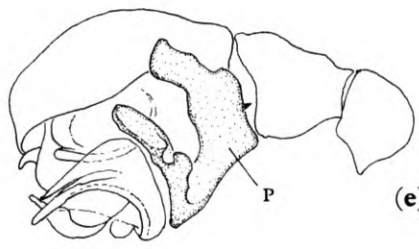


(**d**) *Araneus*

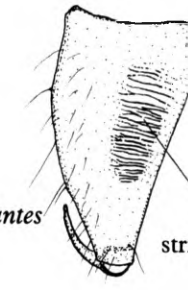


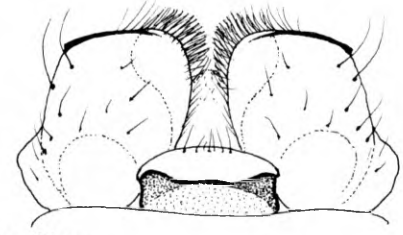


LINYPHIIDAE



(**e**) *Lepthyphantes*





IV. DESCRIPTION OF THE SPECIES

Class ARACHNIDA

Order ARANEAE

Suborder ORTHOGNATHA (Mygalomorphae)

The largest spiders known, mainly from the tropics, belong to this suborder which includes the families THERAPHOSIDAE (hairy mygalomorphs), CTENIZIDAE (trap-door spiders), DIPLURIDAE (funnel-web mygalomorphs) and ATYPIDAE (purse-web spiders). They have chelicerae which project from the front of the carapace and which move, and open, in a vertical plane. Other characters include the presence of two pairs of book lungs and posterior spinners composed of three segments.

The single British representative of this suborder belongs to the ATYPIDAE and is quite modest in size.

Family ATYPIDAE

There is only one genus of this family represented in Britain, containing only the one species.

Genus *Atypus* Eichwald, 1830

The characters of this genus – chelicerae; three-segmented posterior spinners; two pairs of book lungs; labium fused to sternum; absence of true epigyne – can be seen in Text Fig. 12a.

Atypus affinis Eichwald, 1830

Plate 1; Text Fig. 12a

Length: ♀: 10–15mm (up to 18mm with chelicerae); ♂: 7–9mm (up to 12mm with chelicerae).

The appearance of this species makes confusion with any other British spider impossible. Fresh specimens sometimes have olive-green tinge. Male has relatively longer legs and a slimmer abdomen bearing a shiny, oval, brown scutum dorsally. This extends about two-thirds way from anterior end. Female lacks an epigyne. Male palp as illustrated (Text Fig. 12a).

DISTRIBUTION

Mainly southern England, usually on rough grassland or heathland, but recorded as far north as Scotland and from Wales and central Ireland. The spider lives within a silken tube about eight to ten inches in length. All but a couple of inches of this tube forms the lining of a burrow which goes down into the ground. The portion above ground is, because of adherent earth and sand particles, difficult to see. An insect moving about on the aerial portion of the tube attracts the spider's attention, is transfixed by the fangs and pulled through the wall of the tube. The remains of the insect are later ejected and the hole patched up. *Atypus*, like other mygalomorphs, may live for several years.

Suborder LABIDOGNATHA (Araneomorphae)

The majority of spiders, and all other British species, belong to this suborder. They have chelicerae which are attached under the anterior border of the carapace and, although sometimes projecting forwards, open sideways or in an oblique plane. With few exceptions they have only one pair of book lungs. The Labidognatha are traditionally divided into three groups (see Key to the Families, p. 35) – CRIBELLATES (Cribellatae), HAPLOGYNES (Haplogynae) and ENTELEGYNES (Entelegynae), the vast majority of spiders belonging to the latter group.

The CRIBELLATE Spiders (Cribellatae)

These spiders all have a *cribellum* (a flattened, sieve-like spinning organ anterior to the spinners) and a *calamistrum* (a single or double row of bristles on metatarsus IV (Text Figs 4k–m, p. 34) which serves to comb out flocculent silk from the cribellum). The main strands of silk are produced by the spinners and are then partly covered with the bluish-tinged, woolly, cribellate strands. Prey caught in such silk rapidly becomes more and more entangled as it struggles to escape. Although it is convenient and practical to group cribellate spiders together, it now seems by no means certain that the common possession of a cribellum indicates relationship in evolutionary terms. The cribellate *Amaurobius* (Amaurobiidae) has, for instance, a similar appearance to the non-cribellate *Coelotes* (Agelenidae), and the cribellate *Uloborus* (Uloboridae) makes an orb web, although it in no way resembles the other non-cribellate orb-weavers. There are four families of cribellate spider in Britain – Eresidae, Amaurobiidae, Dictynidae and Uloboridae.

Family ERESIDAE

This family has only one British representative.

Genus *Eresus* Walckenaer, 1805

There is one British species in this genus.

Eresus niger (Petagna, 1787)

Plate 2; Text Fig. 12b

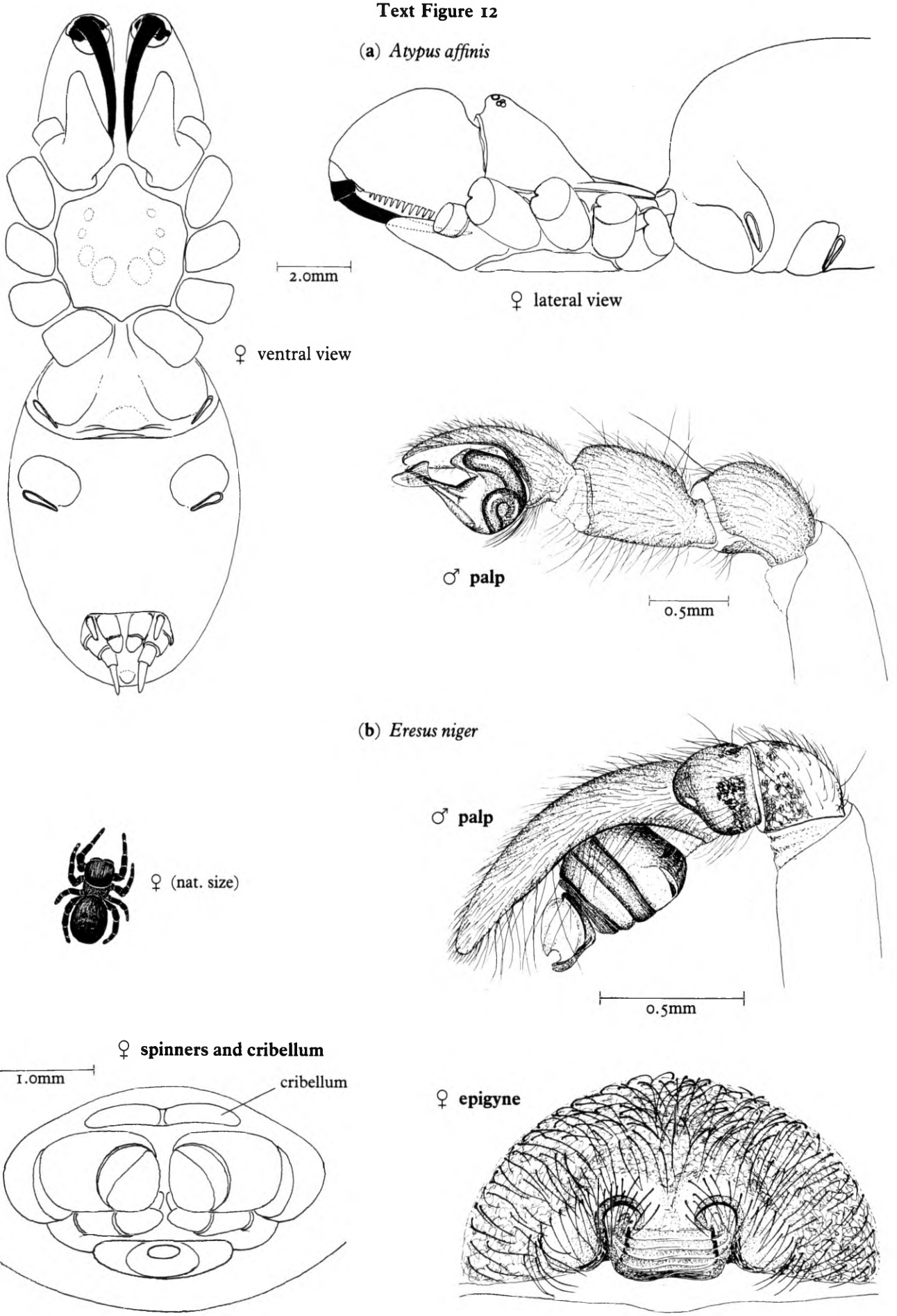
Length: ♀: 8–16mm; ♂: 6–11mm.

This spider could hardly be mistaken for any other British species. Male strikingly handsome; female an almost uniform velvety black appearance. Note the wide, raised, anterior part of carapace with the eight eyes arranged one at each 'corner' and four near the midline anteriorly. The red hairs, which form the pattern in males, fade rapidly in spirit. Plate 2 shows a continental specimen. In British males there is very little red on the rear legs which appear black and white like the front legs. There is also no white on the abdomen. The abdomen may vary from bright red to orange. Epigyne and male palp as illustrated.

DISTRIBUTION

Known from only one locality in southern England. Rediscovered in 1979. The female excavates a burrow three to four inches deep (usually on heathery slopes). A thick roof of cribellate silk on the surface over the burrow serves for capture of prey. Because of its extreme rarity in the British Isles this beautiful spider should be collected only through the lens of a camera. It is a protected species in Britain.

Text Figure 12



Family AMAUROBIIDAE

This family contains three British cribellates – all belonging to the genus *Amaurobius*. They are fairly large spiders (4–15mm). The cribellum is divided and the calamistrum on metatarsus IV consists of two rows of bristles and is degenerate in adult males.

Genus *Amaurobius* C. L. Koch, 1837

There are three British representatives of this genus.

Amaurobius fenestralis (Stroem 1768)
Text Fig. 13a

Length: ♀: 7–9mm; ♂: 4–7mm.

General appearance very like *A. similis*, including the annulations on legs.

Amaurobius similis (Blackwall, 1845)
Plate 3; Text Fig. 13b

Length: ♀: 9–12mm; ♂: 6–8mm.

Female as illustrated; male similar but with a smaller, slightly darker abdomen and more sharply defined pattern. Note annulations on legs.

Amaurobius ferox (Walckenaer, 1825)
Plate 7a; Text Fig. 13c

Length: ♀: 11–15mm; ♂: 8–10mm.

Much darker than *A. fenestralis* and *A. similis* with no annulations on legs. The almost black abdomen with vague lighter markings, sometimes rather like skull and crossbones, give it a sinister appearance. Male palp has a whitish bulb which is conspicuous in life, even to the naked eye.

DISTINGUISHING THE SPECIES

Size useful, but there can be overlap. *A. ferox* is easily distinguished by darker abdomen and lack of leg annulations, and in the male by the white palpal bulb. The genitalia afford easy separation of species. Epigynes tend to be rather variable; that of *A. ferox* is distinct enough, and in case of difficulty with *A. fenestralis* and *A. similis* the shape of the anterior margin is constant. Male palps, viewed laterally, are distinctive. Note that their appearance varies slightly depending on whether the bulb is turgid or collapsed (as illustrated). Palpal tibiae, viewed from above or outside, are quite distinct.

DISTRIBUTION

A. fenestralis and *A. similis* are both very common and widespread throughout British Isles. *A. similis* seems perhaps to favour habitats around houses, such as walls and window-frames, whereas *A. fenestralis* occurs away from houses under bark, fence posts and dense bushes such as holly and gorse. However, they may occur together. *A. ferox*, although widely distributed, is less common, especially in the north, but occupies similar habitats. Perhaps more commonly under stones in north. All build similar retreats in holes or crevices with an irregular mesh of threads spreading from the retreat entrance. These threads (the cribellate silk of which is bluish when fresh) are added to daily, and eventually may cover a considerable area. The spiders normally stay in the retreat during daylight, but will rush out to bite a vibrating tuning fork held to the web. At night, they can be seen (with the aid of a torch) laying down fresh strands of silk and combing out cribellate silk with leg IV.

Family DICTYNIDAE

This family contains thirteen British species in five genera. They are all small spiders (no more than 4mm) and have a calamistrum on metatarsus IV composed of a *single* row of bristles. The commonest species belong to the genus *Dictyna*, *Dictyna arundinacea* being especially common and widespread.

TAXONOMIC NOTE

The limits of this family are radically changed in proposals put forward by Lehtinen (1967). As many of these issues are still under discussion, most of the species described here are, for the present, left in their traditional form. However, it is appropriate that an indication of how the proposed changes affect the British species be summarized here, as follows:

Family DICTYNIDAE

Subfamily DICTYNINAE

Genus *Dictyna* Sundevall, 1833

Dictyna arundinacea (Linnaeus)
D. pusilla Thorell
D. major Menge
D. uncinata Thorell

Genus *Brigittea* Lehtinen, 1967

Brigittea latens (Fabricius) (= *Dictyna latens* (Fabricius))

Genus *Nigma* Lehtinen, 1967 (proposed as a *nomen novum* for *Heterodictyna sensu* Dahl, 1924, and accepted here. F. Dahl synonymized *Heterodictyna* Dahl, 1904, with *Dictynina* Banks, 1904. This makes it also synonymous with *Mallos* O. P.-Cambridge, 1902, the senior, valid synonym of *Dictynina*. Subsequently *Heterodictyna* Dahl, 1924, was listed in the combination *H. flavescens* (Walckenaer, 1825). According to the rules of nomenclature, the use of a generic name that has previously been synonymized with an entirely different genus is not valid.)

Nigma puella (Simon) (= *Heterodictyna puella* (Simon))
N. flavescens (Walckenaer) (= *H. flavescens* (Walckenaer))
N. walckenaeri (Roewer) (= *H. walckenaeri* Roewer)

Subfamily CICURININAE

Genus *Cicurina* Menge, 1869

Cicurina cicur (Fabricius) (listed here in Agelenidae)

Genus *Lathys* Simon, 1884

Lathys humilis (Blackwall)
L. stigmatisata (Menge)

Subfamily TRICHOLATHYSINAE

Genus *Argenna* Thorell, 1870

Argenna subnigra (O. P.-Cambridge)
A. patula (Simon)

Genus *Altella* Simon, 1884

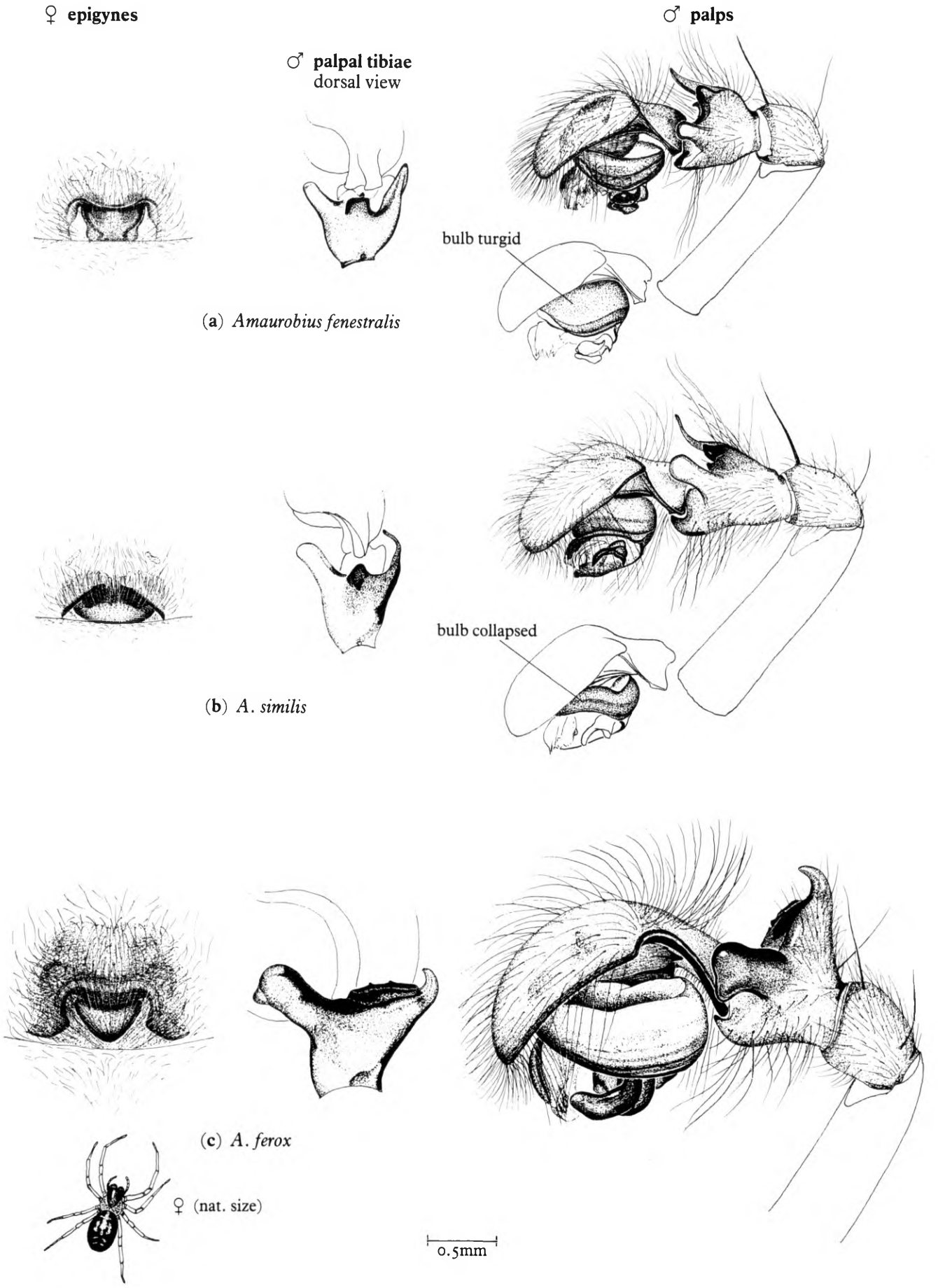
Altella lucida (Simon)

Subfamily ARGYRONETINAE

Genus *Argyroneta* P. A. Latreille, 1804

Argyroneta aquatica (Clerck) (listed here in Argyronetidae)

Text Figure 13



Key to Genera of the DICTYNIDAE

1 Anterior median eyes much smaller than anterior laterals 2
– Anterior median eyes same size as, or not much smaller than, anterior laterals 3

2(1) Anterior median eyes widely separated; carapace with clear blackish markings ..... *Lathys* (p. 52)
– Anterior median eyes practically touching; carapace with no pronounced markings ..... *Altella* (p. 54)

3(1) Tarsi and distal ends of metatarsi each with a trichobothrium ..... *Argenna* (p. 54)
– No trichobothria on tarsi or metatarsi 4

4(3) Carapace dark brown with white hairs; abdomen with dark brown or black markings (sometimes entirely black) ..... *Dictyna* (p. 50)
– Carapace lighter brown, with light patches along margin; abdomen yellow, green (with or without red stripe), or reddish, with white pigment spots ..... *Nigma* (p. 52)

Genus *Dictyna* Sundevall, 1833

Spiders of this genus are brownish or black in colour, and, apart from *D. latens*, have an abdominal pattern which is partly due to pigment and partly to the arrangement of light and dark hairs. Light hairs also present on carapace. In life they have a slightly greyish bloom, due to the hairs, which disappears on immersion in spirit. Eyes more or less equal sized and evenly spaced. Male chelicerae excavated on their inner margins. There is a pointed, double-pronged dorsal apophysis on male palpal tibia (small in *D. latens*) but no apophysis on patella. Cribellum undivided; but faint dividing ridge visible in female of *D. latens*. There are five British species in this genus.

Dictyna arundinacea (Linnaeus, 1758)

Plate 4; Text Fig. 14a

Length: ♀: 2.5–3.5mm; ♂: 2–3mm.

Male similar in appearance to female, the slimmer abdomen being somewhat darker with pattern often clearer and with reddish tinge. Note the darkening of distal ends of tarsi I–IV.

Dictyna pusilla Thorell, 1856

Text Fig. 14b

Length: ♀: 1.5–2.5mm; ♂: 1.5–2mm.

Apart from smaller size, this species resembles *D. arundinacea* closely. When the abdominal pattern is clear the light bands contain well-defined light pigment spots, but in some females, and most males, the darker lateral markings invade the lighter bands.

Dictyna major Menge, 1869

Text Fig. 14c

Length: ♀: 3–3.5mm; ♂: 2.5–3mm.

General appearance similar to *D. uncinata*. The dark mark on the anterior midline of abdomen has usually a distinctly trifid end.

Dictyna uncinata Thorell, 1856

Plate 5; Text Fig. 14d

Length: ♀: 2.25–2.75mm; ♂: 2–2.5mm.

Compare with *D. arundinacea* and note especially the lighter legs with no appreciable darkening of tarsi.

Dictyna latens (Fabricius, 1775)

(= *Brigittea latens* (Fabricius) – see Taxonomic Note, p. 48)

Plate 6; Text Fig. 14e

Length: ♀: 2.5–3.5mm; ♂: 2–2.5mm.

Most females, like the male illustrated, have a dark abdomen with little in the way of a pattern. When markings are present they usually take the form of ill-defined, broad, dark chevrons. The covering of white hairs is striking in both male and female, particularly in life.

DISTINGUISHING THE SPECIES

Males distinguished fairly easily by palps. Females can present difficulties as epigynes are often ill-defined and rather variable. (Note the two epigynes of *D. arundinacea* illustrated.) The problem is resolved easily if the epigyne is cleared in clove oil, the adnexae being distinctive in the various species. Frequently both sexes are collected together and this is helpful. *D. arundinacea*, being common and widespread, is likely to be the first species of this genus to be encountered, followed (a long way behind) by *D. uncinata*. These two are easily separated by genitalia. Also less common is *D. latens*, but the darker abdomen with white hairs, and genitalia make separation of this species easy. Epigyne of *D. latens* is perhaps closest to that of *D. uncinata*, but the openings are larger and closer together. The rather rare *D. pusilla* is similar to *D. arundinacea* but usually distinguished by consideration of its smaller size. Male palps characteristic enough; epigyne has smaller, more oval openings, but in doubtful cases should be cleared. Female of the rare *D. major* distinguished from some species by size, and from others by the trifid end to the central abdominal mark, by the relatively small epigyne openings compared with width of horizontal chitinized ridges, and by the cleared adnexae.

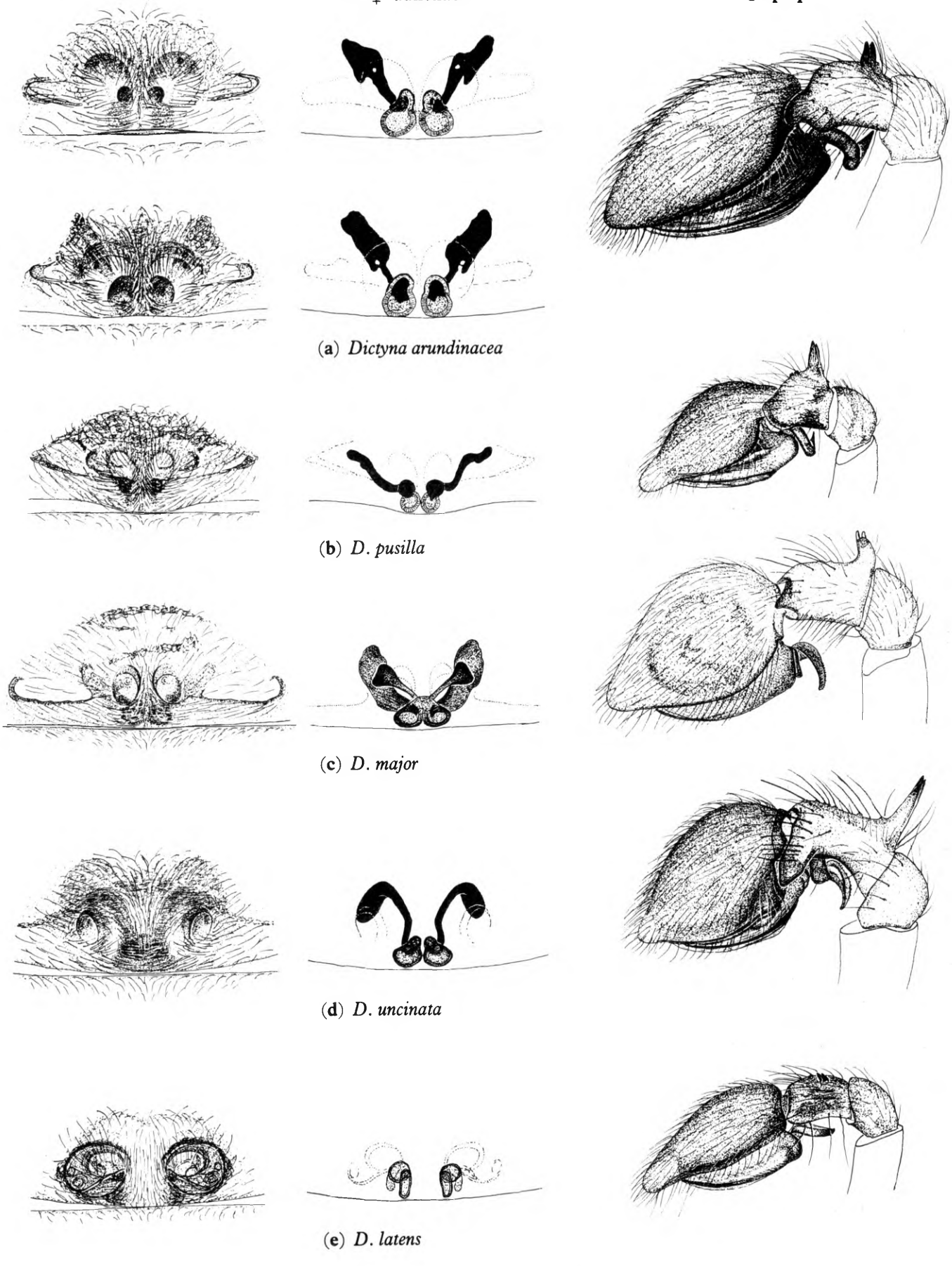
DISTRIBUTION

D. arundinacea is by far the commonest species in this genus and is widespread. *D. uncinata* and *D. latens* much less frequently encountered and do not extend into Scotland. *D. pusilla* appears to be rather rare, but may sometimes have been confused with *D. arundinacea*.

These spiders spin an irregular cribellate web in heads of plants, both living and dead, and in bushes, especially gorse and heather. *D. major* has been found at ground level in Scotland.

Text Figure 14

♀ epigynes ♀ adnexae ♂ palps



(a) *Dictyna arundinacea*

(b) *D. pusilla*

(c) *D. major*

(d) *D. uncinata*

(e) *D. latens*

0.5mm

Genus *Nigma* Lehtinen, 1967
(= *Heterodictyna* Dahl, 1924)

Spiders of this genus have a light brown (or green) carapace with light marks usually visible along the margin. Abdomen light yellowish to green with white spots; sometimes with red stripe or entirely red. They all fade to yellowish white in spirit. Male chelicerae have a swelling at the base. There is a small, blunt, lateral apophysis on palpal tibia and a small tooth-like apophysis on palpal patella. Cribellum divided by a fine ridge (often difficult to see). There are three British species in this genus.

Nigma puella (Simon, 1870)
(= *Heterodictyna puella* (Simon) – see Taxonomic Note, p. 48)
Plate 7b,c; Text Fig. 15a
Length: ♀: 2.5–3mm; ♂: 2–2.75mm.

Colours fade rapidly in spirit to pale yellow with white spots. Some males are not red (as illustrated) but pale yellow. The male and female illustrated both had, after six months in spirit, a whitish abdomen with reddish brown central mark.

Nigma flavescens (Walckenaer, 1825)
(= *Heterodictyna flavescens* (Walckenaer) – see Taxonomic Note, p. 48)
Text Fig. 15b
Length: ♀: 2.5–3.5mm; ♂: 2.25–2.5mm.

Similar to *N. puella* in general appearance but lateral light patches on carapace sometimes continuous in females and may be absent in males. The darker areas inside the light marks usually absent. Abdomen lacks the red stripe but both sexes may have a slight reddish tinge, and fade to yellowish-white on preservation.

Nigma walckenaeri (Roewer, 1951)
(= *Heterodictyna walckenaeri* Roewer – see Taxonomic Note, p. 48)
Text Fig. 15c
Length: ♀: 4mm; ♂: 3.5mm.

Differs from *N. puella* in that females are entirely green, apart from light bands on a greenish brown carapace, and males are green with brown carapace.

DISTINGUISHING THE SPECIES

Males fairly easily distinguished by palps. Females of *N. walckenaeri* distinguished by size, colour and the oval openings of epigyne. Females of *N. puella* recognizable by dark marks on carapace and red abdominal markings, both of which absent in *N. flavescens*. Epigynes of these two species ill-defined; cleared adnexae probably useful, but only a few specimens available for study.

DISTRIBUTION

N. puella is the commonest of the genus but has a rather local distribution in the south where it occurs on bushes and shrubs. *N. walckenaeri* recorded from a few localities around London, Surrey and Essex. *N. flavescens* recorded only once, in Durham (1909).

Genus *Lathys* Simon, 1884

Spiders of this genus have distinct dark veinings on carapace, and anterior median eyes much smaller than anterior laterals. Small spines present on tibiae and patellae. Trichobothria present on tarsi and metatarsi. There are two British species in this genus.

Lathys humilis (Blackwall, 1855)
Plate 8; Text Fig. 15d
Length: ♀: 2–2.5mm; ♂: 1.75–2mm.

Specimen illustrated has abdomen distended with eggs. Non-gravid females, and males, have smaller abdomen with pattern more concentrated and distinct. Note the dark annulations on legs.

Lathys stigmatisata (Menge, 1869)
Text Fig. 15e
Length: ♀: 2.25–2.75mm; ♂: 2mm.

Carapace markings similar to *L. humilis* but less clear. Abdomen uniform grey-brown with no pattern apart from vaguely discernible dark chevrons posteriorly. Legs yellow-brown with no annulations.

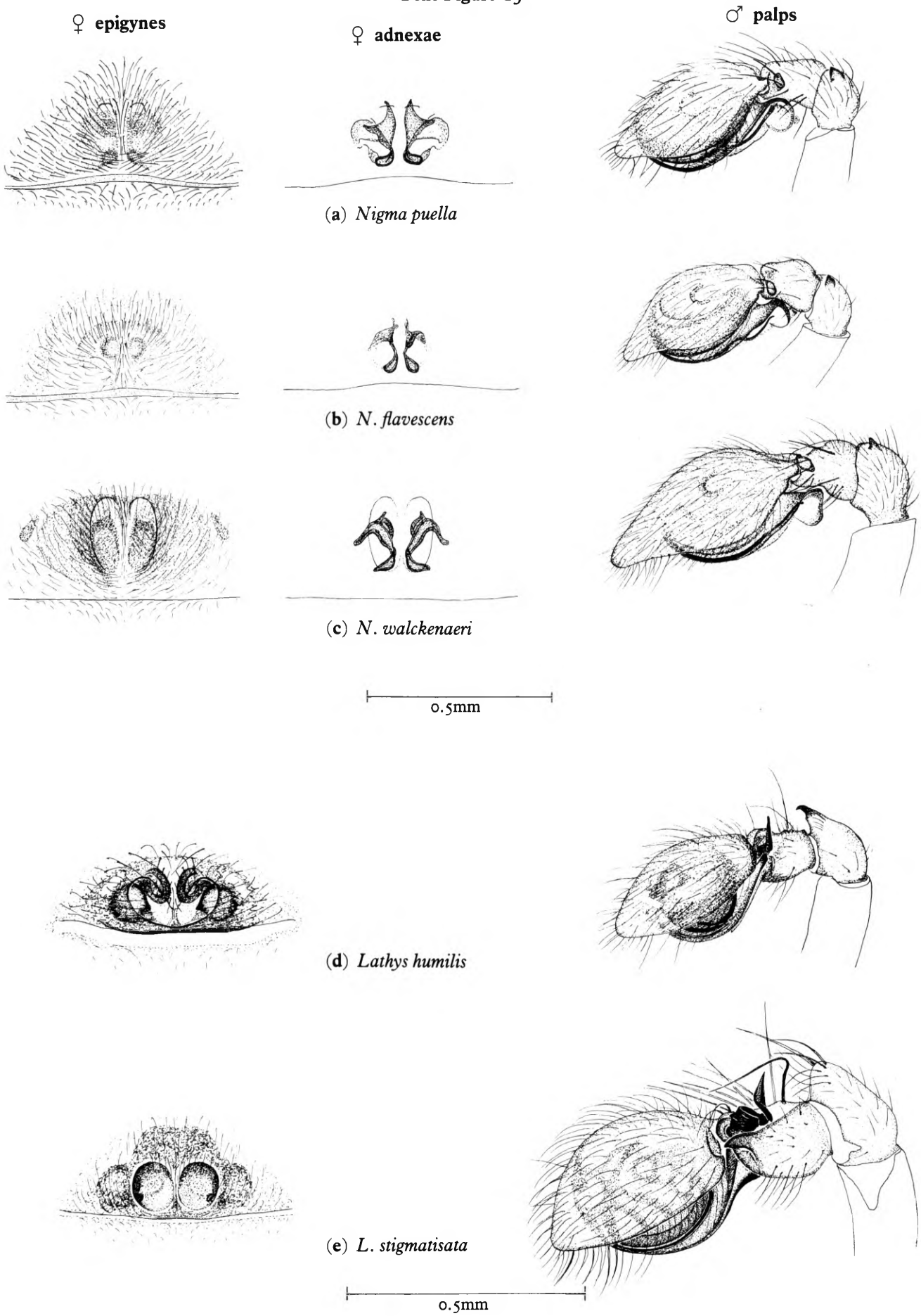
DISTINGUISHING THE SPECIES

The two species are easily separated by genitalia as well as by presence or absence of abdominal pattern and leg annulations.

DISTRIBUTION

L. humilis fairly widely distributed but not common. Usually beaten from bushes and, in Midlands, northern England and North Wales, occurs most frequently on yew. *L. stigmatisata* is rare and known only from a few localities in the south, near the coast, where it occurs at ground level.

Text Figure 15



Genus *Argenna* Thorell, 1870

There are two British species in this genus which is very close to *Altella*. Tarsi and metatarsi each with single trichobothrium as in *Altella* (Text Fig. 4m, p. 34).

Argenna subnigra (O. P.-Cambridge, 1861)

Plate 9; Text Figs 4g,16a

Length: ♀: 1.75–2.5mm; ♂: 1.5–1.75mm.

Male similar to female but has relatively smaller abdomen. The white hairs on the abdomen are only just visible in spirit (as illustrated) but are pronounced in life.

Argenna patula (Simon, 1874)

Plate 7d; Text Fig. 16b

Length: ♀: 2.75–3.2mm; ♂: 2.5–2.75mm.

Male similar to female. Note the fine granulations on anterolateral face of chelicerae. White hairs present as in *A. subnigra*.

DISTINGUISHING THE SPECIES

Size offers easy separation. Both male and female of *A. patula* have granulations on anterolateral face of chelicerae which are not present in *A. subnigra*. Epigynes are quite different, that of *A. subnigra* having the two depressions filled with a striking whitish plug and the posterior rim of the depressions closer to epigastric fold than in *A. patula*. Male palps easily distinguished especially by the posterior projection at base of bulb.

DISTRIBUTION

Both species widespread throughout England. *A. subnigra* is uncommon and occurs under stones on dunes and sandy grassland; *A. patula* is rarer, occurring on river banks and estuaries.

Genus *Altella* Simon, 1884

This genus is very close to, and probably congeneric with, *Argenna*. Tarsi and metatarsi each with single trichobothrium (Text Fig. 4m, p. 34). The single British species is a very small spider.

Altella lucida (Simon, 1874)

Plate 10; Text Fig. 16c

Length: ♀: 1.55–1.75mm; ♂: 1.35mm.

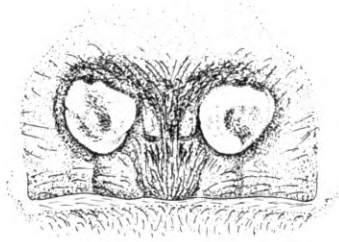
Male similar to female. Note arrangement of hairs on carapace and the slight iridescence of abdomen, present only in fresh specimens. Curved ventral spine present on tibia III of male (weaker in female) and a pair of ventrolateral spines on tibia I in female. The genitalia are quite distinct, and although similar to those of *Argenna*, the size, general appearance and leg spines of *Altella* make confusion with *Argenna* unlikely.

DISTRIBUTION

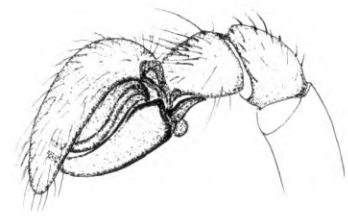
Very rare: recently discovered on Dorset heathland under stones.

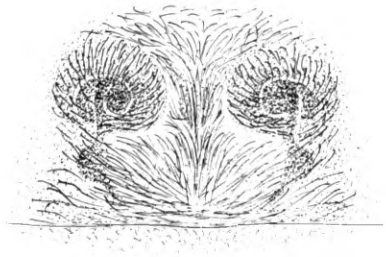
Text Figure 16

♀ **epigynes** ♂ **palps**

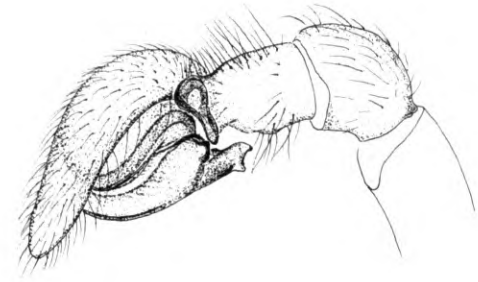


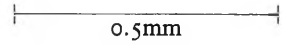
(**a**) *Argenna subnigra*

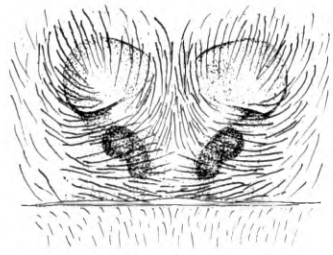




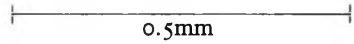
(**b**) *A. patula*







(**c**) *Altella lucida*



Family ULOBORIDAE

This family of cribellate spiders is represented in Britain by two species in the genera *Uloborus* and *Hyptiotes*. Both are rather rare, of peculiar appearance and easily identifiable.

Genus *Uloborus* Latreille, 1806

There is a single British species in this genus.

Uloborus walckenaerius Latreille, 1806

Plate 11; Text Figs 17b,c

Length: ♀: 3.5–6mm; ♂: 3–4mm.

Note legs, which are much longer than in *Hyptiotes*, calamistrum on metatarsus IV of female, dark bands on carapace and arrangement of the eight eyes. Epigyne partly obscured by hairs and rather variable, particularly in respect of the light projecting portions. Male palp rather small. Abdomen of live female has tufts of white hairs arranged linearly.

DISTRIBUTION

Southern counties only. Spins horizontal orb web on heather, the spiral threads being of cribellate silk.

Genus *Hyptiotes* Walckenaer, 1833

The genus is represented in Britain by one species.

Hyptiotes paradoxus (C. L. Koch, 1834)

Plate 12; Text Figs 17a,d

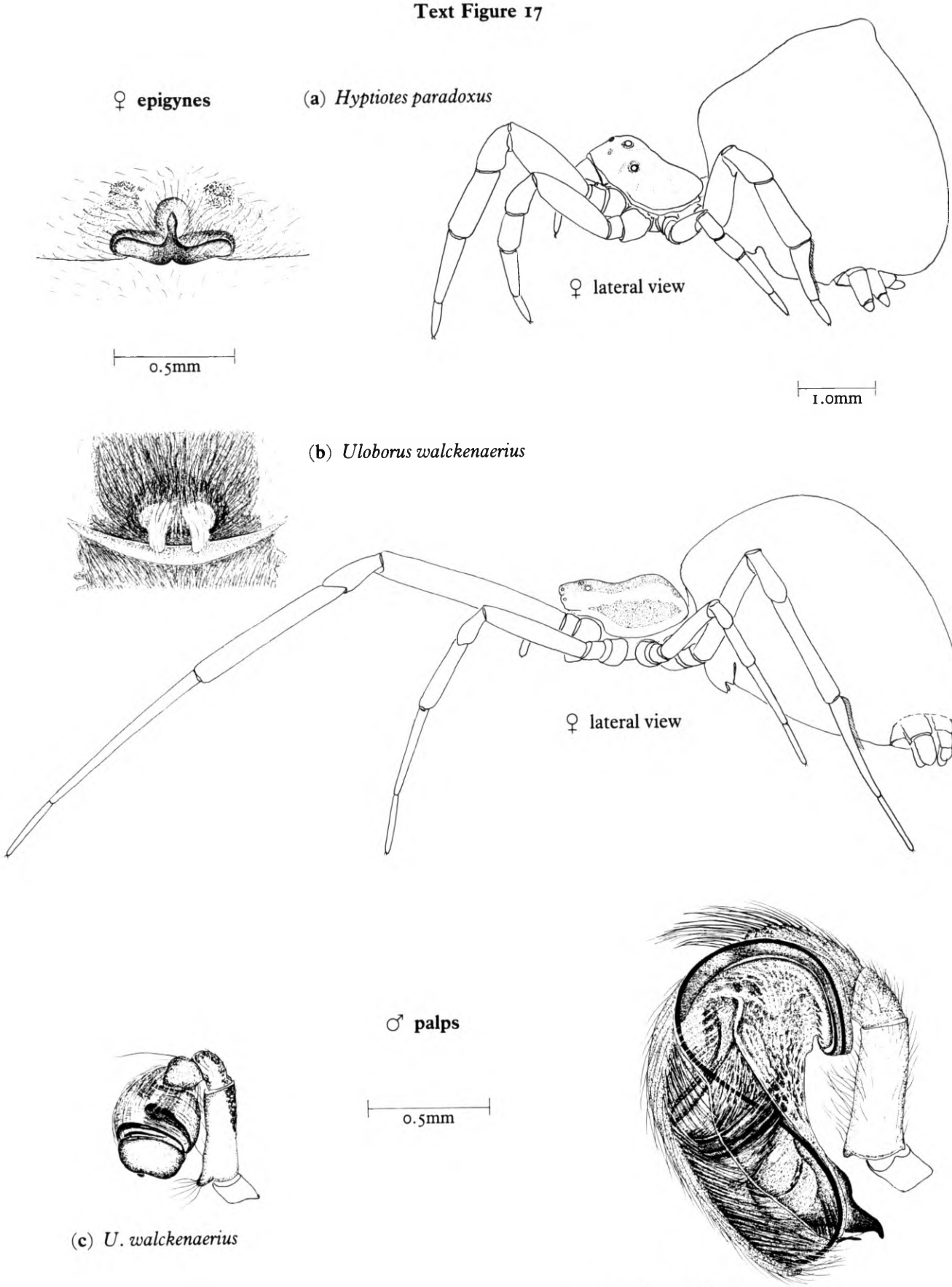
Length: ♀: 5–6mm; ♂: 3–4mm.

Size of male palps remarkable. Note also calamistrum and the carapace with the peculiar arrangement of eyes. Female similar to male in general appearance but abdomen may become much more distended and have dorsal tubercles (Text Fig. 17a). Legs much shorter than in *Uloborus*. Colour in life varies from ginger to dark brown, the markings being obscured by hairs.

DISTRIBUTION

Mainly in southern counties, but recorded from Cumbria. Spins a triangular web – one-sixth of an orb web with three radii – from the apex of which a single thread passes to, and is held by, the spider in its retreat. Crossing the radii are threads of cribellate silk. Usually on yew or box.

Text Figure 17



The HAPLOGYNE Spiders (Haplogynae)

These spiders have six eyes (in British species); females have no epigyne and the male palps are simple. Four families in this group are represented in Britain – the Oonopidae, Scytodidae, Dysderidae and Segestriidae.

Family OONOPIDAE

This family is represented by two British species in the genus *Oonops*.

Genus *Oonops* Templeton, 1834

This genus contains two British species which are small spiders, pale yellow to pinkish red in colour.

Oonops pulcher Templeton 1835

Plate 13; Text Figs 18a,c

Length: ♀ ♂: 1.2–2mm.

Male and female similar in general appearance. Colour varies from whitish yellow to pink to red; occasionally greenish.

Oonops domesticus (de Dalmas, 1916)

Text Figs 18b,d

Length: ♀ ♂: 1.2–2mm.

General appearance as *O. pulcher*.

DISTINGUISHING THE SPECIES

The two species are easily distinguished, in both males and females, by the number of paired spines on ventral aspect of tibia I – there being four in *O. pulcher* and five in *O. domesticus* (Text Figs 18a,b). Male palps are also distinct. Females have no epigyne.

DISTRIBUTION

Both widely distributed. *O. pulcher* found under bark, leaves and stones, often in company with *Amaurobius fenestralis* and *A. similis*, whereas *Oonops domesticus* usually occurs in houses. This habitat difference is, however, by no means rigid.

Family SCYTODIDAE

This family is represented by only one British species, in the genus *Scytodes*.

Genus *Scytodes* Latreille, 1804

There is only one British member of this genus.

Scytodes thoracica Latreille, 1804

Plate 14; Text Fig. 18e

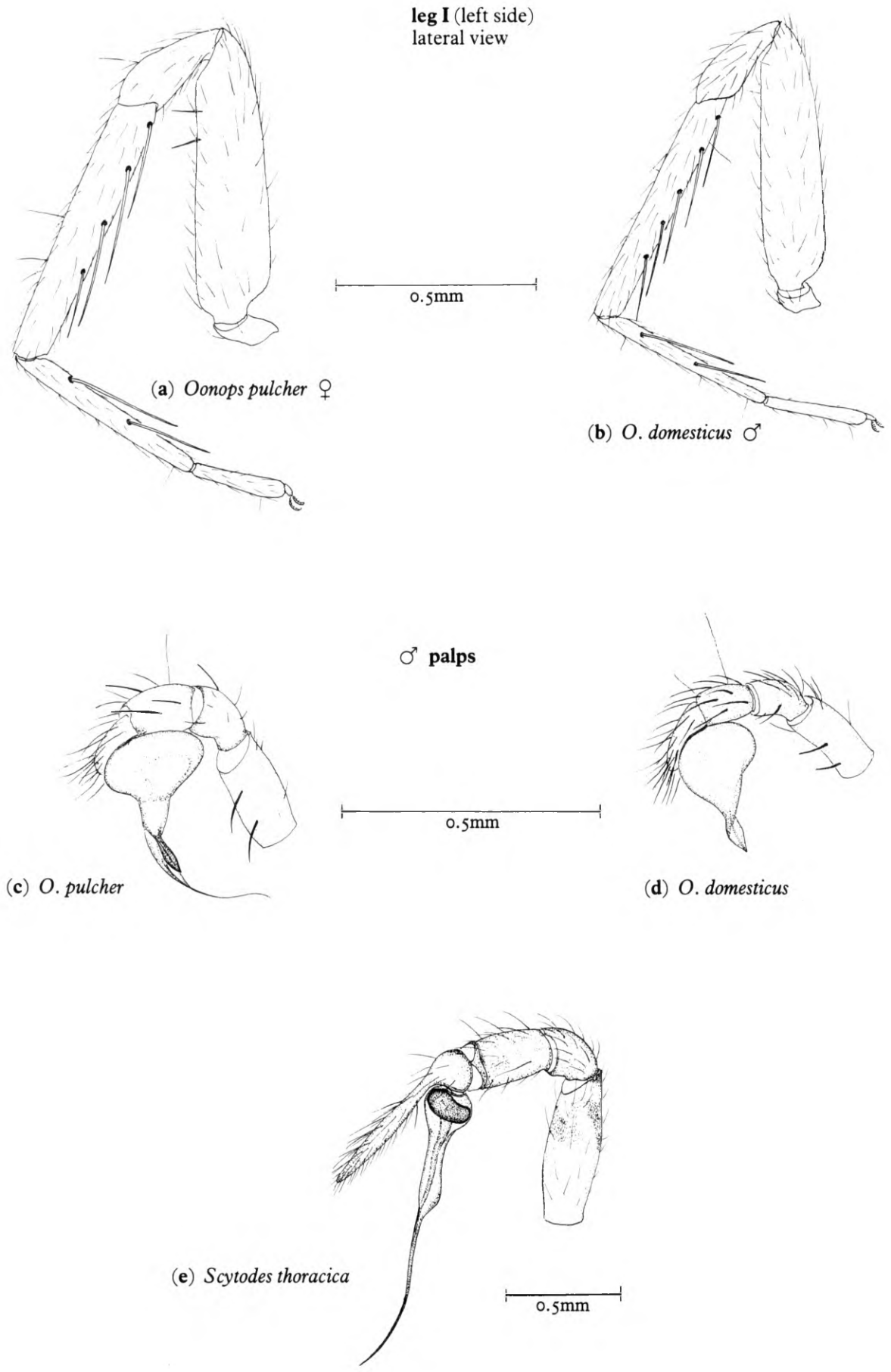
Length: ♀: 4–6mm; ♂: 3–5mm.

Female similar to male but has relatively larger abdomen. The appearance of this six-eyed spider is so characteristic that confusion with any other British species is impossible. Females have no epigyne; male palps simple and inconspicuous. Carapace is markedly elevated posteriorly.

DISTRIBUTION

Southern counties, extending up to Midlands, where it lives inside houses. Active at night. May well increase its distribution northwards as people move about the country (often to centrally heated homes) carrying the spiders with them in furniture. This so-called 'spitting spider' catches prey by squirting a gummy substance from the chelicerae.

Text Figure 18



Family DYSDERIDAE

This family of six-eyed spiders contains three British species in two genera, *Dysdera* and *Harpactea*. These have a somewhat elongated appearance; abdomen lacks a pattern or other definite markings. The eyes are arranged to form a compact group. Two pairs of tracheal spiracles are conspicuous on ventral side of abdomen, just behind the epigastric fold (Text Figs 19e,f). Females have no epigyne and male palps are simple.

The genus *Segestria* was formerly included in the Dysderidae but is now transferred to a separate family, the Segestriidae (p. 62).

Key to Genera of the DYSDERIDAE

1 Carapace reddish brown. Size of adult specimens 7–15mm. Chelicerae large, projecting somewhat anteriorly, and divergent ..... *Dysdera* (p. 60)

2(1) Carapace dark brown, sometimes almost black, in colour. Size of adult specimens 5–7mm. Chelicerae smaller ..... *Harpactea* (p. 62)

Genus *Dysdera* Latreille, 1804

The two British species in this genus are fairly large spiders with a characteristic appearance and large, divergent chelicerae.

Dysdera erythrina (Walckenaer, 1802)

Plate 15; Text Figs 19a,c,e,g

Length: ♀: 9–10mm; ♂: 7–8mm.

Male similar to female except for slimmer abdomen. Note eyes, projecting chelicerae and pale abdomen with very short hairs.

Dysdera crocata C. L. Koch, 1839

Text Figs 19b,d,f,h

Length: ♀: 11–15mm; ♂: 9–10mm.

General appearance identical to *D. erythrina*, but larger.

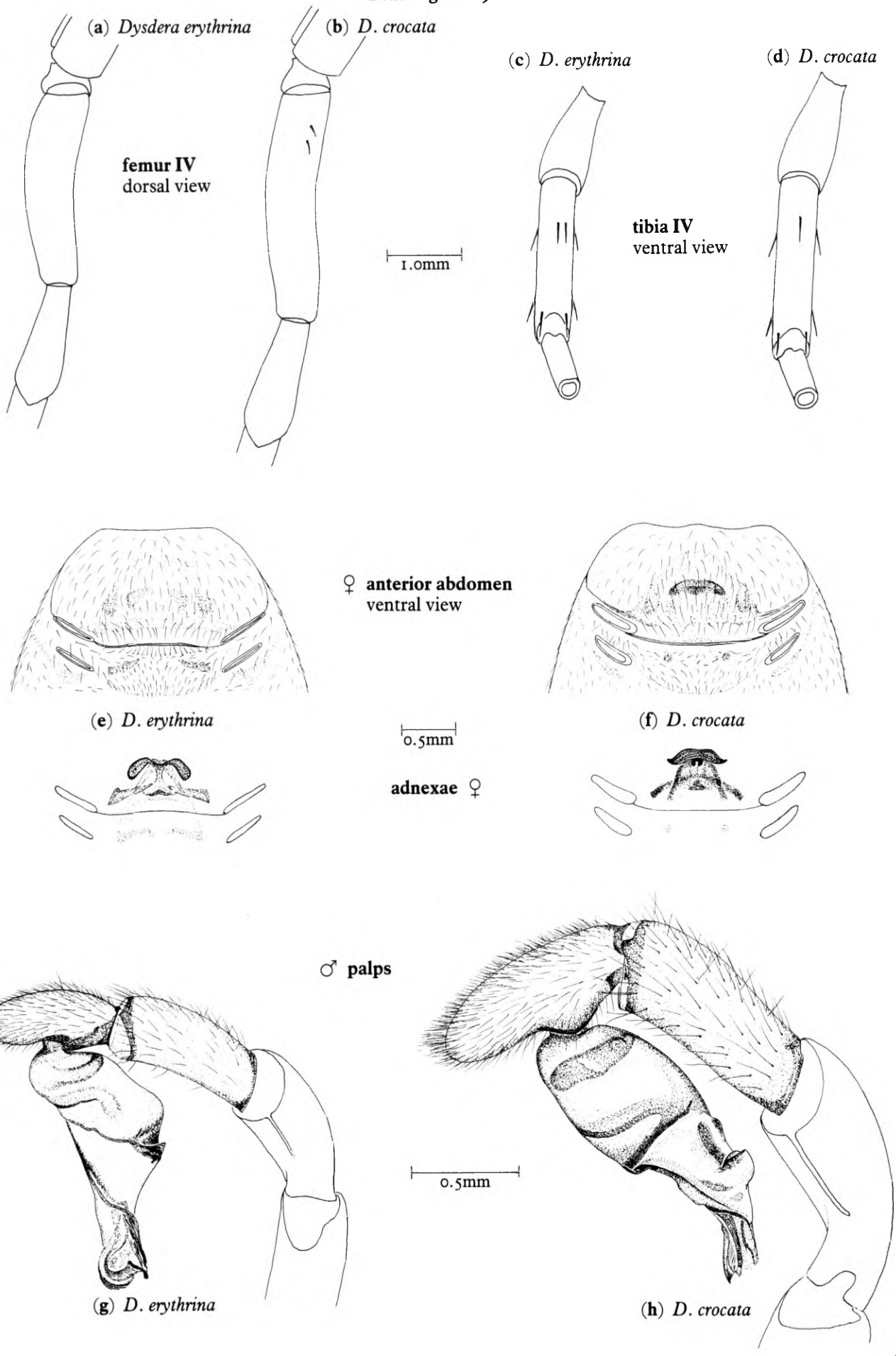
DISTINGUISHING THE SPECIES

Size useful. Dorsal spines on femur IV, one to three in number (Text Fig. 19b) present only in *D. crocata*. Ventral spines on tibiae IV (Text Figs 19c,d) also seem reliably diagnostic. Females have no epigyne, but a genital mark is usually visible, through the cuticle, anterior to the epigastric fold. This is more pronounced in *D. crocata*. The pair of markings posterior to epigastric fold are usually circular in *D. crocata* and elongate in *D. erythrina*. Adnexae distinctly different if the specimen is cleared, but this not normally required. Male palps distinctive.

DISTRIBUTION

Both fairly widely distributed, but not apparently extending far into Scotland (*D. erythrina* not at all). They are nocturnal hunters and are found under stones, usually in a silken cell, during daytime.

Text Figure 19



Genus *Harpactea* Bristowe, 1939

The single British species in this genus is smaller than *Dysdera* and has a dark brown carapace which is slightly narrowed anteriorly.

Harpactea hombergi (Scopoli, 1763)

Plate 16; Text Fig. 20 i

Length: ♀: 6–7mm; ♂: 5–6mm.

Male and female similar and of unmistakable appearance. Female has no epigyne. Male palp characteristic. Chelicerae not as strong as in *Dysdera*.

DISTRIBUTION

Widely distributed and fairly common. Usually under bark and stones in a silken cell.

Family SEGESTRIIDAE

The three British species of this family of six-eyed spiders, all in the genus *Segestria*, were formerly included in the Dysderidae but are now generally accepted as forming a separate family.

Genus *Segestria* Latreille, 1804

These spiders have a characteristic abdominal pattern, obscured only in adult females of *S. florentina*, and six eyes in three separate pairs.

Segestria senoculata (Linnaeus, 1758)

Plate 17; Text Figs 20a,d,f

Length: ♀: 7–10mm; ♂: 6–9mm.

Highly characteristic appearance. Male similar to female illustrated except for relatively smaller abdomen and longer legs. Ventral side of abdomen pale, with a few dark blotches. Metatarsus I with three pairs of ventrolateral spines (Text Fig. 20d).

Segestria bavarica C. L. Koch, 1843

Text Figs 20b,e,g

Length: ♀: 10–13mm; ♂: 9–11mm.

Abdominal pattern similar to, but quite distinct from *S. senoculata* (*cf.* Text Figs 20a,b). In addition ventral side of abdomen has a broad dark band extending along its whole length. Metatarsus I with only one pair of ventrolateral spines (Text Fig. 20e).

Segestria florentina (Rossi, 1790)

Text Figs 20c,e,h

Length: ♀: 13–22mm; ♂: 10–15mm.

This resembles the two foregoing species but is larger and darker. Although subadults, and most males, have a clear abdominal pattern, adult females usually are entirely blackish brown. Chelicerae are iridescent dark green, especially in females. Metatarsus I with one pair of ventrolateral spines (Text Fig. 20e).

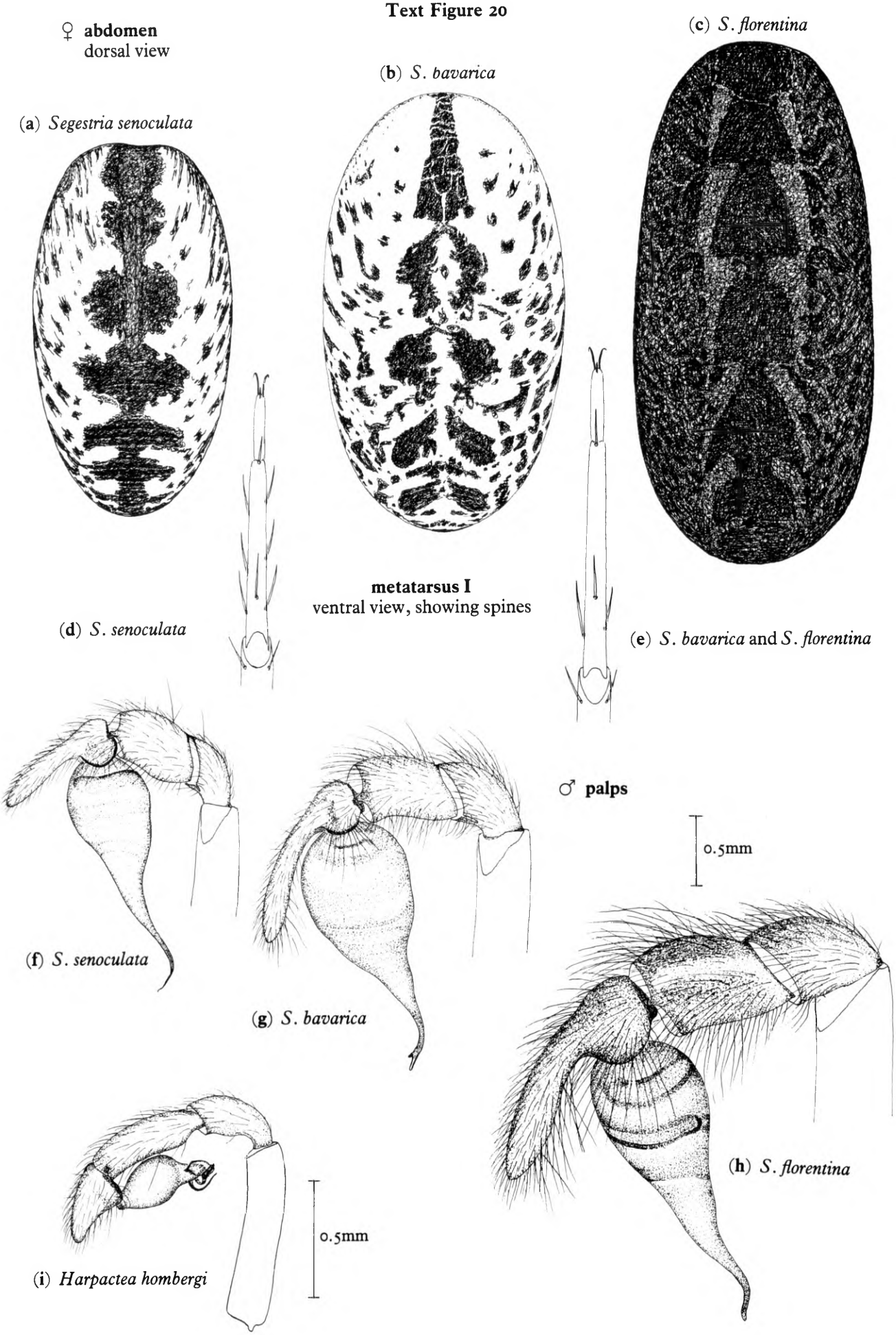
DISTINGUISHING THE SPECIES

Size a useful distinction. Abdominal patterns quite different, even to the naked eye. Longitudinal dark band on *ventral* side of abdomen also separates *S. bavarica* from *S. senoculata*. Ventrolateral spines on metatarsus I are an additional check. Male palps differ in size and relative proportions; the extreme end of the palpal bulb (embolus) tapers to a fine tip in *S. senoculata*, is bifurcate in *S. bavarica* and is relatively shorter and blunter in *S. florentina*.

DISTRIBUTION

S. senoculata is very common and widespread. *S. bavarica* is known from a number of localities in South and South-west of England, mainly near the coast, and *S. florentina* is confined at present to southern sea ports. All three species live in silken tubes in crevices of stone walls, brickwork and bark. The tubes open to the outside with several individual threads radiating from the entrance like trip wires – quite distinct from the haphazard tangle around the opening to the tube of species of *Amaurobius* (Amaurobiidae) (p. 48).

Text Figure 20



The ENTELEGYNE Spiders (Entelegynae)

All the remaining British and Irish spiders to be described belong to this group. They have eight eyes, arranged in many different ways. Females have an epigyne of varying complexity, simple in genera *Tetragnatha* and *Pachygnatha* (Tetragnathidae), and the male palps are more or less complex and partially contained within the hollowed out, expanded tarsus (cymbium).

Family PHOLCIDAE

The two British representatives of this family of 'daddy-long-legs' spiders belong to the genera *Pholcus* and *Psilochorus* and are easily recognizable – although not to be confused with harvestmen (Opiliones). Both have eight eyes, but some genera, occurring in other parts of the world, have only six eyes, the small anterior medians having disappeared completely.

Genus *Pholcus* Walckenaer, 1805

There is one British representative of this genus.

Pholcus phalangioides (Fuesslin, 1775)
Plate 18; Text Fig. 21a

Length: ♀: 8–10mm; ♂: 7–10mm.

The female illustrated is gravid. In male, and non-gravid female, abdomen is more cylindrical. Epigyne and male palp distinctive.

DISTRIBUTION

Mainly in and around houses; formerly only found in south, but probably extending its range northwards, as is *Scytodes* (*q.v.*, p. 58). Hangs upside down in tangled web, often in corners of ceilings. Female holds egg sac in chelicerae.

Genus *Psilochorus* Simon, 1893

The genus contains only one British species.

Psilochorus simoni (Berland, 1911)
Plate 19; Text Fig. 21b

Length: ♀ ♂: 2–2.5mm.

The bluish-tinged globular abdomen, with spinnerets close to epigastric fold, is characteristic. Male and female similar. Epigyne and male palp distinctive.

DISTRIBUTION

Fairly widely distributed in England in houses, often in dry wine cellars, where it hangs upside down in tangled web. Egg sac held in chelicerae by female.

Family GNAPHOSIDAE

The British spiders in this family number thirty species in eight genera. They have cylindrical spinners, the anterior pair of which are widely separated (except in *Micaria*) and which usually project somewhat from the posterior end of the abdomen. The abdomen is elongate and varies in colour from a uniform greyish (with mousy hairs) to glossy black (sometimes iridescent). In some genera there may be a pattern (due to pigment or hairs). The posterior median eyes in most species are oval or elliptical in shape. The Gnaphosidae are nocturnal hunters (with the exception of the genus *Micaria*) and spend the daytime under stones and bark, in a silken cell.

Key to Genera of the GNAPHOSIDAE

1 Trochanters, viewed from below, each with a pronounced deep notch (Text Fig. 21c) ..... *Drassodes* (p. 66)
– Trochanters without notches 2

2(1) Abdomen marked with three pairs of light oval patches (Plate 23) ..... *Phaeocedus* (p. 70)
– Abdomen possibly with a pattern but not exactly as above 3

3(2) Posterior row of eyes distinctly recurved (Text Fig. 21d) ..... *Gnaphosa* (p. 76)
– Posterior row of eyes straight or procurved (Figs 21e–h) 4

4(3) Anterior median eyes noticeably larger than the others (Text Fig. 21e) ..... *Scotophaeus* (p. 70)
– Anterior median eyes same size as, or smaller than, the others (Text Figs 21f–h) 5

5(4) Anterior spinners (viewed from below) close together and scarcely projecting from posterior end of abdomen (Text Fig. 9n, p. 42). Small spiders (2.5–5mm) clothed with iridescent hairs and white hairs (often forming white bands and spots on abdomen) (Plates 26, 27) ..... *Micaria* (p. 78)
– Anterior spinners separated by about the width of one of them, and projecting from posterior end of abdomen (Text Fig. 9l, p. 42) 6

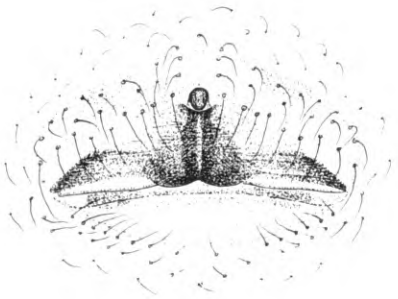
6(5) Carapace markedly narrowed anteriorly with total width of eye group less than one-third width of carapace at its widest point (Text Figs 21g,h) except *Zelotes rusticus q.v.* Posterior row of eyes straight or very slightly recurved 7
– Carapace not markedly narrowed anteriorly. Total width of eye group more than one-third greatest width of carapace (Text Fig. 21f). Posterior row of eyes straight or slightly procurved ..... *Haplodrassus* (p. 66)

7(6) Posterior median eyes roughly circular or oval (Text Fig. 21g). Abdomen usually blackish and glossy with branchial opercula yellow or orange ..... *Zelotes* (p. 72)
– Posterior median eyes appearing as transverse slits (Text Fig. 21h). Abdomen dark with patches of light hairs ..... *Callilepis* (p. 76)

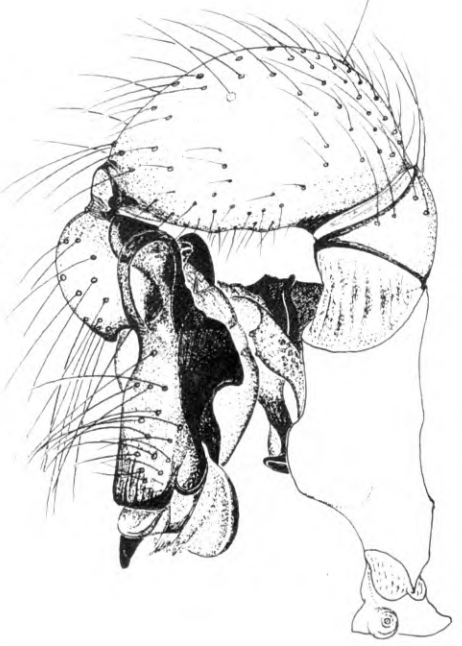
Text Figure 21

(a) *Pholcus phalangioides*

♀ **epigyne**



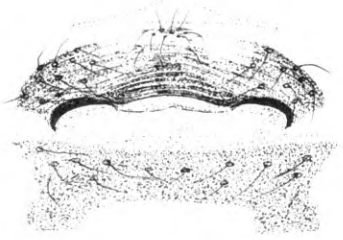
♂ **palp**



0.5mm

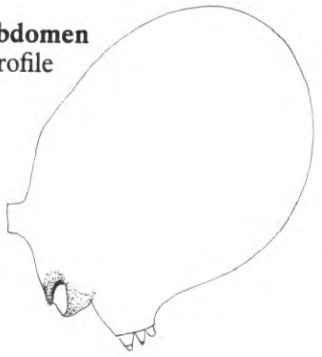
(b) *Psilochorus simoni*

♀ **epigyne**



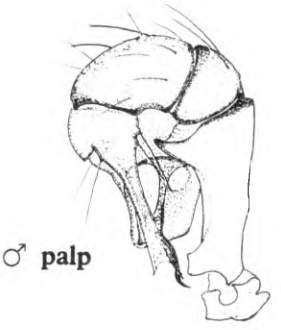
0.5mm

♀ **abdomen**
profile



0.5mm

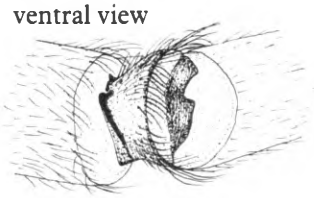
♂ **palp**



0.5mm

GNAPHOSIDAE **Key to Genera**

trochanter
ventral view

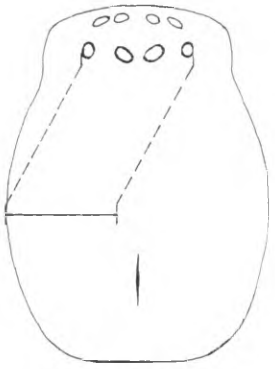


(c) *Drassodes*

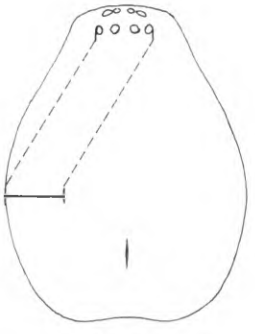
carapaces

(d) *Gnaphosa*

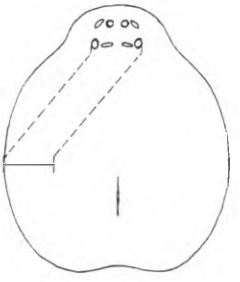
(e) *Scotophaeus*



(f) *Haplodrassus*



(g) *Zelotes*



(h) *Callilepis*

Genus *Drassodes* Westring, 1851

The three British species in this genus are very similar in general appearance. The presence of notched trochanters and two dorsal spines on tibiae IV readily distinguishes this genus from *Haplodrassus*. The only other genus likely to be confused with *Drassodes*, from its general appearance, is *Scotophaeus* but the latter has large anterior median eyes.

Drassodes lapidosus (Walckenaer, 1802)

Plate 25b; Text Figs 22a,d, 23a,d

Length: ♀ ♂: about 9–18mm occasional specimens even outside this range.

Indistinguishable in general appearance from *D. cupreus*.

Drassodes cupreus (Blackwall, 1834)

Plate 20; Text Figs 22b,e, 23b,e

Length: ♀ ♂: about 9–18mm and occasionally outside this range.

General appearance as illustrated, and as for *D. lapidosus*.

Drassodes pubescens (Thorell, 1856)

Text Figs 22c,f, 23c,f

Length: ♀: 6–9mm; ♂: 4–6mm.

Apart from the smaller size this species has the appearance of a freshly moulted specimen of *D. lapidosus* or *D. cupreus*, being generally rather paler.

DISTINGUISHING THE SPECIES

D. pubescens readily distinguished by epigyne, male palp and the male chelicera which has a trifid projection (Text Fig. 23f). Males of *D. lapidosus* and *D. cupreus* can be separated by the teeth in the outer margin of chelicerae (Text Figs 23d,e) although the overall size of the latter varies with the size of individual spider. Male palps likewise show individual variation in the length of the tibiae and in the length of the tarsus relative to the palpal organs. The extremes are illustrated. Tibial apophysis is also variable. However, the palpal organs remain fairly constant in form and are most easily distinguished when viewed ventrally. Epigynes of *D. lapidosus* and *D. cupreus* are rather variable and closely similar. There are two diagnostic features which appear to be reliable:

(i) Two pairs of spermathecae are visible, without clearing, and in *D. lapidosus* the width across the anterior pair is less than that across the posterior pair. This is reversed in *D. cupreus*;

(ii) The central tongue-like process is wider posteriorly, relative to the total width of the epigyne, in *D. lapidosus* than in *D. cupreus*.

DISTRIBUTION

D. lapidosus and *D. cupreus* are both widespread but have been confused in the past. Evidence from my collection (mainly from Midlands, North of England and North Wales) suggests that *D. cupreus* is more commonly met with than *D. lapidosus*. Examination of other collections of '*D. lapidosus*' revealed that a number of specimens – in some cases all specimens – were *D. cupreus*. *D. pubescens*, although widespread, is rather rarely collected, except perhaps in the south. All three species are found under stones and leaves, and in grass roots, often in a silken cell. In the south, *D. cupreus* occurs to the exclusion of *D. lapidosus* on heathland, but both species may be found on grassland (P. Merrett, pers.comm.).

Genus *Haplodrassus* Chamberlin, 1922

Spiders of this genus differ from *Drassodes* in lacking deep notches on the trochanters and (apart from *Haplodrassus silvestris*) lacking dorsal spines on tibiae IV. Sometimes distinct dark markings are present on carapace and occasionally an abdominal pattern is present (as illustrated for *H. dalmatensis*). However, in some species carapace is unmarked and abdomen uniform grey or brown; and this sometimes occurs in species which usually have markings. There are six British species in this genus.

Haplodrassus signifer (C. L. Koch, 1839)

Text Fig. 23g

Length: ♀: 8–9mm; ♂: 6–8mm.

Haplodrassus dalmatensis (L. Koch, 1866)

Plate 21; Text Fig. 24a

Length: ♀: 4.5–6.5mm; ♂: 4–4.5mm.

Haplodrassus silvestris (Blackwall, 1833)

Text Fig. 24b

Length: ♀: 8–10mm; ♂: 6.5–7.5mm.

Haplodrassus minor (O. P.-Cambridge, 1879)

Text Fig. 24c

Length: ♀: 4mm; ♂: 3.5mm.

Haplodrassus soerenseni (Strand, 1900)

Text Fig. 24d

Length: ♀: 6mm; ♂: 5mm.

Haplodrassus umbratilis (L. Koch, 1866)

Text Fig. 25a

Length: ♀: 6–7.5mm; ♂: 5–6mm.

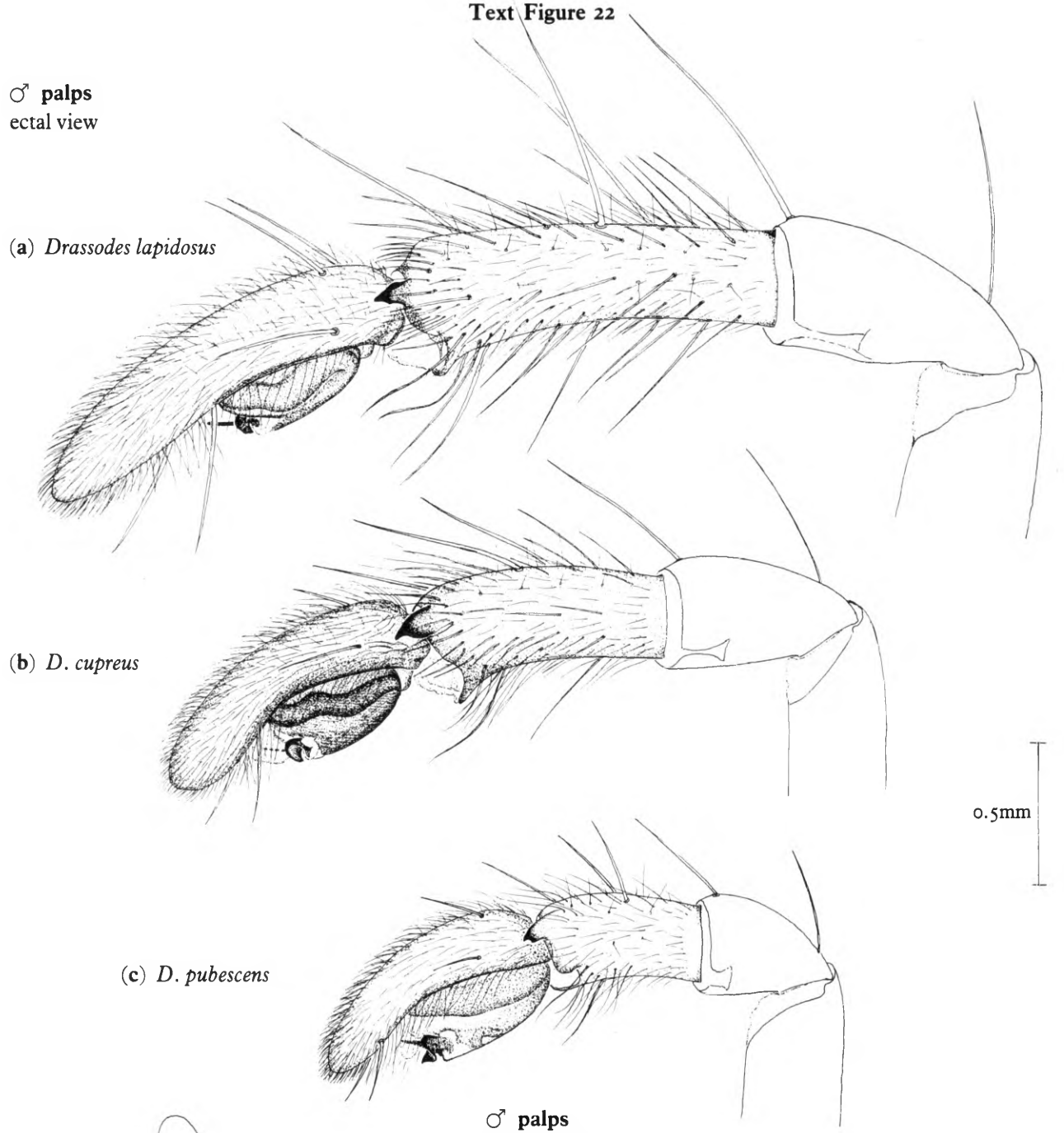
DISTINGUISHING THE SPECIES

Size useful in some cases but the genitalia provide easy separation in both males and females. Epigynes have a pair of lateral plates the shape of which is usually characteristic even allowing for normal variation within a species. The cavity just inside the plates may, on each side, be filled with a dark, irregular exudate in some specimens of all species. For example, the specimen of *H. signifer* illustrated (Text Fig. 23g) is filled with exudate, whereas the specimen of *H. umbratilis* (Text Fig. 25a) is not. This should be taken into account as it may alter the overall appearance of the structure. In addition to the lateral plates, the posterior margin of the opening is a useful character. Male palps can be separated by consideration of both palpal tibiae and palpal organs, care being taken to view them from exactly the same angle as the illustrations.

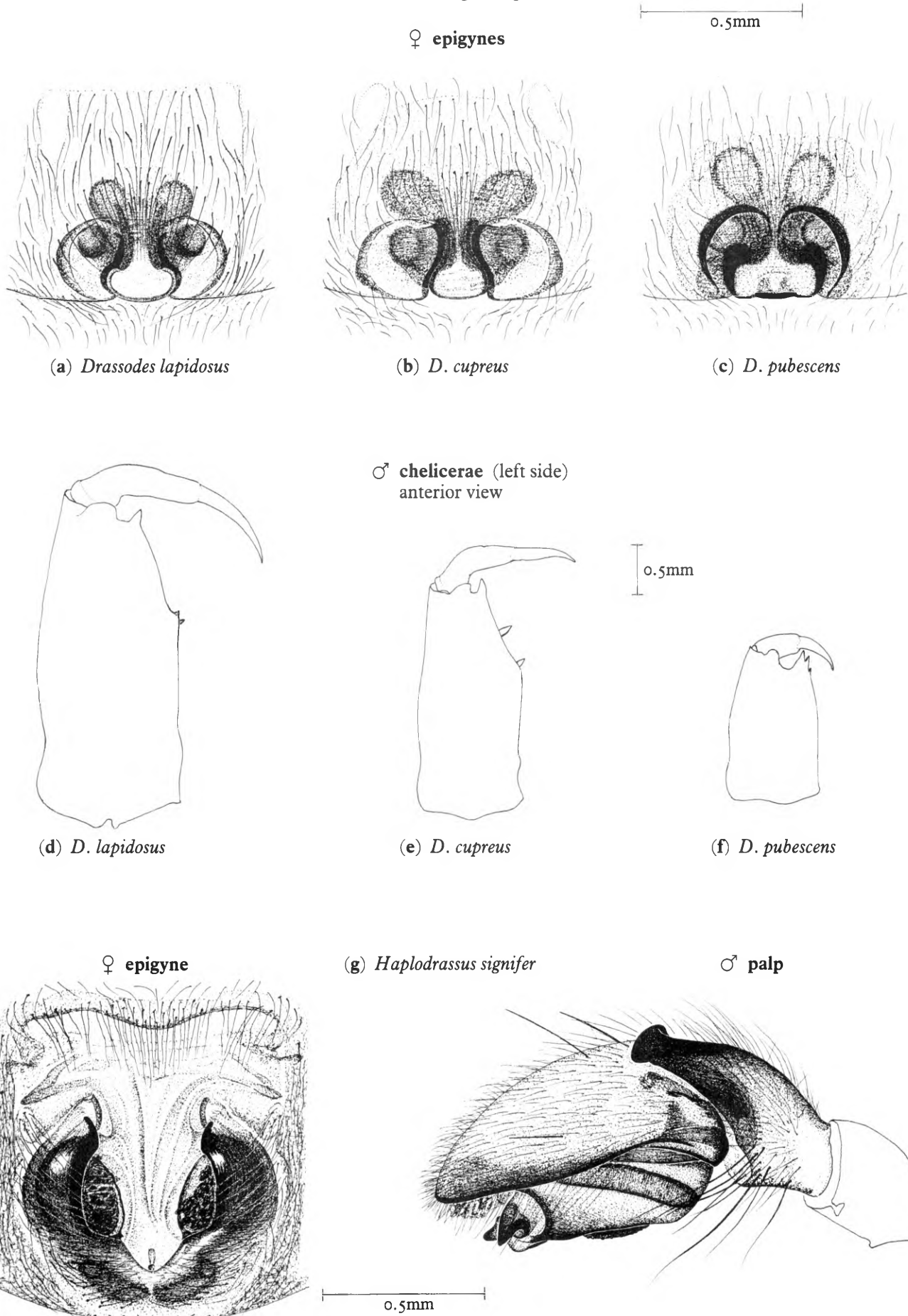
DISTRIBUTION

H. signifer is widely distributed and is the most commonly encountered species of the genus. *H. silvestris* may be widespread but is far less common, and occurs in woods. The remaining species are rare, *H. soerenseni* being known from two localities in Scotland and the rest from localities

Text Figure 22



Text Figure 23

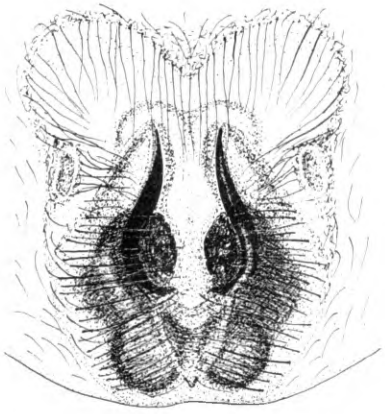


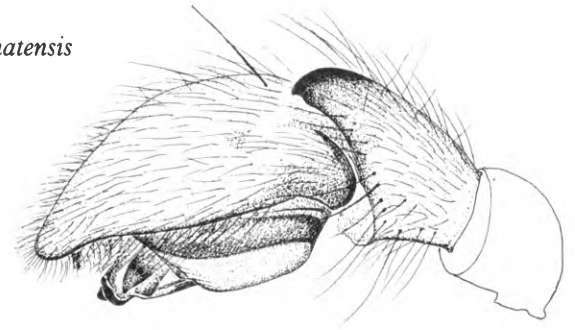
Text Figure 24

♀ epigynes

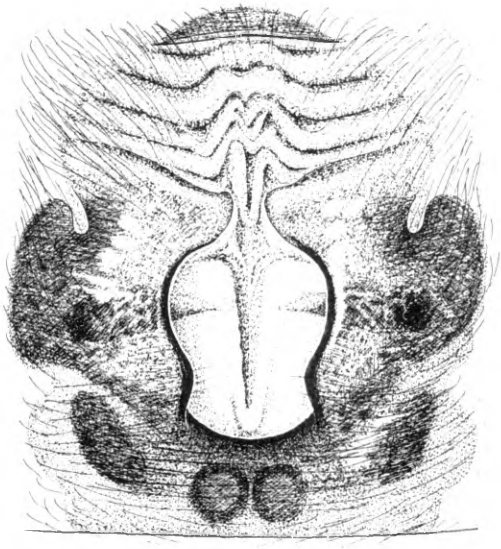
♂ palps

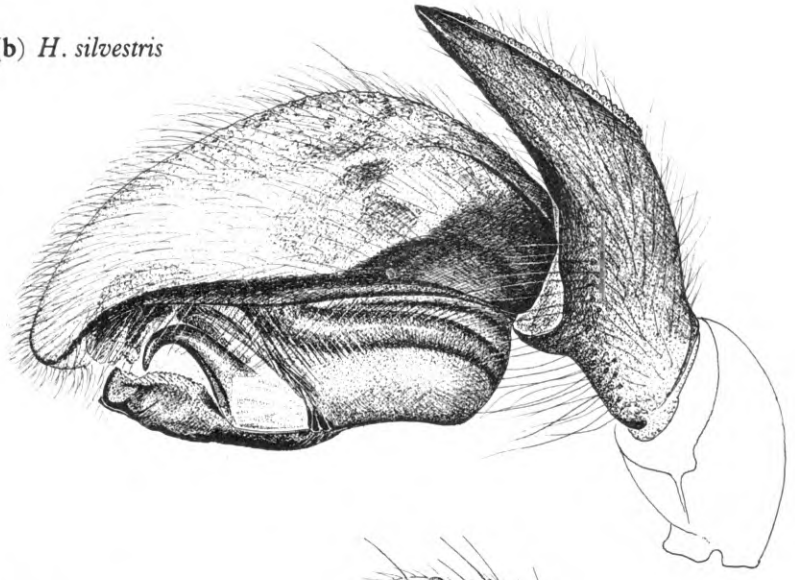
(a) *Haplodrassus dalmatensis*



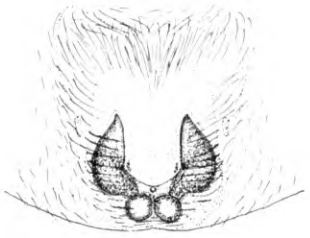


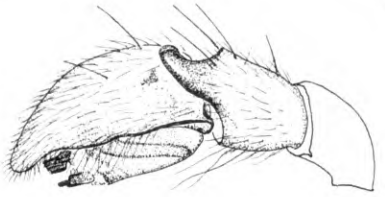
(b) *H. silvestris*





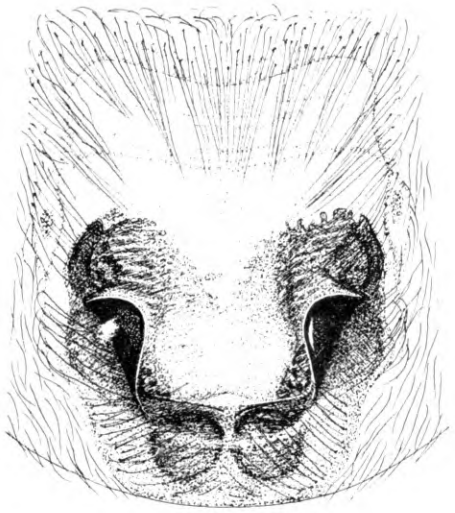
(c) *H. minor*

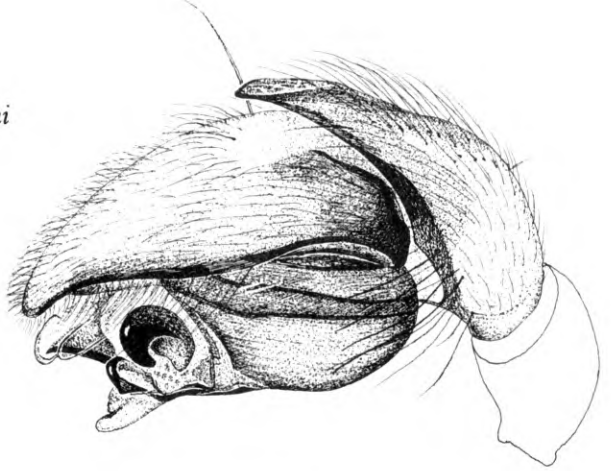




0.5mm

(d) *H. soerenseni*





mainly in the south. *H. dalmatensis* is frequent on some southern heathland and in a few coastal localities, *H. umbratilis* has been found on only a few southern heaths and *H. minor* from a few dry coastal sites.

Genus *Scotophaeus* Simon, 1893

The single British species of this genus has a very mousy abdomen in life and, although its general appearance is rather like that of *Drassodes*, it is readily distinguished by the anterior median eyes, which are considerably larger than the laterals, and by the carapace which is narrower anteriorly and furnished with long black hairs.

TAXONOMIC NOTE

Scotophaeus blackwalli has in the past sometimes been assigned to the genus *Herpyllus* Hentz, 1832. Recent revisionary work suggests that its placement in *Scotophaeus* is correct. (See Platnick & Shadab, 1977.)

Scotophaeus blackwalli (Thorell, 1873)

Plate 22; Text Fig. 25b

Length: ♀: 10–12mm; ♂: 8–9mm.

Male similar to female except that the abdomen is relatively slimmer and has a small dorsal scutum. Epigyne and male palp distinctive.

DISTRIBUTION

Widespread and fairly common, although nearly always in and around houses.

Genus *Phaeocedus* Simon, 1893

There is only one British species in this genus and it has a very distinctive appearance.

Phaeocedus braccatus (L. Koch, 1866)

Plate 23; Text Fig. 25c

Length: ♀: 4.5–6.5mm; ♂: 4–5mm.

Male similar to female except that the slimmer abdomen has a dorsal scutum. Epigyne and male palp as illustrated.

DISTRIBUTION

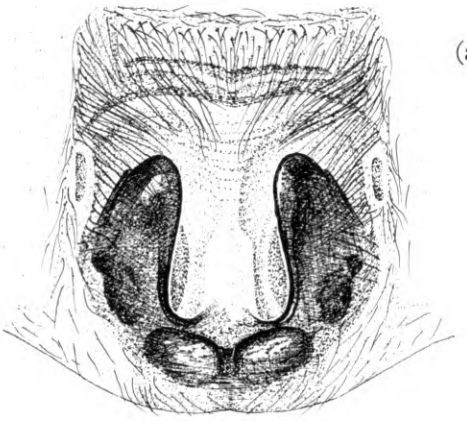
This is a rare spider, known only from a number of localities in the south where it occurs in chalk grassland under stones, leaves and litter.

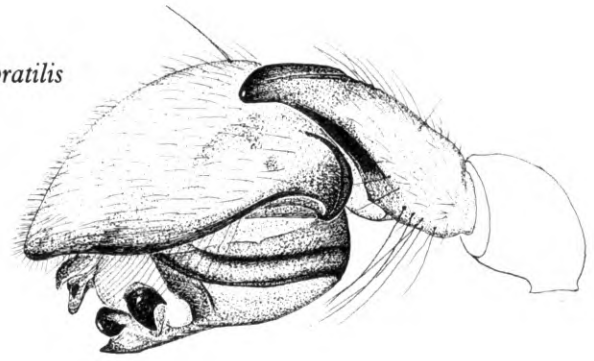
Text Figure 25

♀ **epigynes**

♂ **palps**

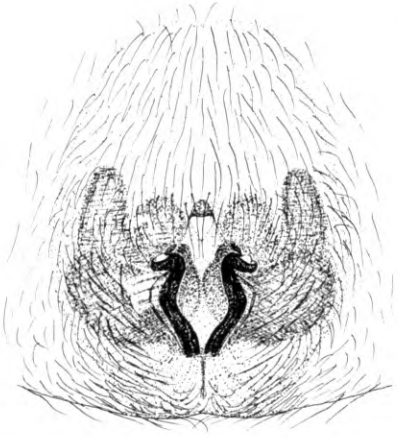
(**a**) *Haplodrassus umbratilis*

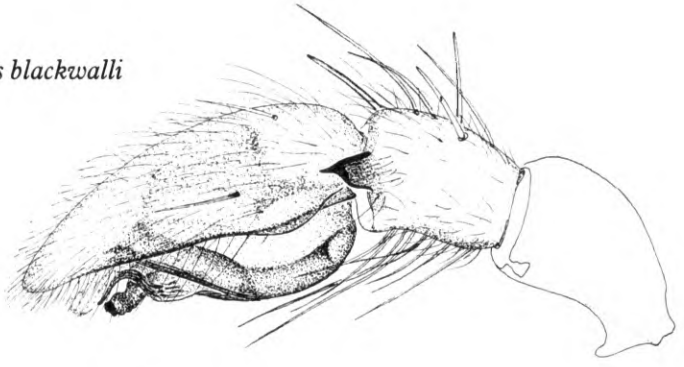




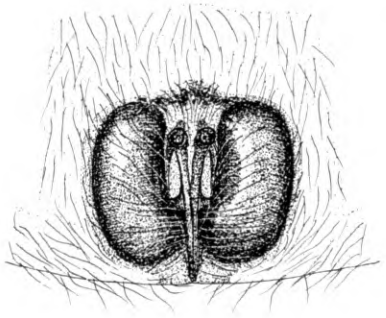
0.5mm

(**b**) *Scotophaeus blackwalli*





(**c**) *Phaeocedus braccatus*



Genus *Zelotes* Gistel, 1848

Spiders of this genus have the carapace markedly narrowed in front and most species are dark in colour or totally black. The branchial opercula are, in contrast, bright yellow or orange in most species. The very rare *Z. rusticus* is an exception, as carapace and legs are yellow-orange and abdomen is light grey. In most species, male abdomen has a small brownish scutum. There are ten British species in this genus.

TAXONOMIC NOTE

Platnick & Shadab (1982) have recently carried out a revision of American spiders of the genus *Drassyllus* Chamberlin. In this work it is suggested that the following three of our British *Zelotes* belong to the genus *Drassyllus* on the basis of male palpal structure: *Z. lutetianus*, *Z. pusillus* and *Z. praeficus*. Although the very difficult taxonomic problem of *Zelotes* and *Drassyllus* appears to have been solved for the species of the United States and Canada (and seems likely to apply also to species from continental Europe and Asia) the need for further work and studied criticism leads me to leave the nomenclature of the British species in its traditional form for the present, but to indicate where possible changes may later be adopted.

Even more recently, Platnick & Murphy (1984) have considered *Zelotes pedestris* as belonging to the genus *Trachyzelotes* Lohmander and *Zelotes rusticus* as belonging to the genus *Urozelotes* Mello-Leitão. Again, these proposed changes are indicated here but not formally adopted.

Zelotes pedestris (C. L. Koch, 1839)

(= *Trachyzelotes pedestris* (C. L. Koch))

Plate 24; Text Fig. 26a

Length: ♀: 7–8mm; ♂: 4–6mm.

Male similar to female but with a black scutum on abdomen.

Zelotes lutetianus (L. Koch, 1866)

(= *Drassyllus lutetianus* (L. Koch))

Text Fig. 26b

Length: ♀: 5–7.5mm; ♂: 4–5mm.

Carapace dark brown with pattern of black striae. Branchial opercula brownish. Male abdomen with brown scutum.

Zelotes pusillus (C. L. Koch, 1833)

(= *Drassyllus pusillus* (C. L. Koch))

Text Fig. 26c

Length: ♀: 4–5mm; ♂: 3–4mm.

General appearance as for *Z. lutetianus*.

Zelotes rusticus (L. Koch, 1872)

(= *Urozelotes rusticus* (L. Koch))

Text Fig. 26d

Length: ♀: 7–8.5mm; ♂: 6–6.5mm.

The orange carapace and legs, and grey abdomen of this species make confusion with other *Zelotes* unlikely. However, as carapace is less narrow anteriorly than in other species of this genus, and the width of the eye group is about one-third that of greatest width of carapace, it could be confused with species of *Haplodrassus*.

Zelotes praeficus (L. Koch, 1867)

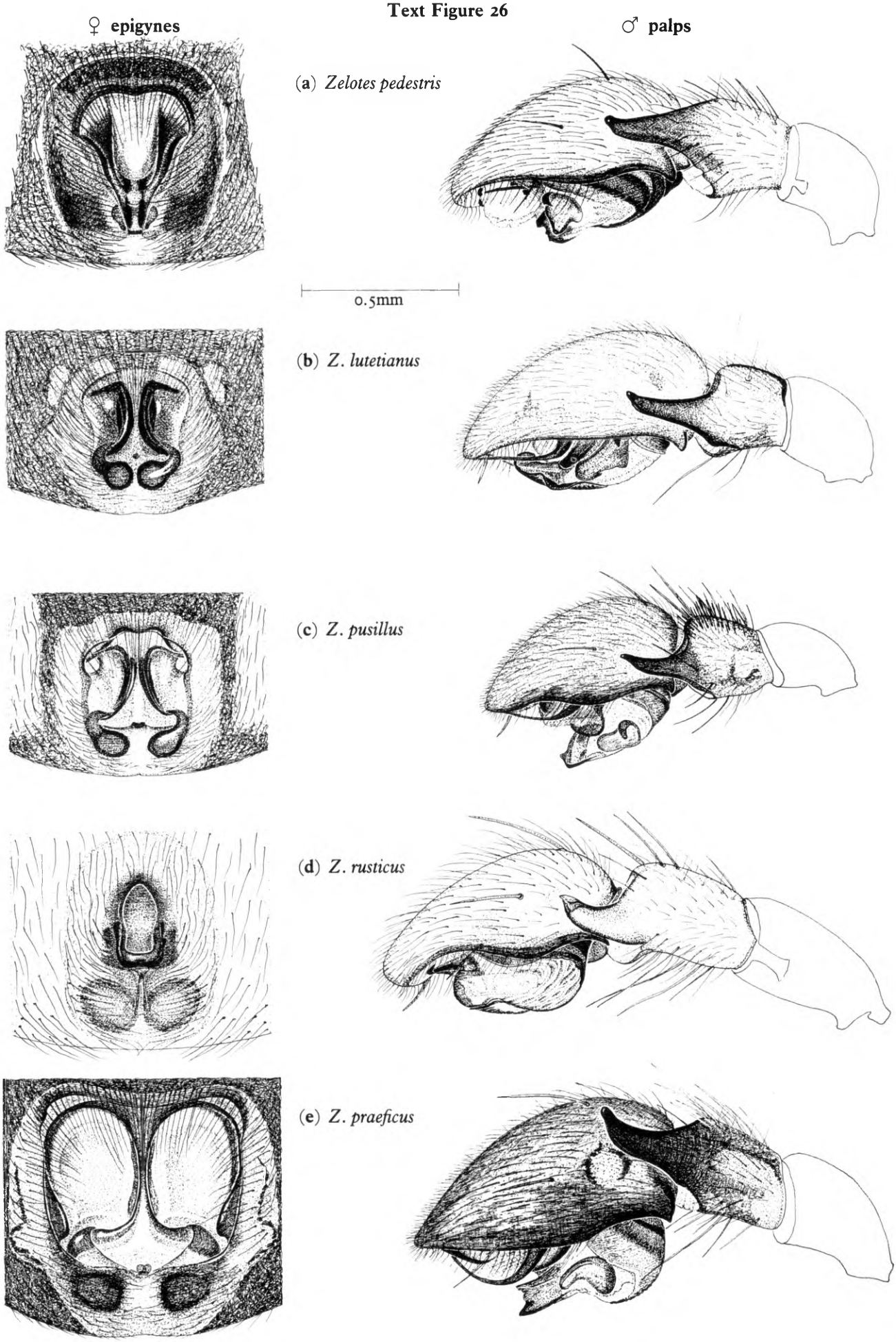
(= *Drassyllus praeficus* (L. Koch))

Text Fig. 26e

Length: ♀: 5–6mm; ♂: 4.5–5mm.

Whole spider blackish, except for branchial opercula and tarsi which are yellow-orange.

Text Figure 26



Zelotes electus (C. L. Koch, 1839)
Text Fig. 27a
Length: ♀: 4–5.5mm; ♂: 3.5–4.5mm.
Carapace reddish brown with dark striae.

Zelotes latreillei (Simon, 1878)
Plate 25a; Text Fig. 27b
Length: ♀: 7–8mm; ♂: 4.5–7.5mm.
Branchial opercula and tarsi orange. Male similar to female except that abdomen has a small scutum. This is the commonest species of the genus.

Zelotes apricorum (L. Koch, 1876)
Text Fig. 27c
Length: ♀: 6.5–9mm; ♂: 5–6mm.
Similar to *Z. latreillei.*

Zelotes serotinus (L. Koch, 1867)
Text Fig. 27d
Length: ♀: 6–8mm; ♂: 5–6mm.
Similar to *Z. latreillei.*

Zelotes petrensis (C. L. Koch, 1839)
Text Fig. 27e
Length: ♀: 6–7mm; ♂: 5–6mm.
Similar to *Z. latreillei.*

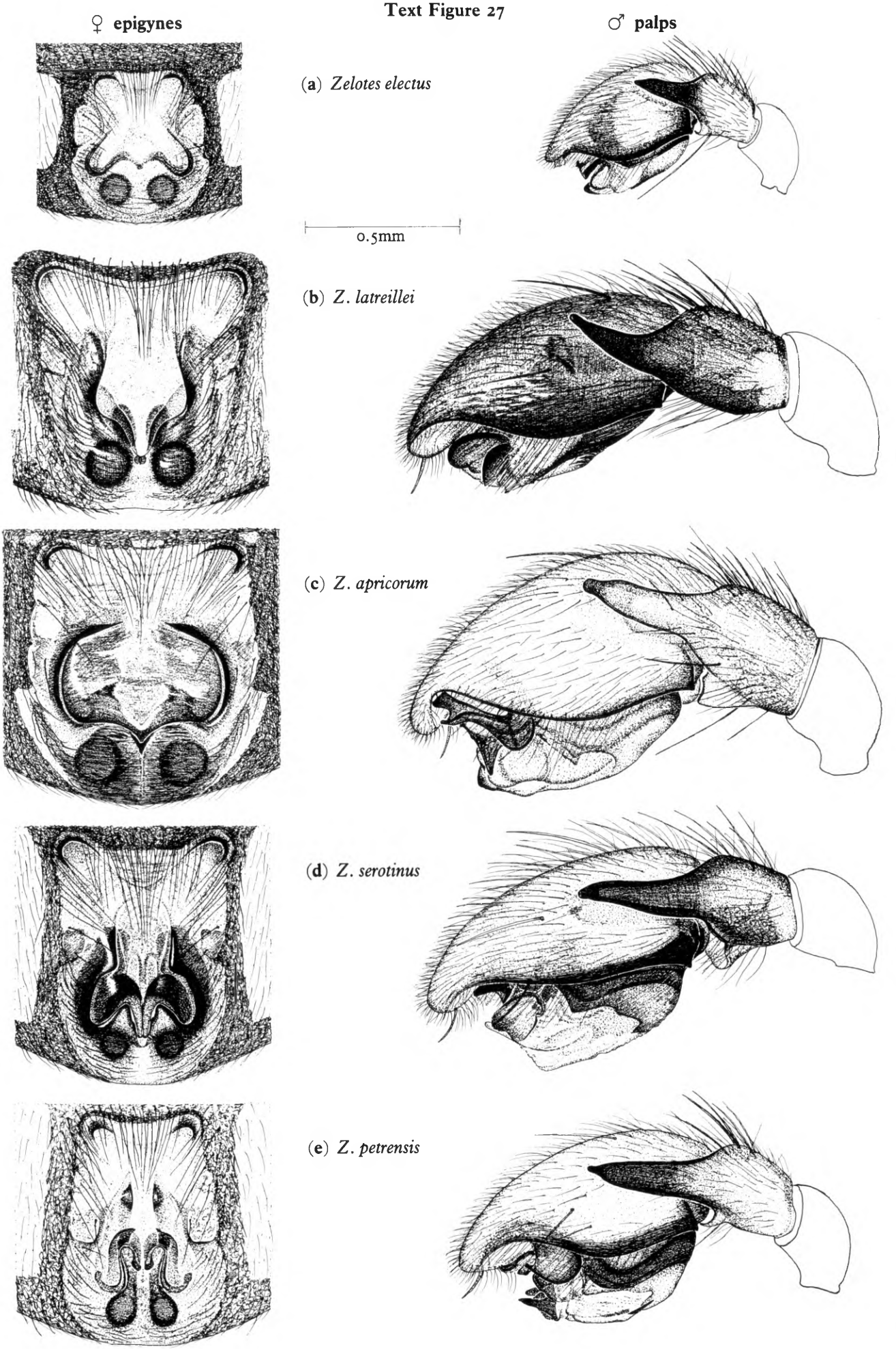
DISTINGUISHING THE SPECIES

The genitalia allow for fairly easy identification. The epigynes, although showing individual variation, are usually clear enough. Those of *Z. lutetianus* and *Z. pusillus* are rather similar, but consideration of the shape and separation of the spermathecae, and the form of the anterior margin together with overall size of spider, offer reliable separation. Male palps are quite distinct when viewed from the side.

DISTRIBUTION

Z. latreillei, *Z. apricorum* and *Z. pusillus* are widely distributed. *Z. lutetianus* is also widely distributed, but rare. *Z. pedestris* and *Z. praeficus* have been recorded only from the South of England, but *Z. pedestris* is common on chalk grassland. *Z. electus* is widely distributed but appears to be almost confined to coastal sand-dunes, and the remaining three species are rare and known only from a few localities, mainly in Midlands and south. They are usually found under stones and debris, often in a silken cell.

Text Figure 27



Genus *Gnaphosa* Latreille, 1804

The three British species of this genus are similar in general appearance, the most useful generic character being the recurved posterior row of eyes (Text Fig. 21d, p. 65).

Gnaphosa lugubris (C. L. Koch, 1839)

Plate 25c; Text Fig. 28a

Length: ♀: 10–13mm; ♂: 9–12mm.

Male similar to female in general appearance; the following two species are also very similar in general appearance.

Gnaphosa occidentalis Simon, 1878

Text Fig. 28b

Length: ♀: 10–12mm; ♂: 9–11mm.

Gnaphosa leporina (L. Koch, 1866)

Text Fig. 28c

Length: ♀: 7–9mm; ♂: 5.5–7mm.

DISTINGUISHING THE SPECIES

The genitalia afford the best means of separating the species. Epigynes rather variable but not usually difficult if one considers the size of the scape projecting from the anterior margin, and the relative width of the opening. Male palps distinguishable by consideration of the form of the tibiae – apophysis bifid in *G. occidentalis* – and the palpal organs. *G. leporina* is also smaller than the other two species.

DISTRIBUTION

G. leporina is fairly widely distributed but uncommon, and the other two species are very rare, *G. lugubris* being known from a few localities in the southern half of England and *G. occidentalis* only from Cornwall. They are usually found under stones and roots, *G. leporina* mainly in damp habitats and the other two species in dry places.

Genus *Callilepis* Westring, 1874

There is but one British species in this genus. The posterior median eyes have the lenses partly sclerotized so that the light parts appear as transverse slits.

Callilepis nocturna (Linnaeus, 1758)

Plate 25d; Text Fig. 28d

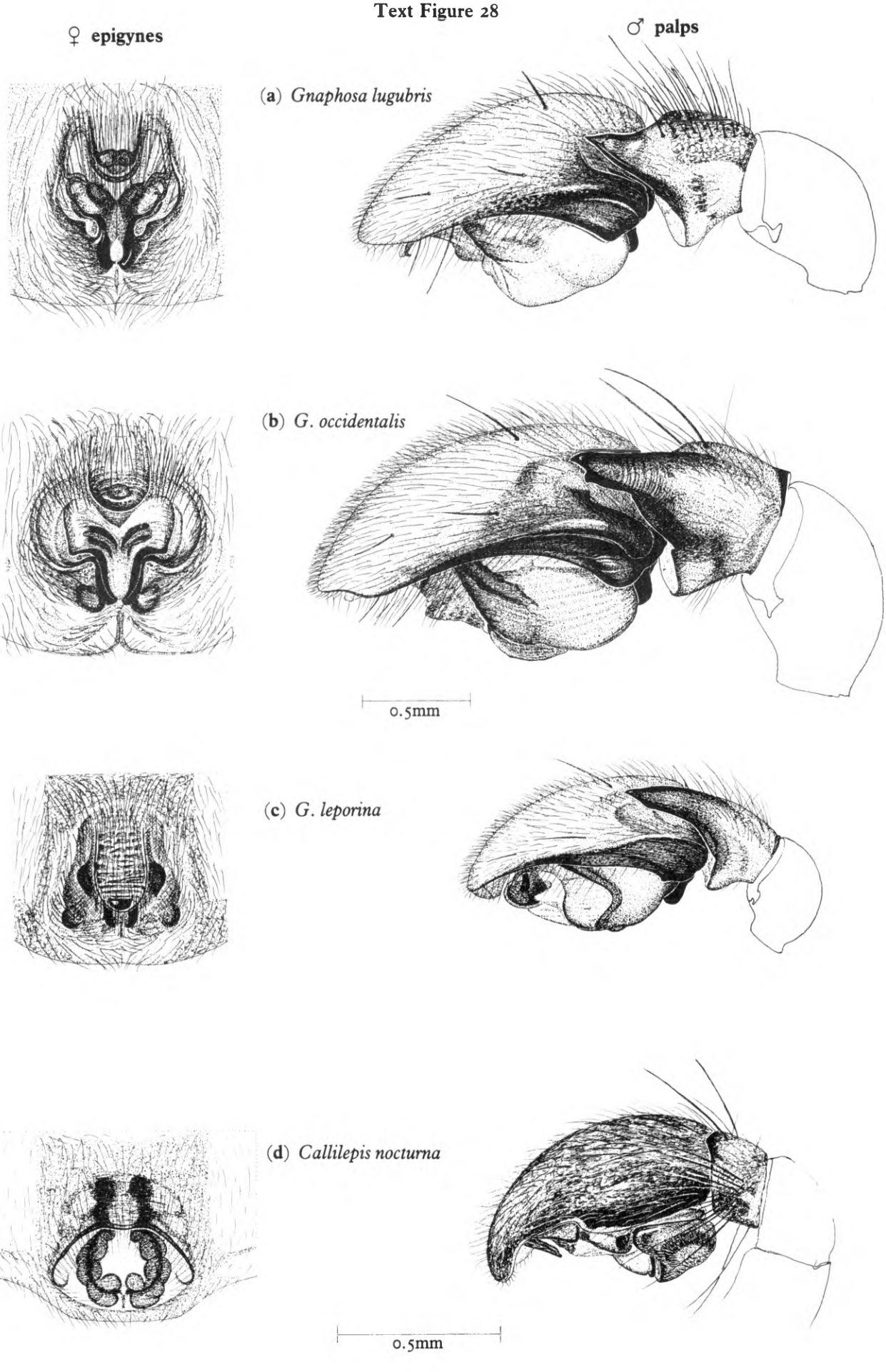
Length: ♀: 3.5–6mm; ♂: 3–4.5mm.

Male and female similar. Markings vary slightly depending on size and disposition of the patches of light hairs. Epigyne and male palp quite distinct.

DISTRIBUTION

So far found in only one coastal locality in Devon.

Text Figure 28



Genus *Micaria* Westring, 1851

The five British species in this genus are small and have a dark brown or black abdomen which is more or less iridescent and sometimes has markings composed of white hairs. Usually the carapace has no fovea, but a foveal mark is present in some males.

Micaria pulicaria (Sundevall, 1831)

Plate 26; Text Fig. 29a

Length: ♀: 2.7–4.5mm; ♂: 3–3.5mm.

Male similar to female in general appearance.

Micaria romana L. Koch, 1866

(= *Micaria scintillans* (O. P.-Cambridge, 1871))

Plate 27; Text Fig. 29b

Length: ♀: 4.5–5mm; ♂: 3.5–4.5mm.

Female similar to male, but has larger abdomen. Also similar to *M. pulicaria*, but larger.

Micaria alpina L. Koch, 1872

Text Fig. 29c

Length: ♀ ♂: 2.7–3.5mm.

General appearance as *M. pulicaria*.

Micaria subopaca Westring, 1861

Text Fig. 29d

Length: ♀ ♂: about 2.5mm.

General appearance as *M. pulicaria*.

Micaria silesiaca L. Koch, 1875

Text Fig. 29e

Length: ♀: 4.5mm; ♂: 3.5mm.

General appearance as *M. pulicaria*.

DISTINGUISHING THE SPECIES

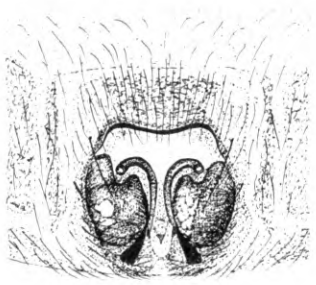
M. pulicaria, being widespread and common, is likely to be encountered before any of the others. The genitalia afford the best means of separating the species. Epigynes do show some individual variation: for instance, the spermathecae of *M. romana* may appear like bent sausages rather than reniform as illustrated. However, epigynes are usually distinct enough. When examining male palps, the tibial apophysis (shape, size, whether curved up or down) should be considered as well as appearance of palpal organs.

DISTRIBUTION

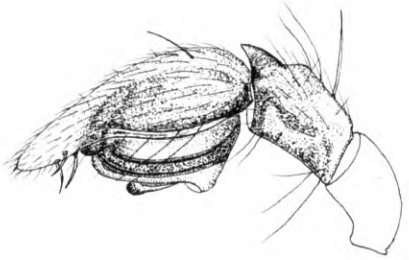
M. pulicaria is widespread and common. *M. romana* is confined to the south coast where it may be abundant locally. *M. alpina* has only been recorded from Welsh mountains and is rare. *M. subopaca* and *M. silesiaca* are both rare and known from a few, mainly southern, localities on heathland, *M. subopaca* usually on pine trees and *M. silesiaca* on sparsely vegetated ground.

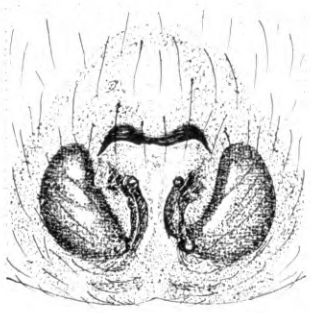
Text Figure 29

♀ **epigyne** ♂ **palps**

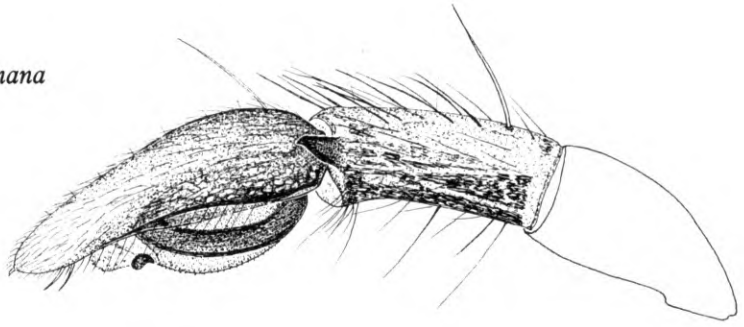


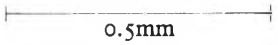
(**a**) *Micaria pulicaria*

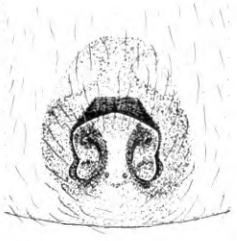




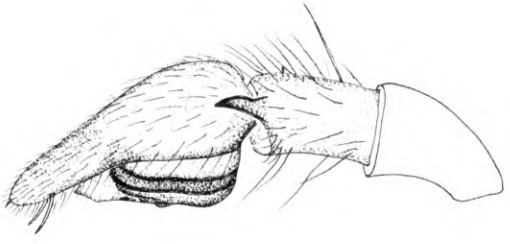
(**b**) *M. romana*

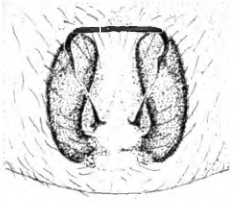




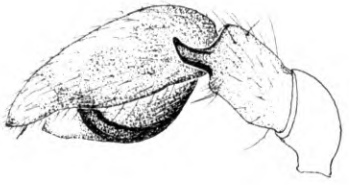


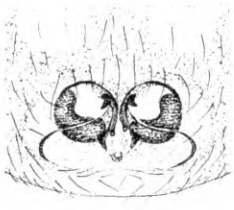
(**c**) *M. alpina*



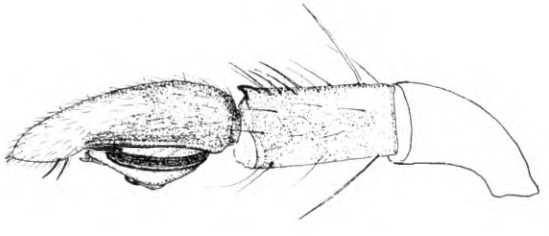


(**d**) *M. subopaca*





(**e**) *M. silesiaca*



Family CLUBIONIDAE

There are thirty-five British species in this family in six genera. They are rather similar to the Gnaphosidae but differ in having the anterior spinners set close together and having posterior median eyes which are circular and not oval or triangular. They occur in similar habitats to the Gnaphosidae and are often found within a tubular sac (open at both ends) under bark and stones, or in rolled-up leaves.

TAXONOMIC NOTE

The spiders here included in the Clubionidae are considered by some authors as forming two families: the Clubionidae (including *Clubiona* and *Cheiracanthium*) and the Liocranidae (including *Agroeca*, *Scotina*, *Liocranum* and *Phrurolithus*). Whilst it is possible that these two groups are not strictly related, a formal diagnosis of the family Liocranidae has not yet been proposed and further difficulties arise in their relationships with the family Gnaphosidae. The genus *Phrurolithus* is sometimes placed in the Gnaphosidae (subfamily Micariinae) and there are reasonable grounds for doing this.

The present work considers the Clubionidae in two subfamilies – Clubioninae and Liocraninae – and, for the present, retains the genus *Phrurolithus* in this family.

At a generic level, examination of the genitalia of the British species of *Clubiona* (Text Figs 30–33) shows that they fall naturally into six fairly distinct, perhaps monophyletic, groups:

(a) *corticalis*;
(b) *reclusa*, *subsultans*, *stagnatilis*, *rosserae*, *norvegica*;
(c) *coerulescens*;
(d) *pallidula*, *phragmitis*, *terrestris*, *neglecta*, *similis*, *lutescens*;
(e) *compta*, *brevipes*;
(f) *trivialis*, *juvenis*, *genevensis*, *diversa*, *subtilis*.

There have been proposals that some, or all, of these groups be given separate generic status, thus splitting *Clubiona*. My present view is that continued informal recognition of 'species groups' is sufficient.

Key to Subfamilies and Genera of the CLUBIONIDAE

1 Total width of eye group at least half the width of carapace at its widest point (Subfamily CLUBIONINAE) 2
– Width of eye group less than half of greatest width of carapace (Subfamily LIOCRANINAE) 3

2(1) Carapace with a fovea. Legs IV the longest ..... *Clubiona* (p. 80)
– Carapace without a fovea. Legs I the longest ..... *Cheiracanthium* (p. 88)

3(1) Posterior row of eyes procurved or straight 4
– Posterior row of eyes recurved ..... *Liocranum* (p. 92)

4(3) Posterior row of eyes more or less straight. ♀ epigyne wide and swollen. ♂ palpal tibiae with large ventro-lateral hook-like apophysis. Carapace with radiating white hairs usually visible. Overall appearance somewhat like *Micaria* (Gnaphosidae) .. *Phrurolithus* (p. 92)
– Posterior row of eyes markedly procurved; characters above not present 5

5(4) Tibiae I with six to ten pairs of ventral spines. Posterior median eyes further from each other than from laterals (Text Fig. 10b, p. 43) ..... *Scotina* (p. 90)
– Tibiae I with two pairs of ventral spines. Posterior eyes more or less equidistant ..... *Agroeca* (p. 88)

Subfamily CLUBIONINAE

Genus *Clubiona* Latreille, 1804

The twenty British species in this genus are broadly similar in general appearance (Plates 28, 29, 30, 35a,b). In some species the abdominal pattern is clear, but in others the abdomen is brownish, often with silky hairs which, in life, impart a mousy appearance. The markings and depth of colour can be rather variable within a given species and the genitalia afford the best means of identification.

Clubiona corticalis (Walckenaer, 1802)
Plate 35a; Text Fig. 30a
Length: ♀: 7–10mm; ♂: 6–10mm.
Male similar to female except for slimmer abdomen.

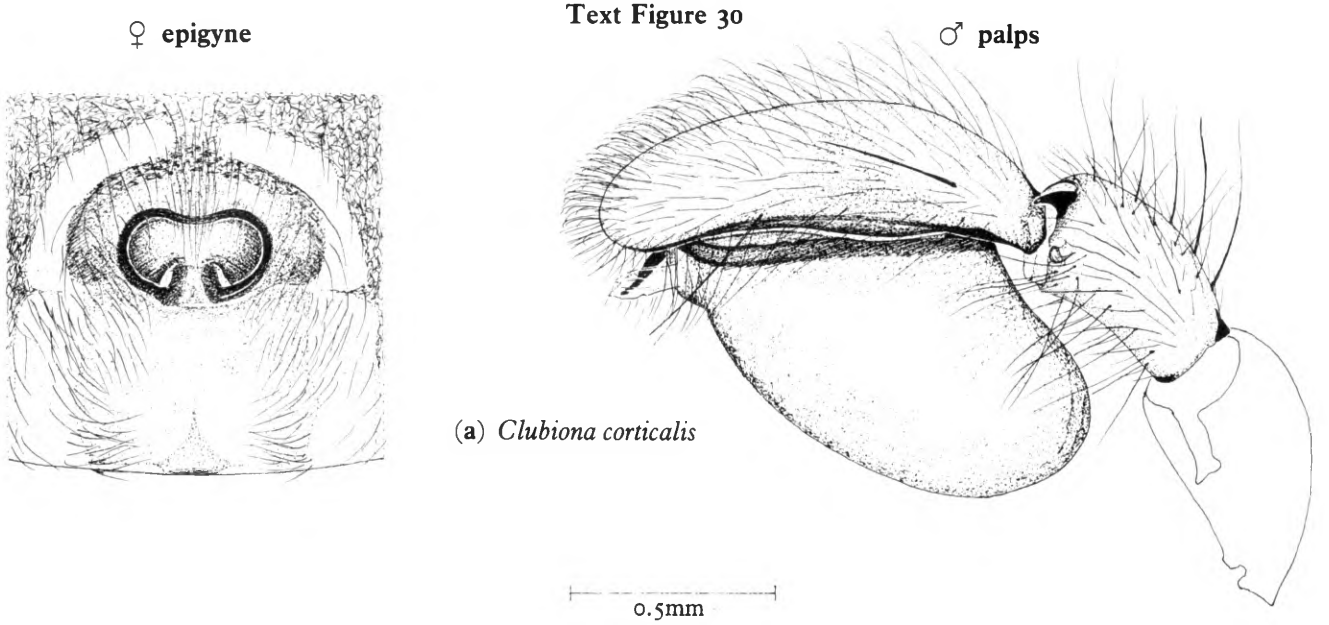
Clubiona reclusa O. P.-Cambridge, 1863
Text Fig. 30b
Length: ♀: 6–9mm; ♂: 5–6mm.
General appearance as *C. lutescens* (Plate 28).

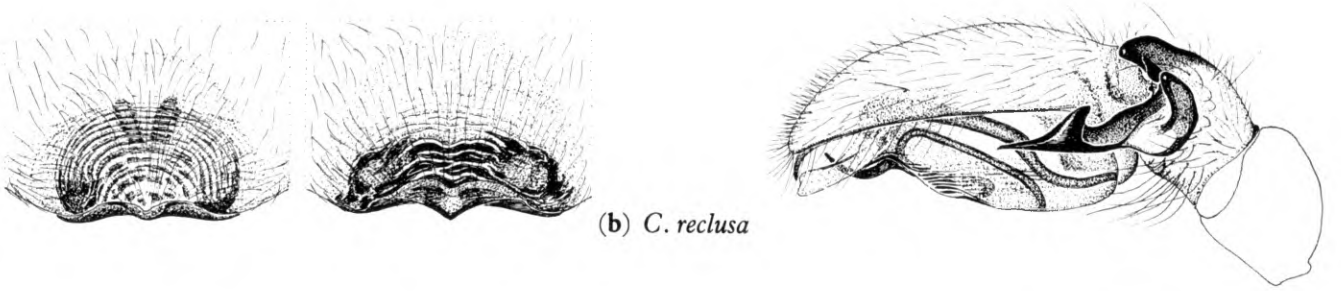
Clubiona subsultans Thorell, 1875
Text Fig. 30c
Length: ♀: 5–7mm; ♂: 4–7mm.
General appearance as *C. corticalis* (Plate 35a) but the dark abdominal markings a more reddish brown.

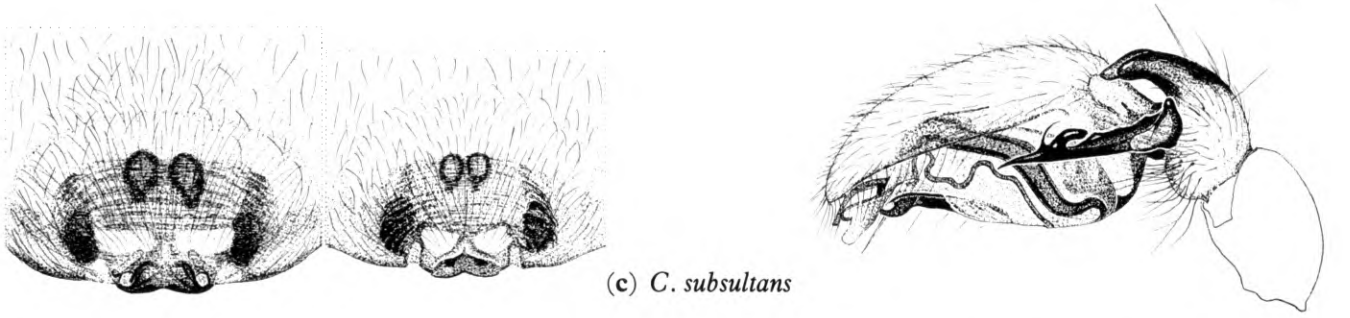
Clubiona stagnatilis Kulczynski, 1897
Text Fig. 30d
Length: ♀: 6–8mm; ♂: 5–7mm.
General appearance as *C. lutescens* (Plate 28).

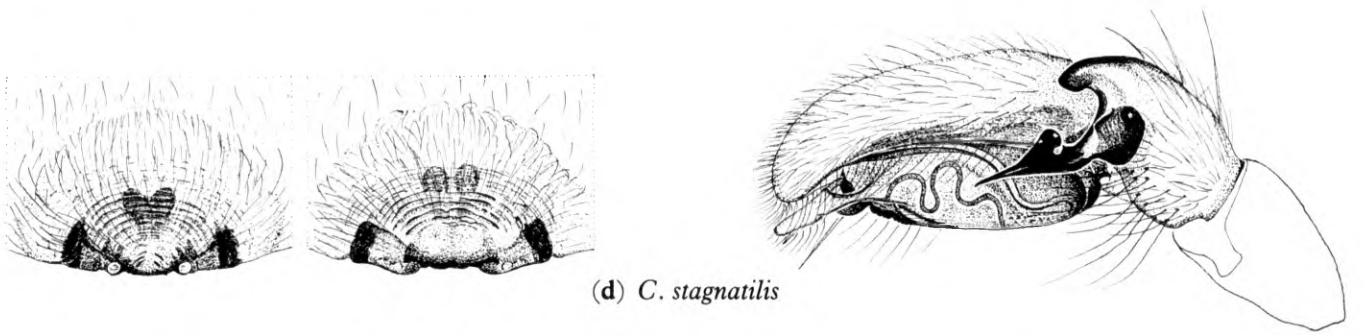
Clubiona rosserae Locket, 1953
Text Fig. 30e
Length: ♀: 5.5–6mm; ♂: 4–5mm.
General appearance as *C. lutescens* (Plate 28), but dorsal abdominal stripe appears slightly more pronounced.

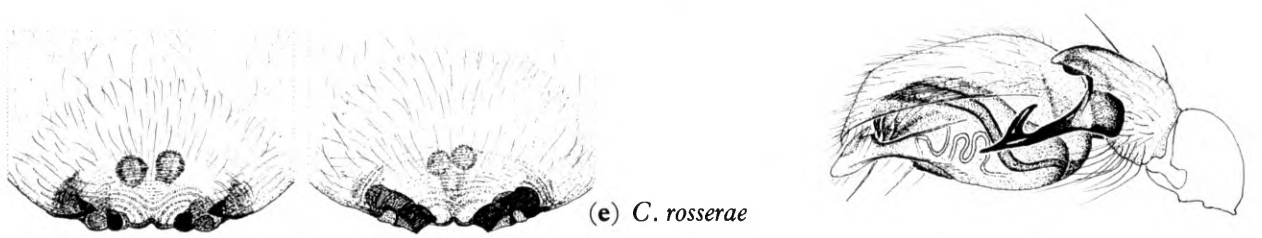
Text Figure 30











Clubiona norvegica Strand, 1900
Text Fig. 31a
Length: ♀: 5–8mm; ♂: 4–5mm.
General appearance as *C. lutescens* (Plate 28).

Clubiona coerulescens L. Koch, 1867
Text Fig. 31b
Length: ♀: 6–9mm; ♂: 5–7mm.
General appearance as *C. lutescens* (Plate 28).

Clubiona pallidula (Clerck, 1757)
Text Fig. 31c
Length: ♀: 7–11mm; ♂: 6–8mm.
General appearance as *C. lutescens* (Plate 28), but abdomen darker brown.

Clubiona phragmitis C. L. Koch, 1843
Text Fig. 31d
Length: ♀: 7–11mm; ♂: 5–10mm.
General appearance as *C. lutescens* (Plate 28), but with swollen, dark chelicerae.

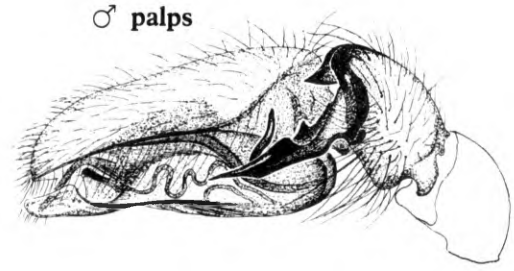
Clubiona terrestris Westring, 1862
Text Fig. 31e
Length: ♀: 6–7mm; ♂: 5–6mm.
General appearance as *C. lutescens* (Plate 28), but abdomen often more yellowish.

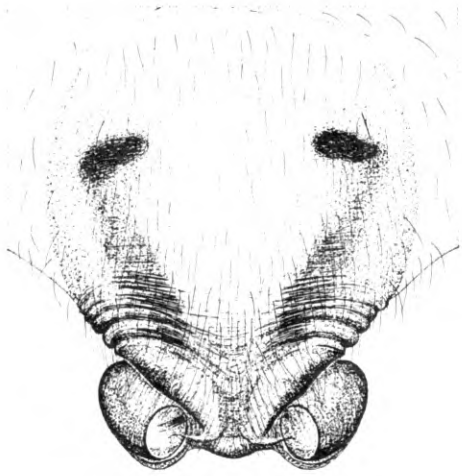
Text Figure 31

♀ epigynes

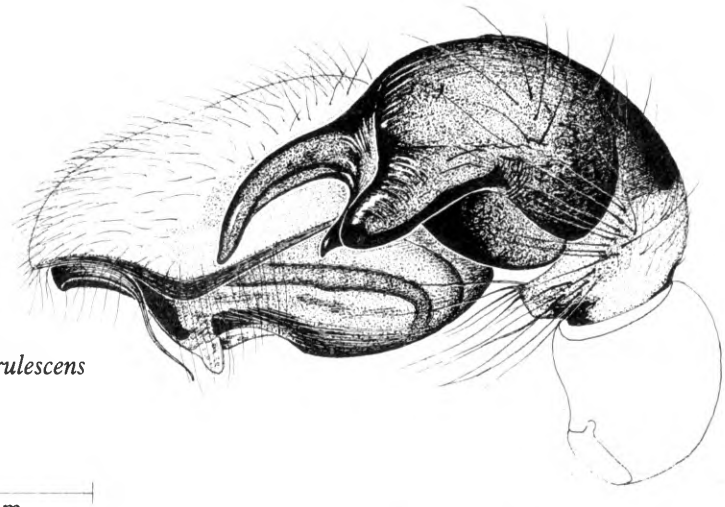
♂ palps

(a) *Clubiona norvegica*



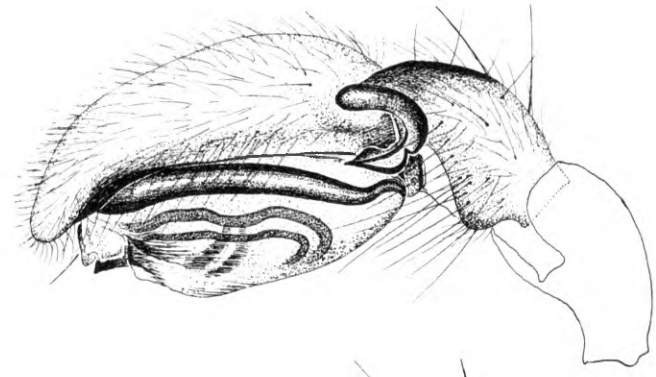


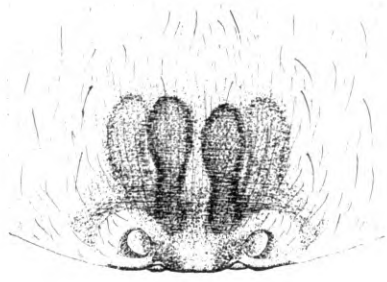
(b) *C. coerulescens*



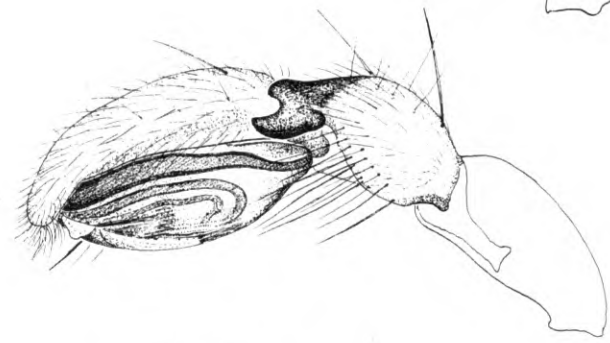
0.5mm

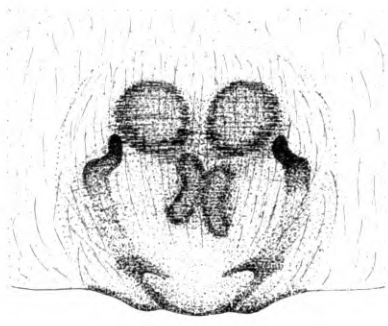
(c) *C. pallidula*



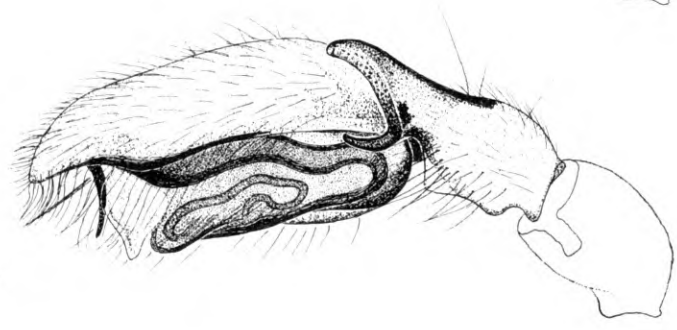


(d) *C. phragmitis*





(e) *C. terrestris*



Clubiona neglecta O. P.-Cambridge, 1862
Text Fig. 32a
Length: ♀: 6–8mm; ♂: 4–6mm.
General appearance as *C. lutescens* (Plate 28).

Clubiona similis L. Koch, 1867
Text Fig. 32b
Length: ♀: 5–7mm; ♂: 5–6mm.
General appearance as *C. lutescens* (Plate 28).

Clubiona lutescens Westring, 1851
Plate 28; Text Fig. 32c
Length: ♀: 6–8mm; ♂: 4–6mm.
Males similar to females, apart from slimmer abdomen.

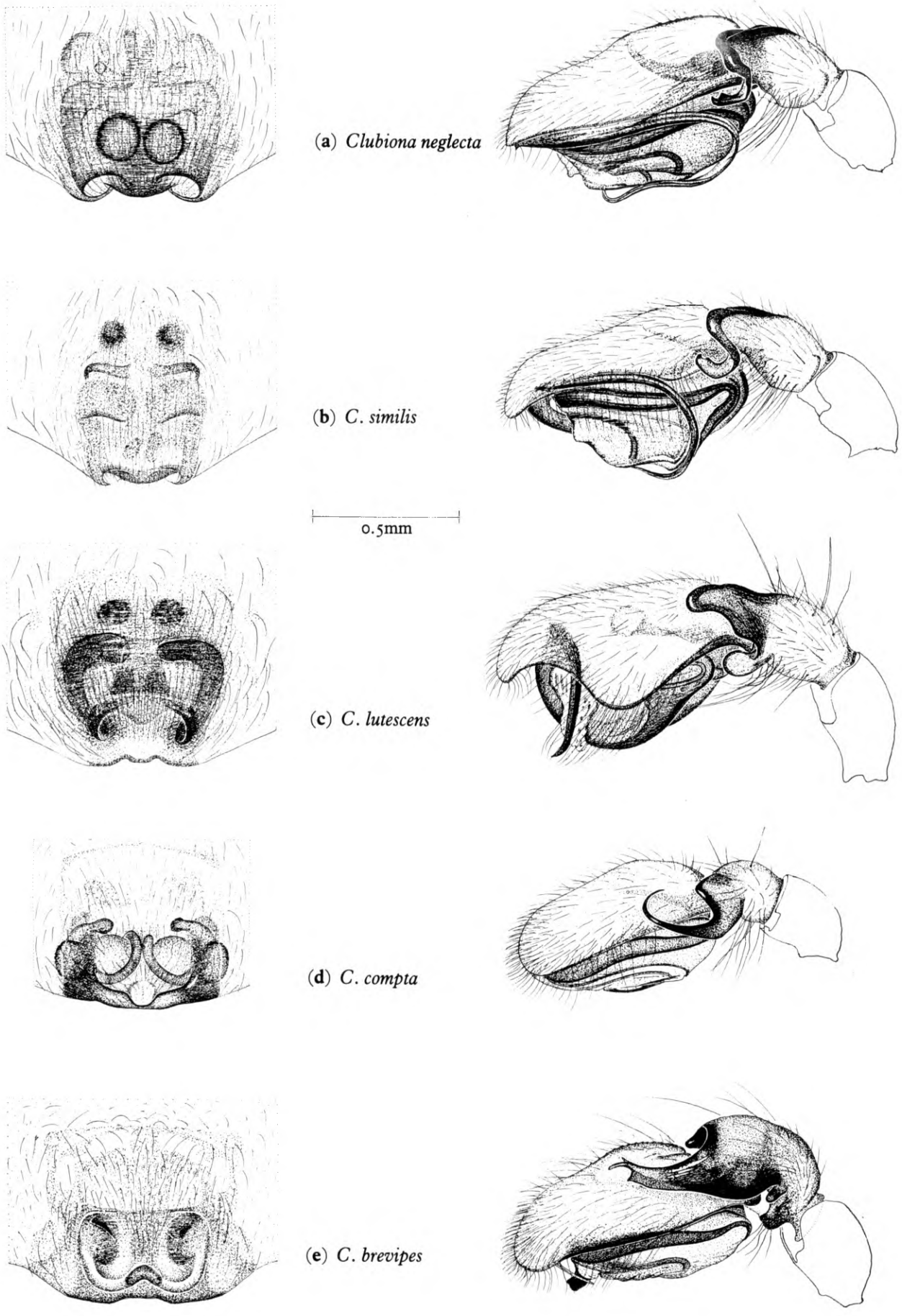
Clubiona compta C. L. Koch, 1839
Plate 29; Text Fig. 32d
Length: ♀: 3.5–6mm; ♂: 3–5mm.
Males similar to females, but abdomen slimmer.

Clubiona brevipes Blackwall, 1841
Plate 35b; Text Fig. 32e
Length: ♀: 4.5–7mm; ♂: 4–6mm.
Females similar to males, but abdomen larger.

Text Figure 32

♀ epigynes

♂ palps



Clubiona trivialis C. L. Koch, 1841
Text Fig. 33a
Length: ♀: 4–4.5mm; ♂: 3.5–4mm.
General appearance as *C. diversa* (Plate 30), but abdomen uniform red-brown.

Clubiona juvenis Simon, 1878
Text Fig. 33b
Length: ♀: 5–6mm; ♂: 4–5mm.
This spider has a slightly odd appearance as carapace is scarcely wider at the midpoint than at its anterior end, and anterior median eyes are larger than laterals. Female abdomen is pale yellow with, usually, a red-brown dorsal stripe. The whole spider thus appears rather pale and oblong in shape with a covering of fine silky hairs. Males are somewhat darker.

Clubiona genevensis L. Koch, 1867
Text Fig. 33c
Length: ♀: 3.5–4.5mm; ♂: 3–3.5mm.
General appearance as *C. compta* (Plate 29) but the red-brown pattern made up of many smaller blotches, although no less distinct.

Clubiona diversa O. P.-Cambridge, 1862
Plate 30; Text Fig. 33d
Length: ♀: 4–5mm; ♂: 3–4mm.
Males similar to females, but abdomen slimmer.

Clubiona subtilis L. Koch, 1867
Text Fig. 33e
Length: ♀: 3–4.5mm; ♂: 2.5–3mm.
General appearance as *C. diversa* (Plate 30), but slimmer, more like *C. juvenis*.

DISTINGUISHING THE SPECIES

C. corticalis is easily identified from both the abdominal pattern and the genitalia. *C. compta* and *C. genevensis* both have striking, and similar, abdominal markings and the genitalia afford easy separation of these two. *C. diversa* seems (at least in all my specimens) to have a fairly characteristic appearance as illustrated. The genitalia are the most useful method of separating the species, and this is not too difficult even allowing for the variability of epigynes from one specimen to another.

The species *C. reclusa*, *C. subsultans*, *C. stagnatilis*, *C. rosserae* and *C. norvegica* have similar genitalia. Male palps have a barbed tibial apophysis and this should be examined, together with palpal organs. Epigynes vary and two examples are illustrated for each of the first four species in order to give some idea of the degree of intraspecific variation. Note the form of the posterior margin and the direction of the lines formed by the wrinkles.

C. coerulescens is easily identified by the large epigyne, which projects somewhat from the epigastrium, and in the male by the enormous tibial apophyses.

C. pallidula, *C. phragmitis*, *C. terrestris*, *C. neglecta*, *C. similis* and *C. lutescens* have broadly similar epigynes and one should note particularly the openings, size and position of spermathecae, the form and disposition of the ducts, when visible, and the posterior margin. Male palps should present no problems.

C. compta and *C. brevipes* have distinctive epigynes and male palps and, in the unlikely event of confusion with the epigynes of these two species, the abdominal patterns afford easy separation.

The remaining species, *C. trivialis*, *C. juvenis*, *C. genevensis*, *C. diversa* and *C. subtilis*, are again readily identifiable by their genitalia and any difficulty in the case of females is easily overcome by consideration of general appearance, colour and markings.

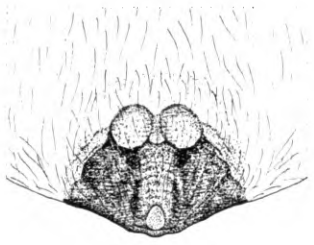
DISTRIBUTION

C. reclusa, *C. stagnatilis*, *C. pallidula*, *C. phragmitis*, *C. terrestris*, *C. neglecta*, *C. lutescens*, *C. compta*, *C. brevipes*, *C. trivialis* and *C. diversa* are all fairly widespread and common. *C. corticalis* occurs in England and Wales as far north as Yorkshire, becoming progressively more common towards the south. *C. subtilis* may be widespread but is so far known from relatively few counties and *C. coerulescens*, although recorded from several counties, from north to south, is rare. The other species, *C. subsultans*, *C. rosserae*, *C. norvegica*, *C. similis*, *C. juvenis* and *C. genevensis*, have each only been recorded from very few localities in different parts of the country. *C. stagnatilis*, *C. rosserae*, *C. norvegica*, *C. phragmitis*, *C. lutescens*, *C. juvenis* and *C. subtilis* are all found mainly in wet habitats; *C. corticalis*, *C. subsultans*, *C. pallidula*, *C. compta* and *C. brevipes* mainly on trees and bushes; and *C. similis* on sand-dunes; while *C. reclusa*, *C. coerulescens*, *C. terrestris*, *C. neglecta*, *C. trivialis*, *C. genevensis* and *C. diversa* are found among low vegetation in a range of mainly dry habitats.

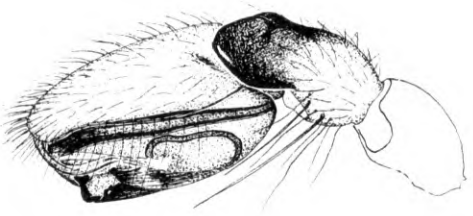
Text Figure 33

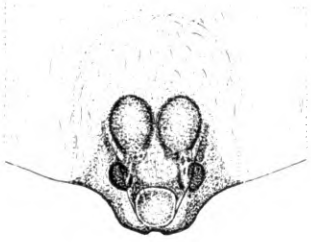
♀ epigynes

♂ palps

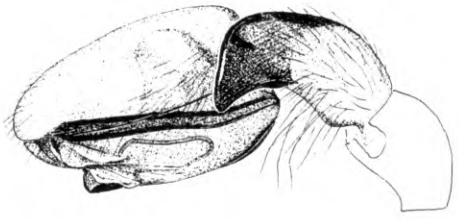


(a) *Clubiona trivialis*



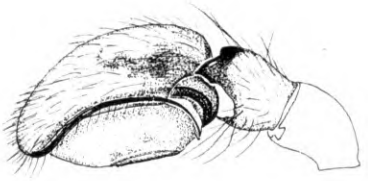


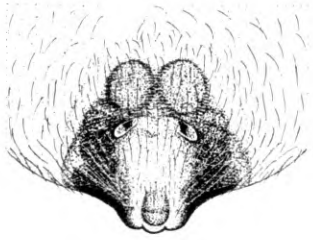
(b) *C. juvenis*



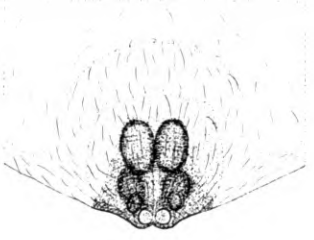
0.5mm

(c) *C. genevensis*

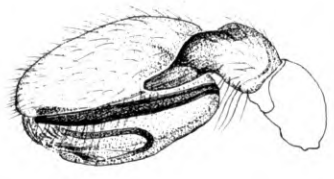




(d) *C. diversa*



(e) *C. subtilis*



Genus *Cheiracanthium* C. L. Koch, 1839

This genus is distinguished from *Clubiona* by the absence of a clear foveal mark on the carapace, and by having the first pair of legs the longest. There are three British species.

Cheiracanthium erraticum (Walckenaer, 1802)
Plate 31; Text Fig. 34a
Length: ♀: 7–8mm; ♂: 5–6mm.
Female illustrated has a rather small abdomen; in most specimens it is more distended and oval. Male similar to female, with abdomen usually like that of the female illustrated. The grey-brown abdomen with reddish median stripe bordered by pale yellow is similar to that of *C. pennyi*.

Cheiracanthium pennyi O. P.-Cambridge, 1873
Text Fig. 34b
Length: ♀: 6–7mm; ♂: 5–6mm.
Similar in general appearance to *C. erraticum*.

Cheiracanthium virescens (Sundevall, 1833)
Text Fig. 34c
Length: ♀: 5–7mm; ♂: 5–6mm.
Similar to *C. erraticum*, but abdomen greenish brown without a pronounced red-brown stripe.

DISTINGUISHING THE SPECIES

C. erraticum, being the commonest species, is likely to be encountered first. The genitalia offer the best means of identification. In females, the overall size of epigyne and relative proportions of the size of opening to the total width across seminal receptacles are useful. The ducts, visible anterior to the opening, are often useful although slightly variable. Male palps require careful comparison with the specimen in exactly the same position as the illustrations. Take note of ventral projection near the tip of tarsus, the spur arising from the proximal end of tarsus, the tibial apophysis and palpal organs. *C. virescens* can also be distinguished by the lack of a pronounced red-brown stripe on abdomen.

DISTRIBUTION

Both *C. erraticum* and *C. virescens* are fairly widely distributed, but the latter is rather rare in general, though the commonest species of *Cheiracanthium* on heathland. *C. pennyi* is very rare, being known only from a few localities on heathland in the South of England.

Subfamily LIOCRANINAE

Genus *Agroeca* Westring, 1861

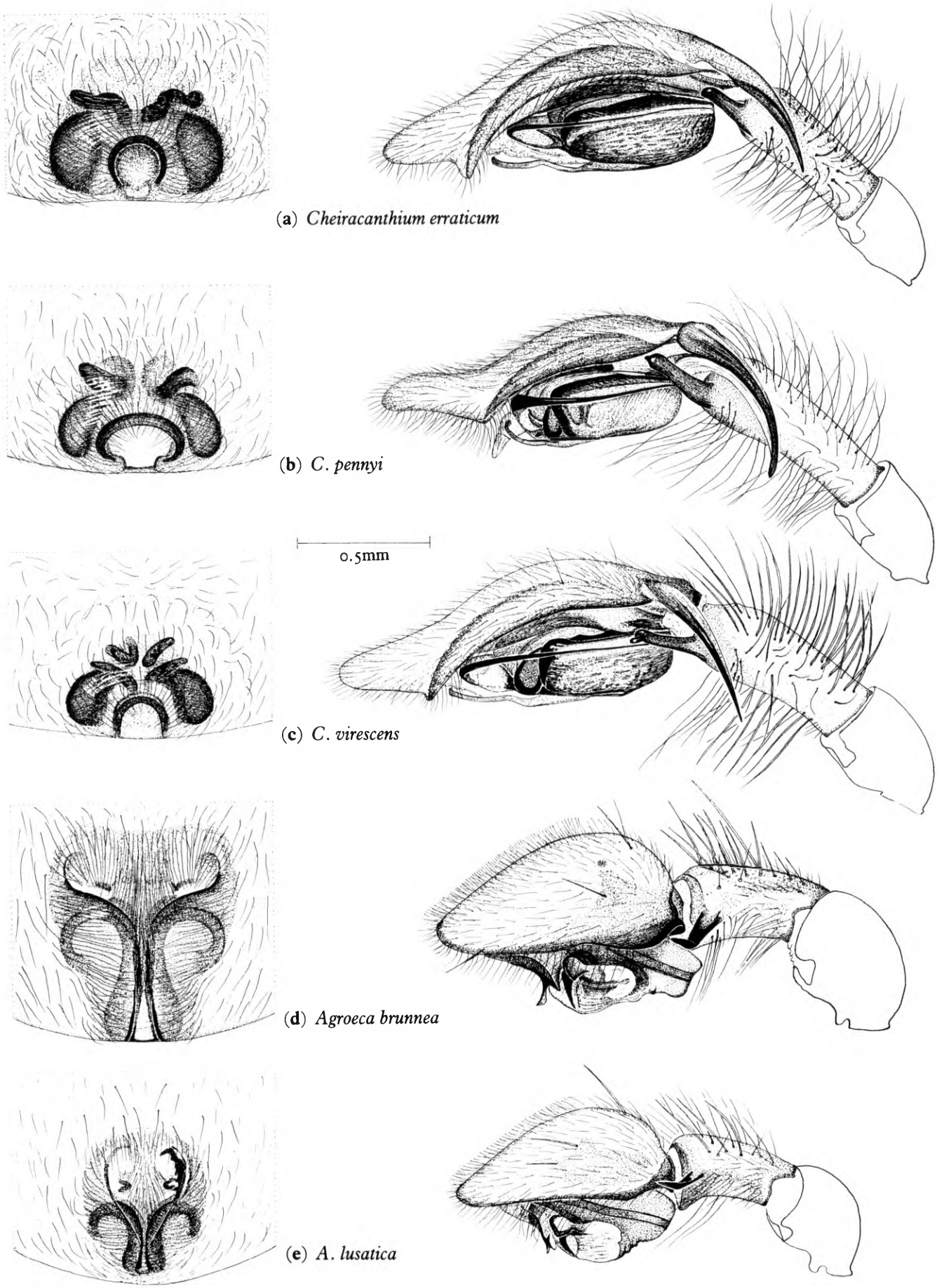
The six British species of *Agroeca* are of similar appearance (Plates 32,33) and the distinguishing characters of the genus are given in the Key to Genera (p. 80). Metatarsi I have three pairs of ventral spines, except in *A. striata* where there are only two pairs.

Agroeca brunnea (Blackwall, 1833)
Text Fig. 34d
Length: ♀: 7–8mm; ♂: 6–7mm.
Similar to *A. proxima* in general appearance, but larger, with male being rather darker in colour.

Agroeca lusatica (L. Koch, 1875)
Text Fig. 34e
Length: ♀: 6–7mm; ♂: 5–6mm.
Similar to *A. proxima* in general appearance.

Text Figure 34

♀ **epigynes** ♂ **palps**



(**a**) *Cheiracanthium erraticum*

(**b**) *C. pennyi*

(**c**) *C. virescens*

(**d**) *Agroeca brunnea*

(**e**) *A. lusatica*

Agroeca proxima (O. P.-Cambridge, 1871)
Plate 32; Text Fig. 35a
Length: ♀: 5.5–7.5mm; ♂: 4–5.5mm.
Males similar to females. Eyes all more or less equal sized, as illustrated.

Agroeca inopina O. P.-Cambridge, 1886
Text Fig. 35b
Length: ♀: 4.5–7.5mm; ♂: 3–4.5mm.
Similar to *A. proxima* in general appearance. Anterior median eyes same size as posterior medians, but smaller than laterals (*cf. A. proxima*).

Agroeca cuprea Menge, 1873
Text Fig. 35c
Length: ♀: 4–5mm; ♂: 3.5–4mm.
Slightly darker than *A. proxima*, but otherwise similar. Anterior median eyes smaller than posterior medians and smaller than laterals (*cf. A. proxima*).

Agroeca striata Kulczynski, 1882
(= *Agraecina striata* (Kulczynski))
Plate 33; Text Fig. 35d
Length: ♀: 4.5–5.5mm; ♂: 3–3.5mm.
Male similar to female. Genitalia quite distinct but the epigyne tends to vary. Two examples are illustrated.

DISTINGUISHING THE SPECIES

The genitalia offer the best means of identification. It should be noted that the epigynes may have the openings partly filled, and obscured, with a dark irregular exudate. This is illustrated on the right side of the *A. lusatica* epigyne (Text Fig. 34e) and on both sides of that of *A. cuprea* (Text Fig. 35c). The structures in the posterior half of the epigyne, although variable, are usually distinctive enough. Male palps should be examined with the specimens in the same position as the illustrations when the form of the palpal organs, together with the tibial apophysis, afford relatively easy identification. In case of difficulty, the overall size and the relative sizes of the eyes (*q.v.*) are a useful additional check, and *A. striata* has only two pairs of spines ventrally on metatarsus I.

DISTRIBUTION

A. brunnea and *A. proxima* are both widespread but the latter is much commoner. *A. inopina* is known only from southern England and *A. cuprea* from only a few, mainly coastal localities in the south. *A. lusatica* has been found only in one locality in Kent. *A. striata* is rather rare, being known from marshy areas in southern England and southwest Ireland.

Genus *Scotina* Menge, 1873

The three British species of this genus are similar to *Agroeca* but differ principally in the arrangement of the eyes and in the number of ventral spines on tibiae and metatarsi I (see Key to Genera, p. 80).

Scotina celans (Blackwall, 1841)
Plate 34; Text Fig. 35e
Length: ♀: 4–4.75mm; ♂: 2.5–3mm.
Male similar to female. The reddish abdomen is characteristic.

Scotina gracilipes (Blackwall, 1859)
Text Fig. 36a
Length: ♀ ♂: 2.5–3.5mm.
Differs from *S. celans* in having a dark brown-black abdomen and no clearly defined lighter median and lateral bands on carapace. Tibiae, metatarsi and tarsi I, II and III are dark brown in contrast to yellow femora.

Scotina palliardi (L. Koch, 1881)
Text Fig. 36b
Length: ♀ ♂: 2.5–3.5mm.
Rather similar to *S. gracilipes* with dark brown-black abdomen. The darkening on legs I, II and III sometimes more pronounced, especially in males.

DISTINGUISHING THE SPECIES

S. celans is normally recognizable by its reddish abdomen with distinct pattern, and well-defined carapace markings. The genitalia of all three species are quite distinct, despite individual variation.

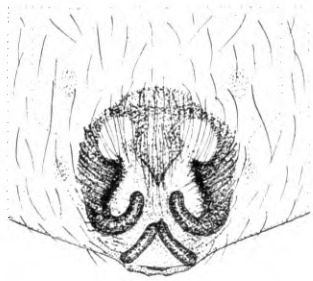
DISTRIBUTION

S. celans and *S. gracilipes* are both widely distributed, and fairly common. *S. palliardi* is rare and known only from a few localities in southern England. All three species are found on heathlands, and in woodland litter; *S. celans* and *S. palliardi* also on chalk grassland.

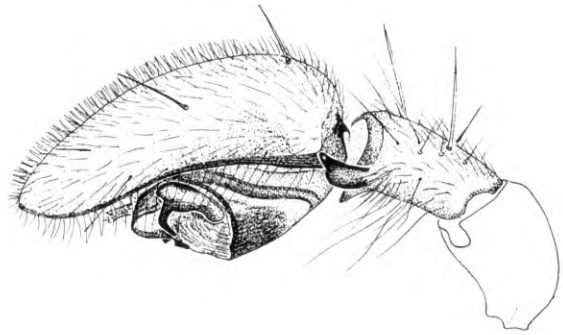
Text Figure 35

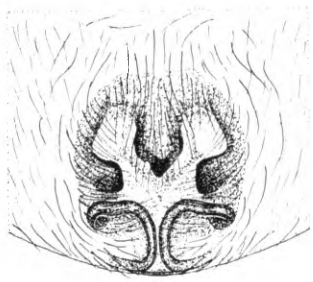
♀ epigynes

♂ palps

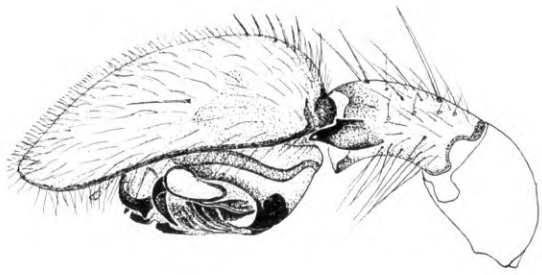


(a) *Agroeca proxima*





(b) *A. inopina*



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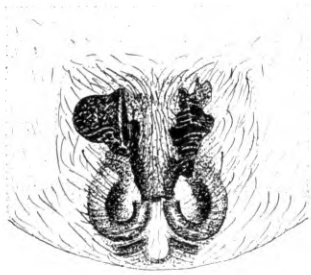
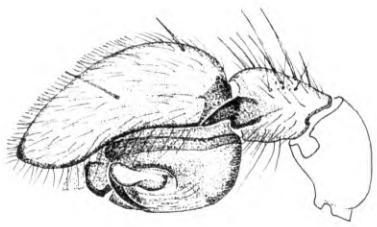
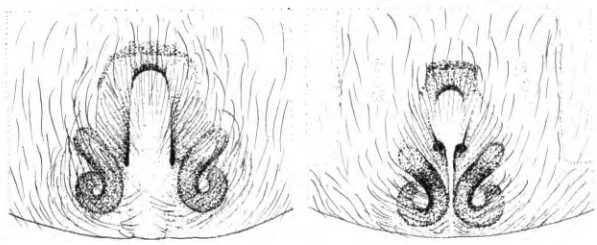
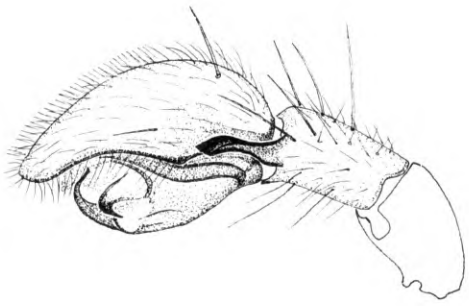


(c) *A. cuprea*





(d) *A. striata*



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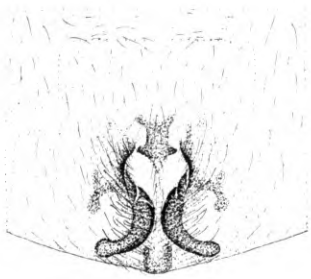
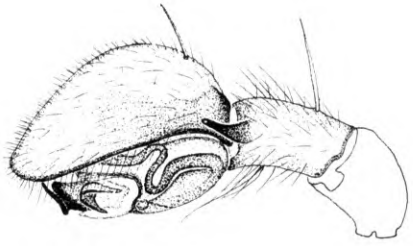


(e) *Scotina celans*



Genus *Liocranum* L. Koch, 1866

The single British species of this genus has a quite distinctive appearance.

Liocranum rupicola (Walckenaer, 1825)

Plate 35d; Text Fig. 36c

Length: ♀: 6–7.5mm; ♂: 5.5–6mm.

Male similar to female. Genitalia allow for easy identification.

DISTRIBUTION

L. rupicola is rather rare and mainly of southern distribution. Usually under stones in dry places; occasionally indoors.

Genus *Phrurolithus* C. L. Koch, 1839

The two British species of this genus are small spiders which bear some resemblance to *Micaria* (Gnaphosidae) (p. 78), especially when found running in sunshine. Chelicerae each bear, on the anterior face, a single spine which points forwards and slightly inwards. This is a useful character, but not always easily visible when the specimen is viewed from directly above. Males have an orange-brown scutum covering the entire dorsal side of the abdomen (Plate 36) the edges of which are not always visible in dorsal view or in fresh specimens.

Phrurolithus festivus (C. L. Koch, 1835)

Plate 36; Text Fig. 36d

Length: ♀ ♂: 2.5–3mm.

The male illustrated has a parasitic mite attached to the abdomen. Dorsal abdominal scutum becomes more obvious after prolonged preservation. Female similar to male, but abdomen larger and lacking scutum.

Phrurolithus minimus C. L. Koch, 1839

Text Fig. 36e

Length: ♀: 2.5–3.5mm; ♂: 2–2.5mm.

Carapace markings in this species tend to be obscure. Abdomen is reddish brown with less distinct markings than in *P. festivus*. Male has a shiny brown scutum covering the dorsal abdomen, more obvious in long preserved than in fresh specimens.

DISTINGUISHING THE SPECIES

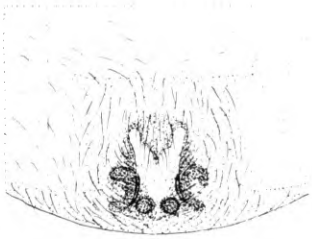
The genitalia are highly characteristic and make identification an easy matter.

DISTRIBUTION

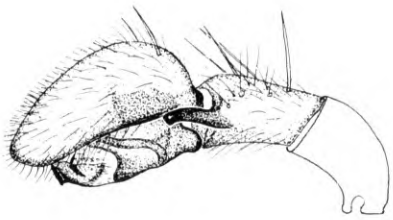
P. festivus is widely distributed and fairly common, whereas *P. minimus* is rare and known from only a few localities in the south, all on chalk grassland.

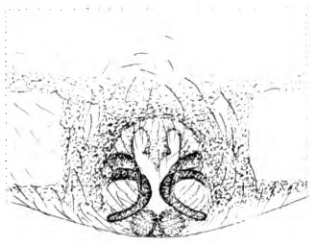
Text Figure 36

♀ **epigynes** ♂ **palps**

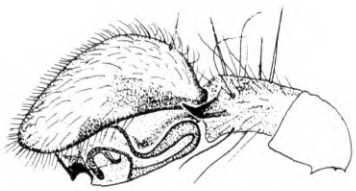


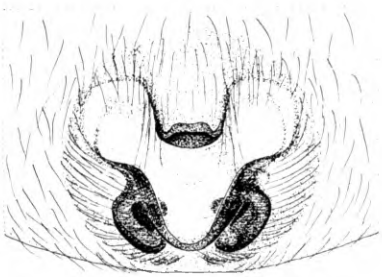
(**a**) *Scotina gracilipes*

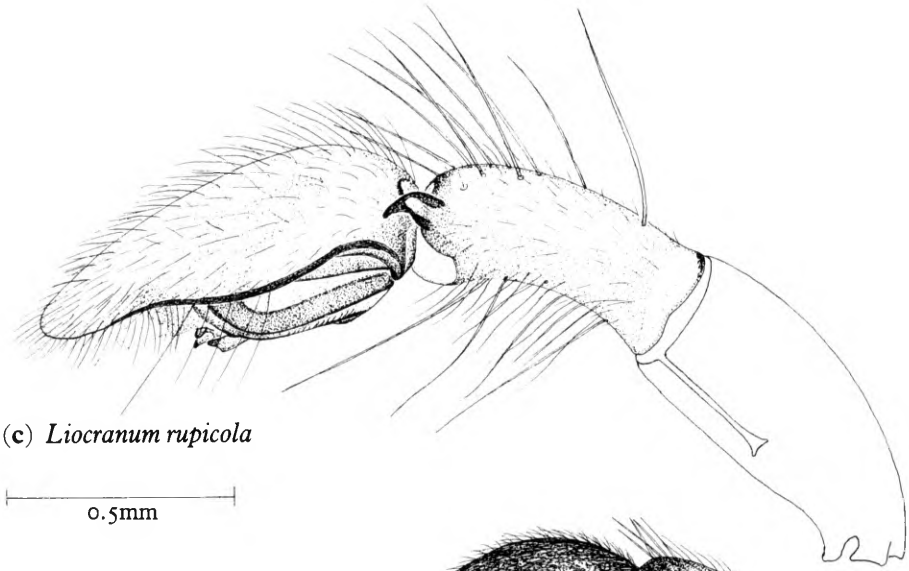




(**b**) *S. palliardi*

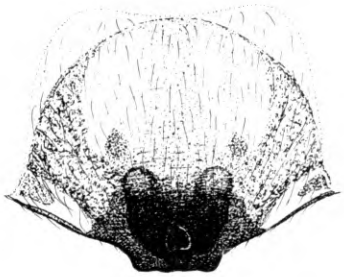


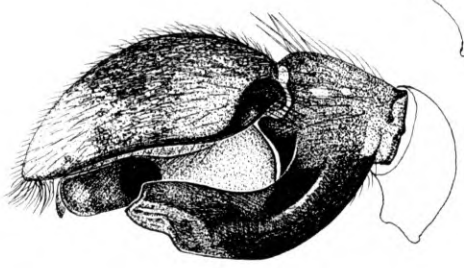




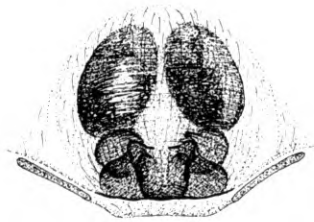
(**c**) *Liocranum rupicola*

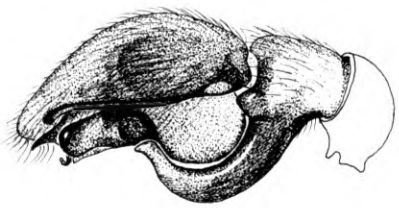
0.5mm





(**d**) *Phrurolithus festivus*





(**e**) *P. minimus*

Family ZORIDAE

There are four British species in this family of which *Zora* is the only representative genus. They have previously been assigned to the Clubionidae by some authors, and to the Ctenidae by others. All four British species of *Zora* have a similar and distinctive general appearance and the arrangement of the eyes is highly characteristic (see Key to the Families, p. 35 and Plate 37).

They hunt during the daytime, rather like the Lycosidae, and may be found on grass and low plants as well as on the ground and amongst leaf-litter.

Genus *Zora* C. L. Koch, 1848

A genus containing four British species.

Zora spinimana (Sundevall, 1833)
Plate 37; Text Fig. 37a
Length: ♀: 5–6.5mm; ♂: 4.5–5mm.
Males similar to females, but abdomen slimmer and markings more sharply defined.

Zora armillata Simon, 1878
Text Fig. 37b
Length: ♀: 4–6.5mm; ♂: 3.5–4mm.
Very similar to *Z. spinimana* in general appearance, but usually with fewer dark streaks on legs.

Zora nemoralis (Blackwall, 1861)
Text Fig. 37c
Length: ♀: 3.5–5.5mm; ♂: 3–4mm.
Similar to *Z. spinimana* but usually darker.

Zora silvestris Kulczynski, 1897
Text Fig. 37d
Length: ♀: 3.5–4mm; ♂: 3–4mm.
Similar to *Z. spinimana* but usually has a larger number of smaller blotches forming the abdominal pattern. The blotches tend to be dark greyish brown on a lighter greyish abdomen rather than the yellow and chocolate markings of *Z. spinimana*.

DISTINGUISHING THE SPECIES

The male palps are distinguished by consideration of the form of the tibial apophysis as well as the palpal organs. The epigynes, although variable, can be separated by the size and shape of the opening and relative size of the spermathecae and ducts which are usually easily visible. In addition, *Z. silvestris* has only two pairs of ventral spines on metatarsi I and II whereas the other species have three pairs.

DISTRIBUTION

Z. spinimana is widespread and common. *Z. nemoralis* is rare and perhaps slightly more frequent in the north, mainly in woods. *Z. armillata* and *Z. silvestris* are both rare and known from a few localities mainly in the southern half of England, in wet places and on heathland respectively.

Family ANYPHAENIDAE

This family, of which there is only one British representative in the genus *Anyphaena*, is close to the Clubionidae but is readily distinguished by the position of the tracheal spiracle (see Key to the Families, p. 35).

Genus *Anyphaena* Sundevall, 1833

A single British species in this genus.

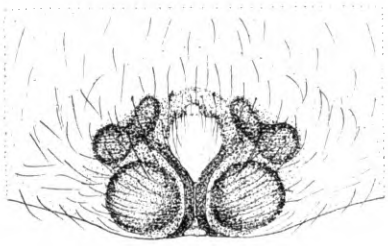
Anyphaena accentuata (Walckenaer, 1802)
Plates 35c, 38; Text Fig. 37e
Length: ♀: 4.5–7.5mm; ♂: 4–6.5mm.
General appearance of this spider and its genitalia makes confusion with any other species unlikely. Very occasionally abdomen may be uniformly dark, obscuring the normally characteristic markings.

DISTRIBUTION

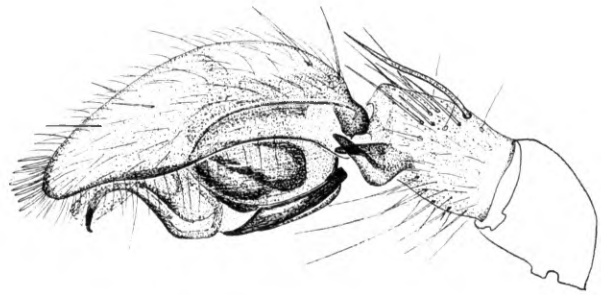
Widely though rather locally distributed, but may occur in large numbers. Normally beaten from trees and bushes.

Text Figure 37

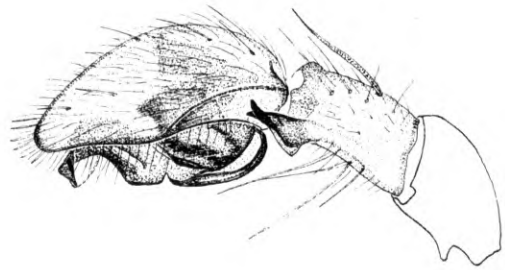
♀ **epigynes** ♂ **palps**



(**a**) *Zora spinimana*



(**b**) *Z. armillata*



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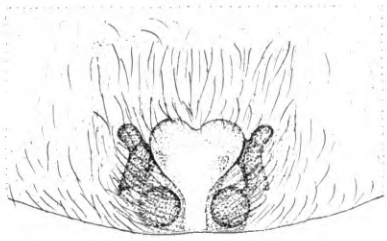
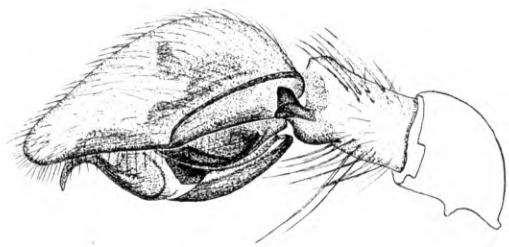
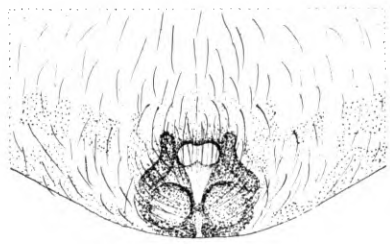
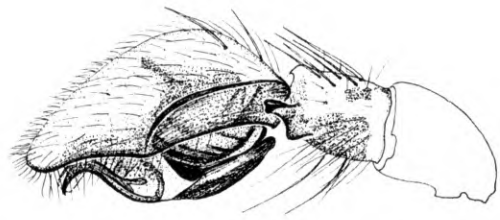


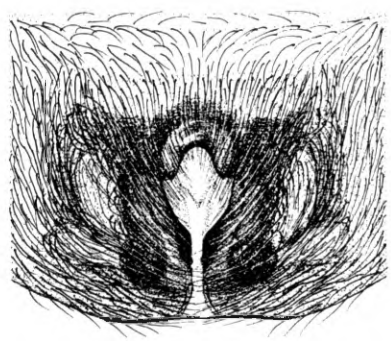
(**c**) *Z. nemoralis*





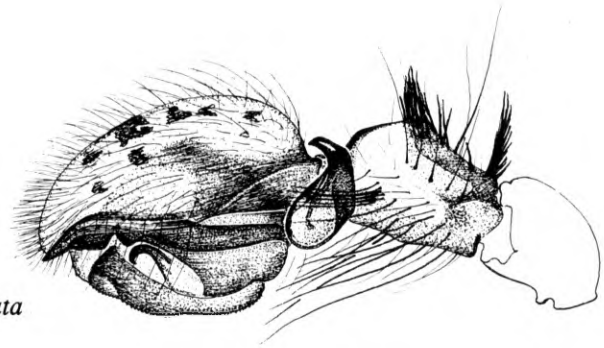
(**d**) *Z. silvestris*





0.5mm

(**e**) *Anyphaena accentuata*



Family EUSPARASSIDAE

Micrommata virescens, the only British representative of this family, has a striking appearance and could not be mistaken for any other species. Some tropical genera in this family have a distinctly crab-like stance.

Genus *Micrommata* Latreille, 1804

Although rather similar to spiders in the family Clubionidae, this genus also bears a slight resemblance to some of the Thomisidae. Compare for instance the illustration of *M. virescens* (Plate 39) with that of *Tibellus oblongus* (Plate 54).

Micrommata virescens (Clerck, 1757)

Plate 39; Text Fig. 38a

Length: ♀: 10–13mm; ♂: 7–8mm.

Both male and female subadults are similar in appearance to the female illustrated. Adult male, however, has a slimmer abdomen which is of a pale yellowish colour strikingly marked with a broad, scarlet median band and scarlet sides. The colours of both sexes fade very rapidly in spirit, becoming a more or less uniform pale yellowish brown. Genitalia highly characteristic.

DISTRIBUTION

Found on grasses, bushes and low branches of trees. Although this species may be widely distributed in England, it is encountered with any frequency only in the south, and even then adult males are a rare find.

Family THOMISIDAE

There are forty British species in this family, in nine genera. The majority have legs I and II longer and stouter than legs III and IV, have a crab-like stance, and can move forwards, backwards and sideways like a crab. The genus *Tibellus* is an exception, and *Philodromus* and *Thanatus* are not very obviously crab-like. In some genera (*Thomisus* and *Misumena*) the male is very different in size and colour from the female.

Typical spiders of this family catch their prey by lying in wait, in bushes, flowers or at ground level, with the first pair of legs held wide apart. An insect venturing near enough is then rapidly seized. Other members of the family (*Philodromus* spp.) are move active hunters.

The Thomisidae can exhibit a remarkable degree of camouflage. Their coloration and markings often exactly match the background on which they are found and, in different species, this may be earth particles, sand, roots, lichen, grasses or flowers. Furthermore, specimens of the same species, from differently coloured environments, may themselves vary widely in coloration. For example, *Thomisus onustus* (Plate 40) may be almost white, or yellowish, or may be suffused with variable amounts of pale pink to red. The vivid pink colour of the specimen illustrated is no exaggeration but, as with many species, it fades rapidly in spirit.

The epigynes of some species are rather ill-defined and exhibit considerable variation in shape and in degree of sclerotization. Male palps are all illustrated from a ventral aspect as they are more easily distinguished from this viewpoint. Also, it can be particularly difficult to view the undetached palp from the side unless some of the legs are removed.

TAXONOMIC NOTE

The British species here included in the Thomisidae have traditionally been recognized as falling into two subfamilies, the Misumeninae and Philodrominae, though some authors have used the name Thomisinae in place of Misumeninae. Other authors have considered these groups as meriting separate family status, such as Xysticidae and Philodromidae (Palmgren, 1950) or, more recently, Thomisidae and Philodromidae (Homann, 1975). After very careful consideration I can find no reasonable grounds for such upranking of the traditional subfamilies.

At a generic level, there have been proposals which would split *Xysticus* and *Philodromus* each into several genera (Schick, 1965). Whilst, in many genera, one recognizes relationships between various 'species groups', formally upgrading these to generic level could, as well as overburdening the nomenclature, possibly even obscure those relationships.

Key to Subfamilies and Genera of the THOMISIDAE

1 Legs I and II considerably stouter and longer than III and IV; lacking claw tufts and scopulae. No cheliceral teeth. Spiders very crab-like in appearance (Subfamily MISUMENINAE) 2

– Legs less different in thickness and length; claw tufts and scopulae present on legs I and II (less obvious in ♂). Chelicerae with one anterior tooth. Spiders less crab-like in appearance (Subfamily PHILODROMINAE) 7

2(1) Abdomen distinctly triangular, being widened and sharply truncated behind 3

– Abdomen globular, oval or elongated 4

3(2) Lateral eyes on pronounced conical protuberances ..... *Thomisus* (p. 98)

– Lateral eyes on shallow tubercles ..... *Pistius* (p. 98)

4(2) Trapezium formed by the four median eyes longer than broad. (It may be necessary to view the spider slightly from in front in order to judge or measure this.) 5

– Trapezium formed by the four median eyes square or broader than long 6

5(4) Numerous club-shaped hairs present either on front of carapace, abdomen, legs or all three of these areas ..... *Oxyptila* (p. 104)

– Only normal spines present on carapace, abdomen and legs. Spider green and brown in colour. *Diaea* (p. 98)

6(4) Anterior median eyes closer to the anterior laterals than to each other and considerably smaller than anterior laterals. Many strong spines present on carapace ..... *Xysticus* (p. 100)

– Anterior eyes roughly equidistant and equal sized. Fewer and weaker spines present on carapace ..... *Misumena* (p. 98)

7(1) Posterior row of eyes only slightly recurved, the medians being a little closer to the laterals than to each other ..... *Philodromus* (p. 108)

– Posterior row of eyes strongly recurved, the medians being equidistant or closer to each other than to the laterals 8

8(7) Abdomen long and cylindrical. Posterior median eyes much closer to one another than to posterior laterals ... *Tibellus* (p. 114)

– Abdomen only slightly elongated. Posterior median eyes only slightly closer to one another than to posterior laterals ..... *Thanatus* (p. 112)

Subfamily MISUMENINAE

Genus *Thomisus* Walckenaer, 1805

There is one British species in this genus. The conical protuberances carrying the lateral eyes and the overall shape make confusion with any other British species unlikely. Male and female differ considerably in general appearance.

Thomisus onustus Walckenaer, 1806
Plates 40, 45a; Text Fig. 38b
Length: ♀: 6–7mm; ♂: 2.5–3.5mm.

Considerable variation occurs in the colour, especially of females, which may be whitish, or yellow, or pale brownish, or suffused with pink or red to a variable degree. The pink colour fades rapidly in spirit. The female specimen illustrated (Plate 40) has the carapace tilted slightly upwards. Male is smaller and has a somewhat different appearance (Plate 45a). Epigyne is rather insignificant but usually easily recognizable; the male palp is characteristic.

DISTRIBUTION

A rare British species, found in southern counties only, usually on heather where it waits for its prey, often being concealed amongst the flowers.

Genus *Diaea* Thorell, 1869

The single British species in this genus has a highly characteristic appearance.

Diaea dorsata (Fabricius, 1777)
Plate 41; Text Fig. 38c
Length: ♀: 5–6mm; ♂: 3–4mm.

Immature specimens of either sex are as illustrated, but the green colour fades rapidly to yellowish in spirit. Adult females are similar; sometimes a little less green. Adult males have a rather darker brown folium on abdomen, a brownish carapace, and legs spotted with brown. The genitalia afford an additional aid to identification.

DISTRIBUTION

Found mainly in the southern half of the country where it seems to have a rather local distribution and occurs mostly on oak trees.

Genus *Misumena* Latreille, 1804

The single British species of this genus could not easily be mistaken for any other. The two sexes differ greatly in general appearance.

Misumena vatia (Clerck, 1757)
Plate 42; Text Fig. 38d
Length: ♀: 9–11mm; ♂: 3–4mm.

Coloration of females varies somewhat, from white or pale green to yellow, and the two pairs of crimson spots, shown on abdomen of the specimen illustrated, may be either totally absent, or joined together to form a pair of lateral crimson lines. Males, apart from being much smaller, have dark brown margins to carapace and a pair of dark brown longitudinal stripes on the slimmer, greenish white abdomen. Legs I and II are much darker, the femora being uniformly dark brown; other segments annulated. Epigyne and male palp as illustrated.

DISTRIBUTION

Mainly southern England and southern Ireland. Usually well concealed on flowers and shrubs where it ambushes visiting insects.

Genus *Pistius* Simon, 1875

The single British species in this genus has the general appearance of a rather dark brown *Thomisus*, as it has a truncated abdomen. However, the genitalia are closer to those of *Misumena*.

Pistius truncatus (Pallas, 1772)
Text Fig. 38e
Length: ♀: 7–9mm; ♂: 4–5mm.

Female, of which life-size illustration appears next to that of epigyne, is uniform mottled brown in colour. The smaller male superficially resembles that of *Thomisus onustus* (Plate 45a) but abdomen is a darker brown and shiny. Epigyne and male palp characteristic.

DISTRIBUTION

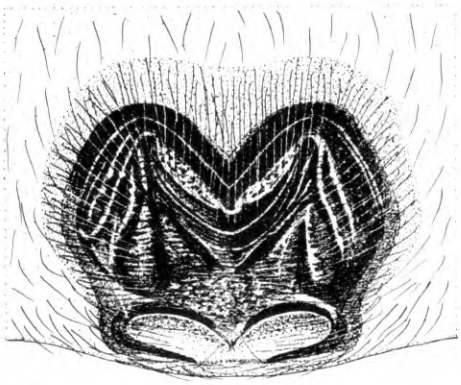
Recorded many years ago from one locality in southern England, and not so far rediscovered in this country.

Text Figure 38

♀ epigynes

♂ palps

(a) *Micrommata virescens*



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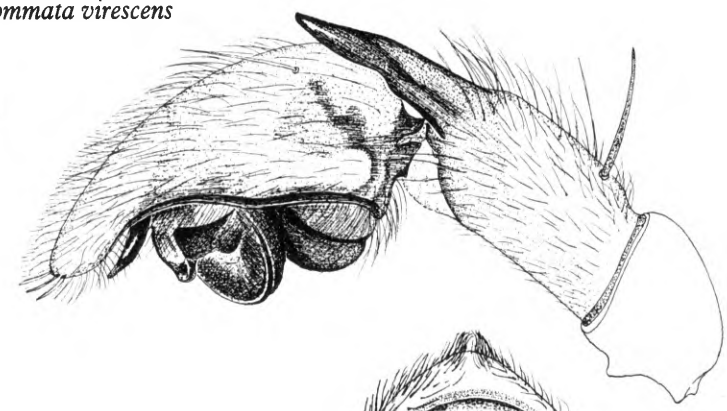
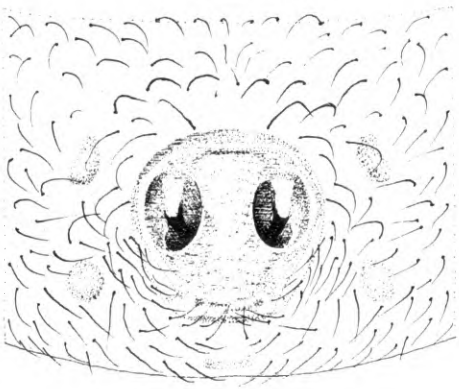


(b) *Thomisus onustus*



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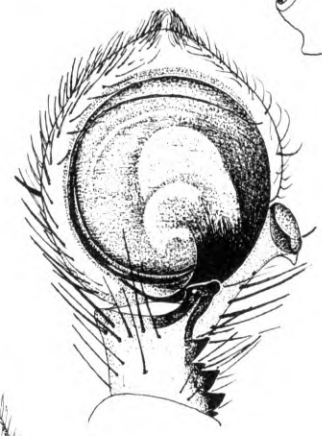
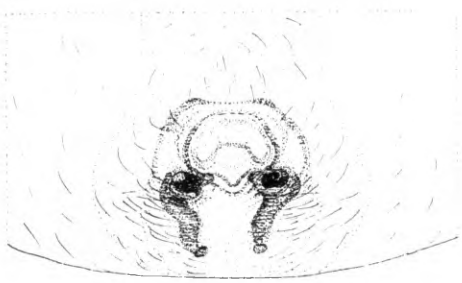
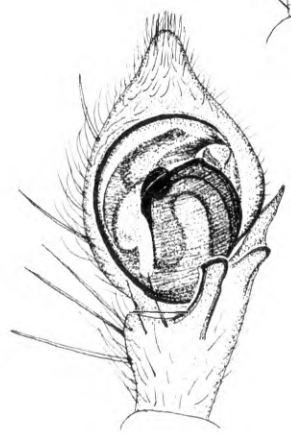
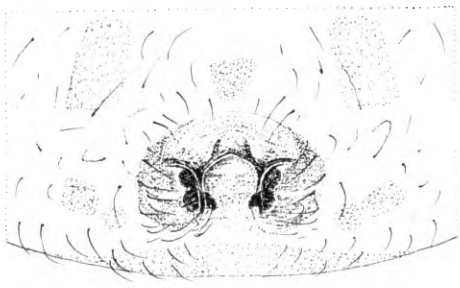


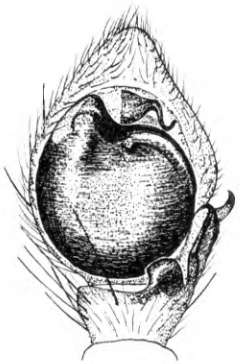
(c) *Diaea dorsata*



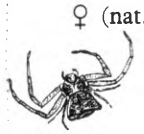


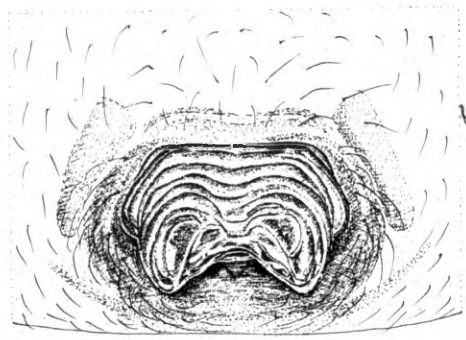
(d) *Misumena vatia*



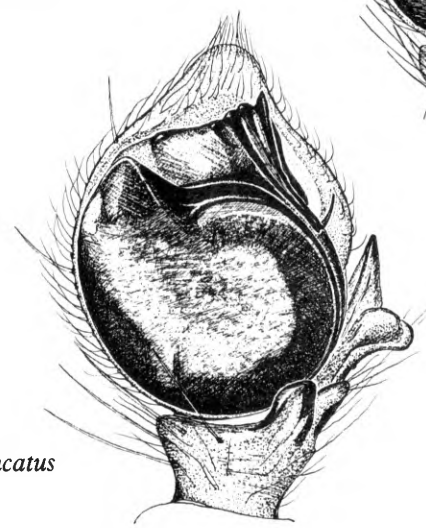


♀ (nat. size)





(e) *Pistius truncatus*



Genus *Xysticus* C. L. Koch, 1835

There are twelve British species in this genus, and all have a broadly similar and very crab-like appearance (Plates 43–46). They are not quite as squat as spiders of the genus *Oxyptila* and have no club-shaped spines as do the latter. Coloration within a given species is apt to vary and often closely matches that of the environment. Although the colours tend to be rather earthy, some species are very attractively marked, particularly the males.

Xysticus cristatus (Clerck, 1757)

Plates 43, 44; Text Fig. 39a

Length: ♀: 6–8mm; ♂: 3–5mm.

Note the sexual dimorphism, the male having a smaller abdomen and generally much richer markings. On the carapace, compare the length of the central wedge-shaped marking with that of *X. audax* (Plate 46b), and note that it ends in a well-defined darker point in *X. cristatus*.

Xysticus audax (Schrank, 1803)

Plate 46b; Text Fig. 39b

Length: ♀: 6–8mm; ♂: 3–5mm.

This species is very similar to *X. cristatus* but the markings on abdomen and carapace are darker and more pronounced. The central wedge-shaped mark on carapace does not extend as far behind the eyes as in *X. cristatus*, and does not end in a well-defined dark point (*cf.* Plates 43, 44).

(NOTE. Some authors have suggested that *X. audax* is only a variety of *X. cristatus*. However, I am certain that it is a distinct species.)

Xysticus kochi Thorell, 1872

Text Fig. 39c

Length: ♀: 6–8mm; ♂: 4–5mm.

Similar to *X. cristatus*, but usually a little darker.

Xysticus erraticus (Blackwall, 1834)

Plate 45d; Text Fig. 39d

Length: ♀: 6–8mm; ♂: 4–5mm.

Male is rather similar to that of *X. bifasciatus* (Plate 46c).

Xysticus lanio C. L. Koch, 1824

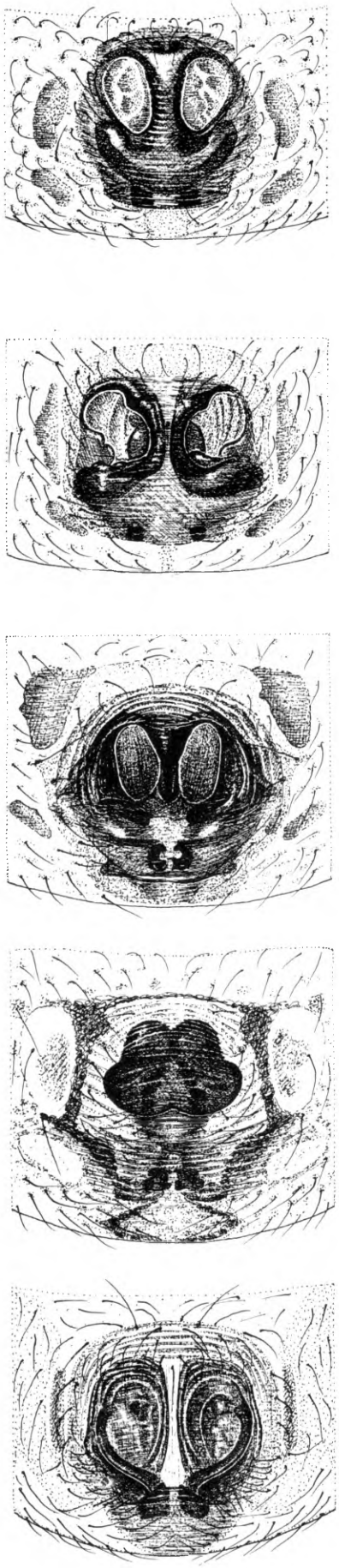
Text Fig. 39e

Length: ♀: 6–7mm; ♂: 4–5mm.

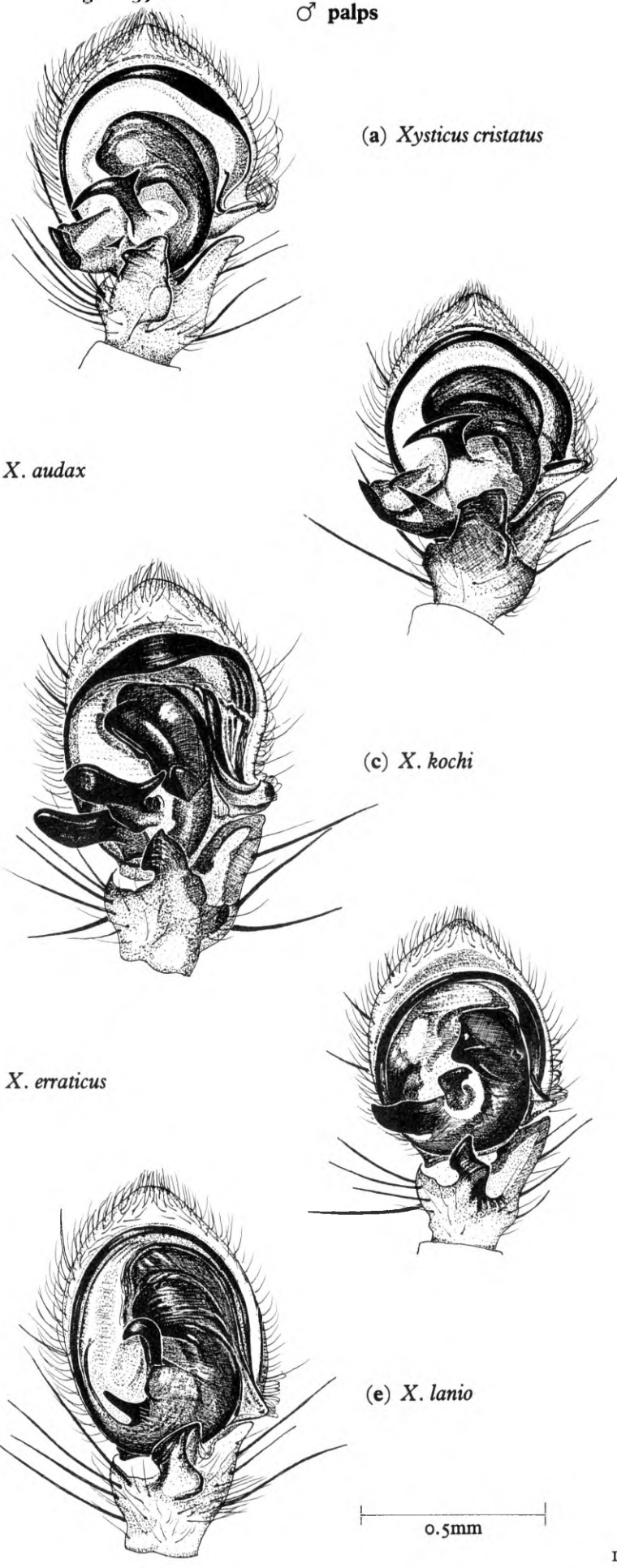
Rather similar to *X. cristatus* but usually having a reddish hue, and with central wedge on carapace rather ill-defined.

Text Figure 39

♀ **epigynes**



♂ **palps**



(**a**) *Xysticus cristatus*

(**b**) *X. audax*

(**c**) *X. kochi*

(**d**) *X. erraticus*

(**e**) *X. lanio*

0.5mm

Xysticus ulmi (Hahn, 1831)
Text Fig. 40a
Length: ♀: 5–8mm; ♂: 3–4mm.
Similar to *X. cristatus*.

Xysticus bifasciatus C. L. Koch, 1837
Plate 46c; Text Fig. 40b
Length: ♀: 7–10mm; ♂: 6–7mm.
Females similar to males, but markings rather less well-defined.

Xysticus luctator L. Koch, 1870
Text Fig. 40c
Length: ♀: 7–10mm; ♂: 6–7mm.
Similar to *X. bifasciatus*.

Xysticus sabulosus (Hahn, 1831)
Plate 45c; Text Fig. 40d
Length: ♀: 7–9mm; ♂: 5–6mm.
The rather greyish abdomen is characteristic and may sometimes be quite dark. The blotchy markings on legs are often very distinct.

Xysticus luctuosus (Blackwall, 1836)
Text Fig. 40e
Length: ♀: 7–8mm; ♂: 4–5mm.
Overall appearance similar to *X. cristatus* but markings in both male and female usually poorly defined, the male being rather dark brown.

Xysticus acerbus Thorell, 1872
Text Fig. 41a
Length: ♀: 7–8mm; ♂: 4–5mm.
Similar to *X. luctuosus*.

Xysticus robustus (Hahn, 1831)
Plate 46d; Text Fig. 41b
Length: ♀: 7–10mm; ♂: 5–6mm.
The appearance of male is highly characteristic. Female has a rather lighter, less reddish carapace and a greyish brown abdomen.

DISTINGUISHING THE SPECIES

X. cristatus is by far the commonest and most widespread species in this genus, and in all probability many specimens of this will be collected before coming across any of the others. The opportunity should be taken to note the variation in depth and hue of colour, within the same basic pattern, in this species. Also epigynes and male palps of a series of specimens should be compared as they vary somewhat in shape and often greatly in the degree of pigmentation. Having studied such a series of *X. cristatus* (and kept the specimens for reference) it is then easier to distinguish from *X. audax*. The difference in the central wedge-shaped mark on the carapace which is illustrated (Plates 43, 44, 46b) has been discussed already, and seems fairly reliable. The illustrations of epigynes and male palps of *X. cristatus* and *X. audax* are of typical examples and in these illustrations one can see several points of difference. Unfortunately not all specimens are entirely typical and the variability, already alluded to, can cause problems in identification. Epigynes of both species have a pair of openings separated by a septum. Note the way in which the septum curves around to the anterior margin of the openings; in *X. cristatus* the curve is smooth, but it is not so in *X. audax*. The male palpal organs of both species have a projecting T-shaped apophysis, which varies somewhat, and (below and to the left of this in the drawings) a median apophysis on which is a tooth. These structures offer the best means of identification.

Females of *X. kochi* and *X. lanio* also have an epigyne divided by a septum. In *X. kochi* this takes the form of a tapering tongue extending backwards from the anterior edge, whereas in *X. lanio* the septum is pale and ill-defined and the openings are filled with a pair of reddish brown structures. Both *X. kochi* and *X. lanio* have five or six pairs of ventral spines on tibiae I – usually only four in *X. cristatus* and *X. audax* – and whilst the female of *X. kochi* has the appearance of a rather dark *X. cristatus*, *X. lanio* usually has a distinctly reddish appearance. Male palps of these two species are quite distinct.

X. ulmi has genitalia, particularly male palps, which are similar to those of *X. lanio* but there should be no trouble in separating them. In addition, *X. ulmi* resembles *X. cristatus*, and also *X. kochi*, in general appearance whereas *X. lanio* is characteristically reddish in colour.

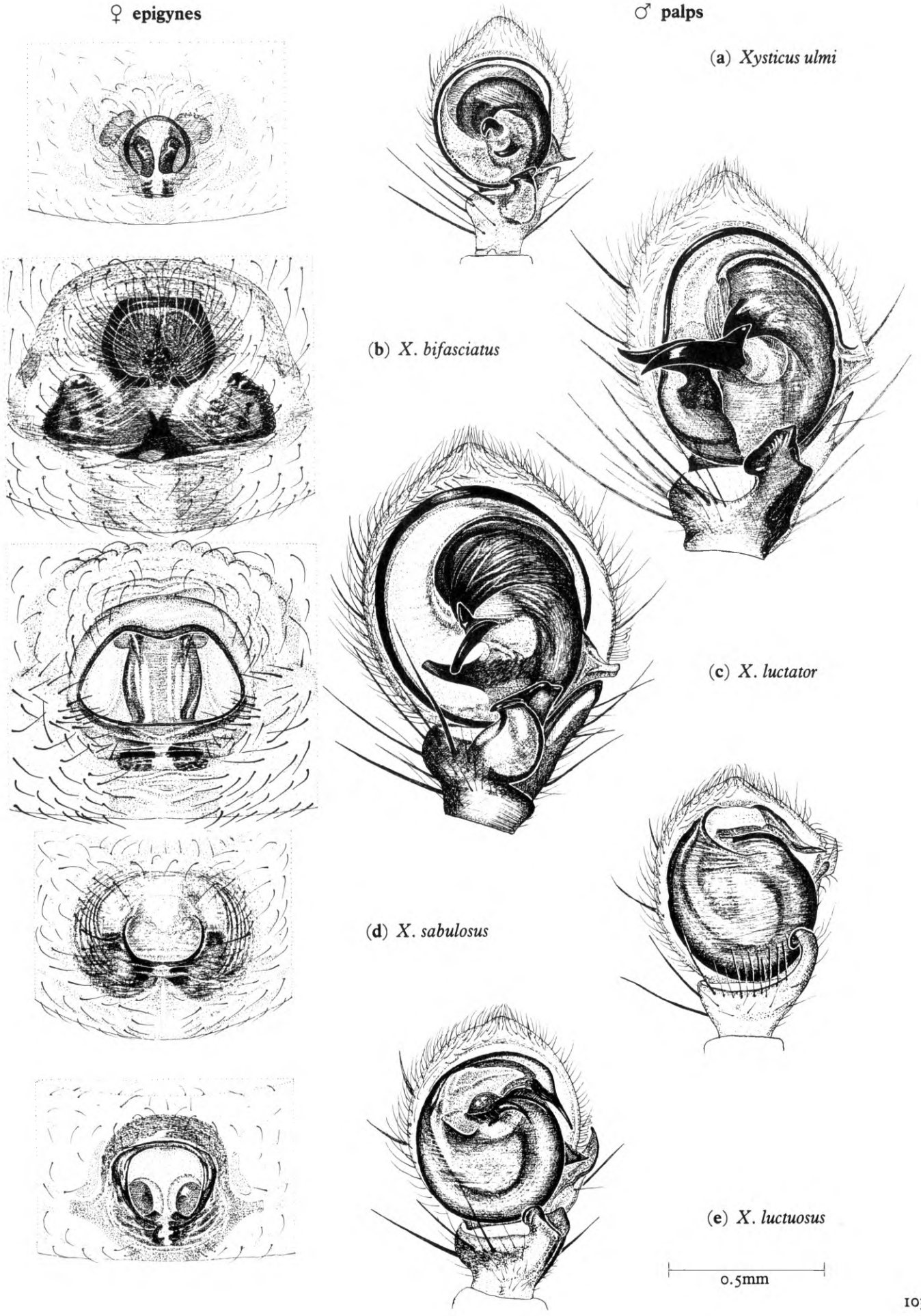
X. erraticus, *X. bifasciatus*, *X. luctator* and *X. robustus* present no problems.

X. sabulosus, *X. luctuosus* and *X. acerbus* have rather similar genitalia, but with careful comparison of the form and relative proportions of their structure they are fairly easily distinguished.

DISTRIBUTION

X. cristatus is by far the commonest species and is widely distributed, being found on bushes, low vegetation and in undergrowth. *X. luctator*, *X. acerbus* and *X. robustus* are rare and known only from a few localities in the South of England. The remaining species are fairly widely distributed. *X. audax* and *X. kochi* occur in similar situations to *X. cristatus*, but *X. audax* is usually higher on bushes, gorse, and the like; *X. erraticus* is usually found among low vegetation; *X. ulmi* shows a preference for swampy areas; *X. lanio* occurs more often on bushes in wooded areas as does the rarer *X. luctuosus*. Both *X. sabulosus* and *X. bifasciatus* occur at ground level and are rather uncommon, the former mainly on heathland and the latter mostly on chalk grassland.

Text Figure 40



Genus *Oxyptila* Simon, 1864

The nine British species in this genus have a rather squat appearance, are distinctly crab-like and have a number of club-shaped hairs which are rather variable in distribution on carapace, abdomen and legs in the different species. They are found among low vegetation, etc., and in general appear rather sluggish and retiring in their habits. The markings and coloration of some species can be very attractive.

Oxyptila blackwalli Simon, 1875

Text Fig. 41c

Length: ♀: 3–4mm; ♂: 2–3mm.

This species is, apart from a paler central band on carapace, almost completely dark greyish brown with darker blotches and is clothed with a large number of conspicuous club-shaped hairs.

Oxyptila scabricula (Westring, 1851)

Text Fig. 41d

Length: ♀: 3–4mm; ♂: 2–3mm.

This is a uniformly dark coloured species clothed with a large number of club-shaped hairs. Usually coated with particles of soil which render it even less conspicuous.

Oxyptila nigrita (Thorell, 1875)

Text Fig. 41e

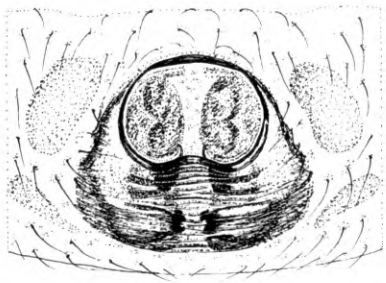
Length: ♀: 3–4mm; ♂: 2–3mm.

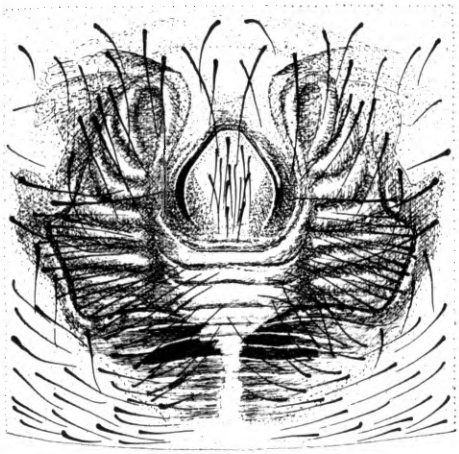
Similar in general appearance to *O. blackwalli* and *O. scabricula*.

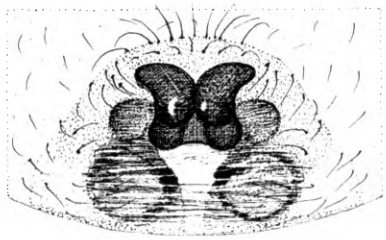
Text Figure 41

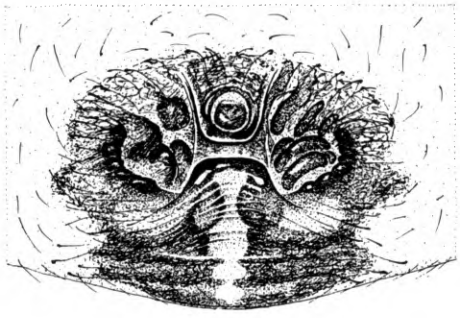
♀ **epigynes**

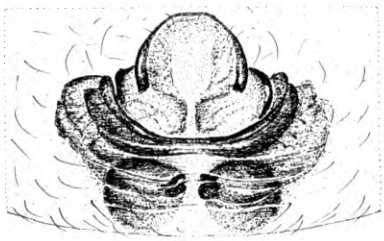
♂ **palps**



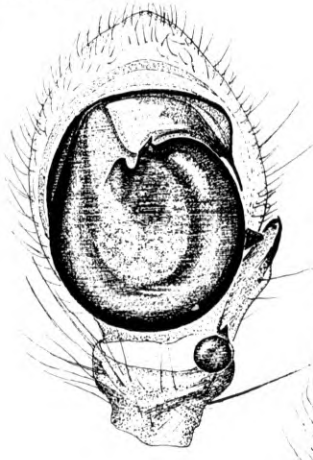






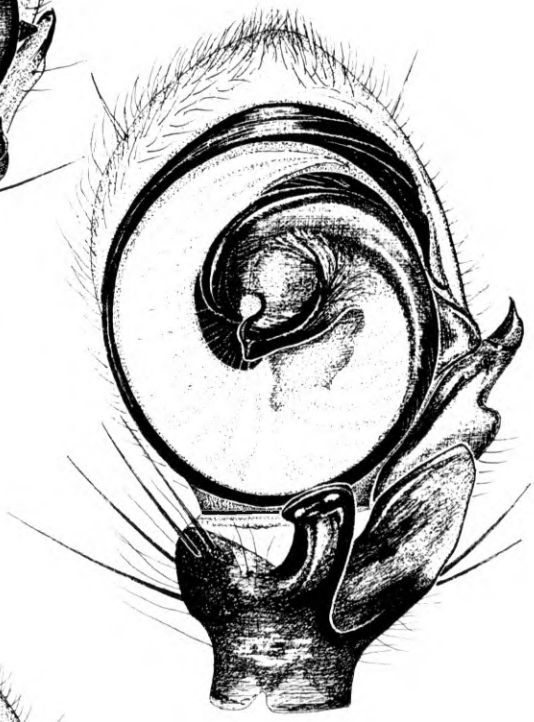


(**a**) *Xysticus acerbus*

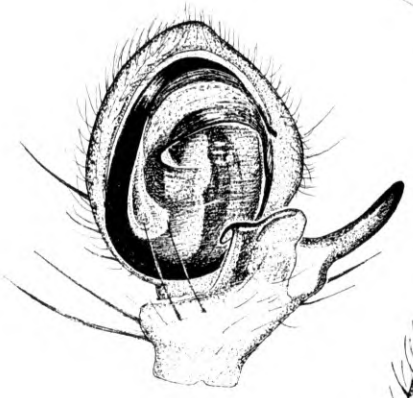


0.5mm

(**b**) *X. robustus*

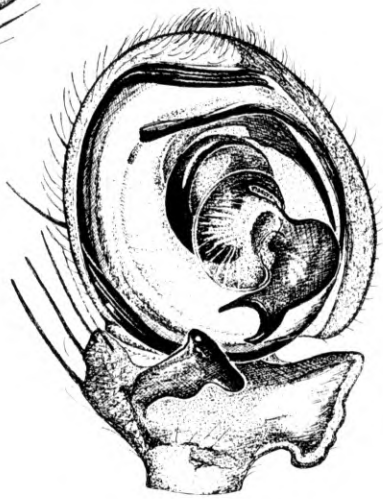


(**c**) *Oxyptila blackwalli*



0.5mm

(**d**) *O. scabricula*



(**e**) *O. nigrita*

Oxyptila sanctuaria (O. P.-Cambridge, 1871)
Plate 47; Text Fig. 42a
Length: ♀: 3–4mm; ♂: 2–3mm.
Male darker than female and with fewer club-shaped hairs.

Oxyptila praticola (C. L. Koch, 1837)
Plate 48; Text Fig. 42b
Length: ♀: 3–4mm; ♂: 2.5–3mm.
Female similar to male, but with larger abdomen having a less well-defined pattern.

Oxyptila trux (Blackwall, 1846)
Text Fig. 42c
Length: ♀: 4–5mm; ♂: 3–4mm.
Similar in general appearance to *O. atomaria* (Plate 50). Males darker.

Oxyptila simplex (O. P.-Cambridge, 1862)
Plate 49; Text Fig. 42d
Length: ♀: 4–5mm; ♂: 3–4mm.
Female similar to *O. atomaria* (Plate 50) but usually paler.

Oxyptila atomaria (Panzer, 1810)
Plate 50; Text Fig. 42e
Length: ♀: 4–6mm; ♂: 3–4mm.
Male similar to female, but sides of carapace darker and abdomen smaller and a little darker.

Oxyptila brevipes (Hahn, 1831)
Text Fig. 43a
Length: ♀: 3–4mm; ♂: 2–3mm.
Female has brownish carapace and pale abdomen marked with black bars; male darker.

DISTINGUISHING THE SPECIES

Males are easily distinguished by their palps, but to identify females the epigynes require more careful examination as they are somewhat variable both in shape and in the degree of pigmentation and overall definition.

O. blackwalli, *O. scabricula* and *O. nigrita* are easily separated from the remaining species by virtue of their general dark coloration and liberal covering of clavate hairs, and these three species have epigynes which are quite different from each other.

O. sanctuaria has a fairly characteristic appearance, even though the epigyne may be poorly differentiated, and *O. praticola* has both a distinctive general appearance and epigyne. Confusion is also unlikely with *O. brevipes* females.

O. trux, *O. simplex* and *O. atomaria* require the most care. The scape projecting from the anterior margin varies somewhat in size, shape and angle of projection, and the whole epigyne may sometimes be so pale and ill-defined that very close scrutiny is needed to make out any detail at all.

DISTRIBUTION

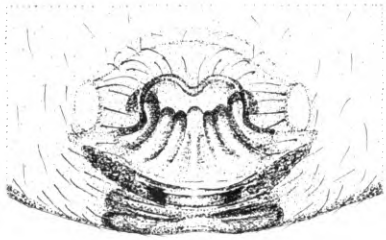
O. trux and *O. atomaria* are widespread and common. *O. praticola* is not met with as frequently although it is fairly widespread. The species *O. brevipes*, *O. sanctuaria* and *O. simplex* appear even less common, especially in the north, and *O. blackwalli*, *O. scabricula* and *O. nigrita* are rather rare and appear to be confined to the more southern counties. *O. sanctuaria* and *O. nigrita* are sometimes abundant on chalk grassland, and *O. scabricula* occurs mainly on heathland, but the other species occupy a wider range of habitats.

Text Figure 42

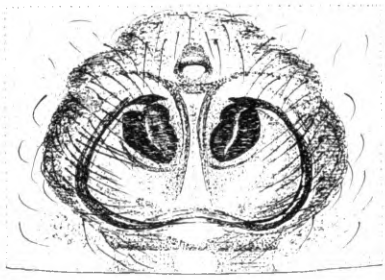
♀ **epigynes**

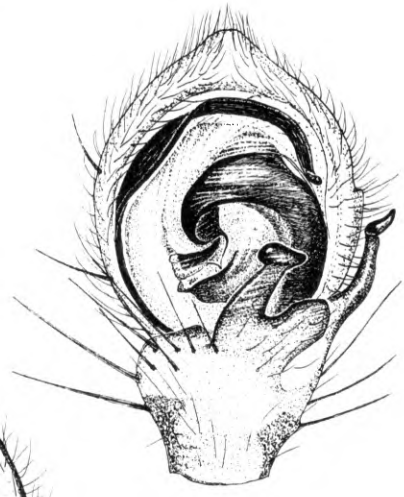
♂ **palps**

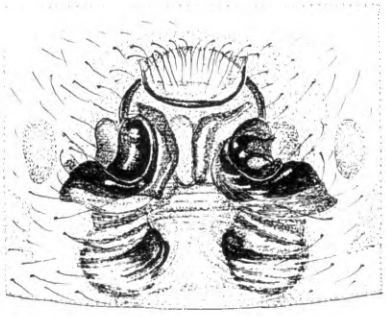
(**a**) *Oxyptila sanctuaria*



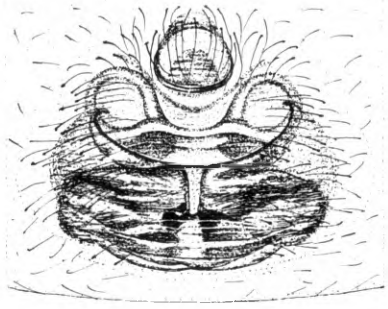
(**b**) *O. praticola*



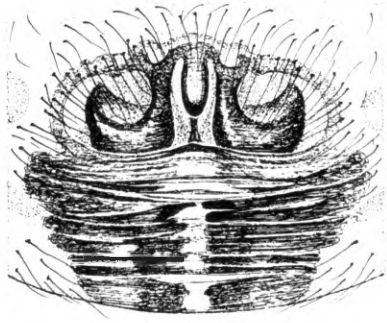




(**c**) *O. trux*



(**d**) *O. simplex*



(**e**) *O. atomaria*

0.5mm

Subfamily PHILODROMINAE

Genus *Philodromus* Walckenaer, 1825

The eleven British species in this genus have rather long legs, fairly equal in length, and a more or less oval abdomen which is wider behind in females and rather more elongated in males. They are not as markedly crab-like as the preceding genera (*Oxyptila*, *Xysticus*) and they run and move with greater speed and agility. Apart from *P. margaritatus*, which occurs on tree trunks, and *P. fallax* which is found on sand-dunes, the other species are usually collected from low vegetation, sometimes being found concealed between a pair of leaves loosely held together by silk strands.

Most of the species have a similar, and variable general appearance and careful examination of the genitalia is necessary for identification.

Philodromus dispar Walckenaer, 1825

Text Fig. 43b

Length: ♀: 4–5mm; ♂: 4mm.

Female rather similar to *P. cespitum* (Plate 51), but paler with little or no red in the abdominal pattern. Male similar to that of *P. aureolus* (Plate 45b) but often almost completely black.

Philodromus aureolus (Clerck, 1757)

Plate 45b; Text Fig. 43c

Length: ♀: 5–6mm; ♂: 4mm.

Female indistinguishable in general appearance from *P. cespitum* (Plate 51); abdomen often uniformly pale beige dorsally.

Philodromus praedatus O. P.-Cambridge, 1871

Text Fig. 43d

Length: ♀: 5–6mm; ♂: 3.5–4mm.

Very similar to *P. aureolus* and *P. cespitum*; usually, but not always, paler.

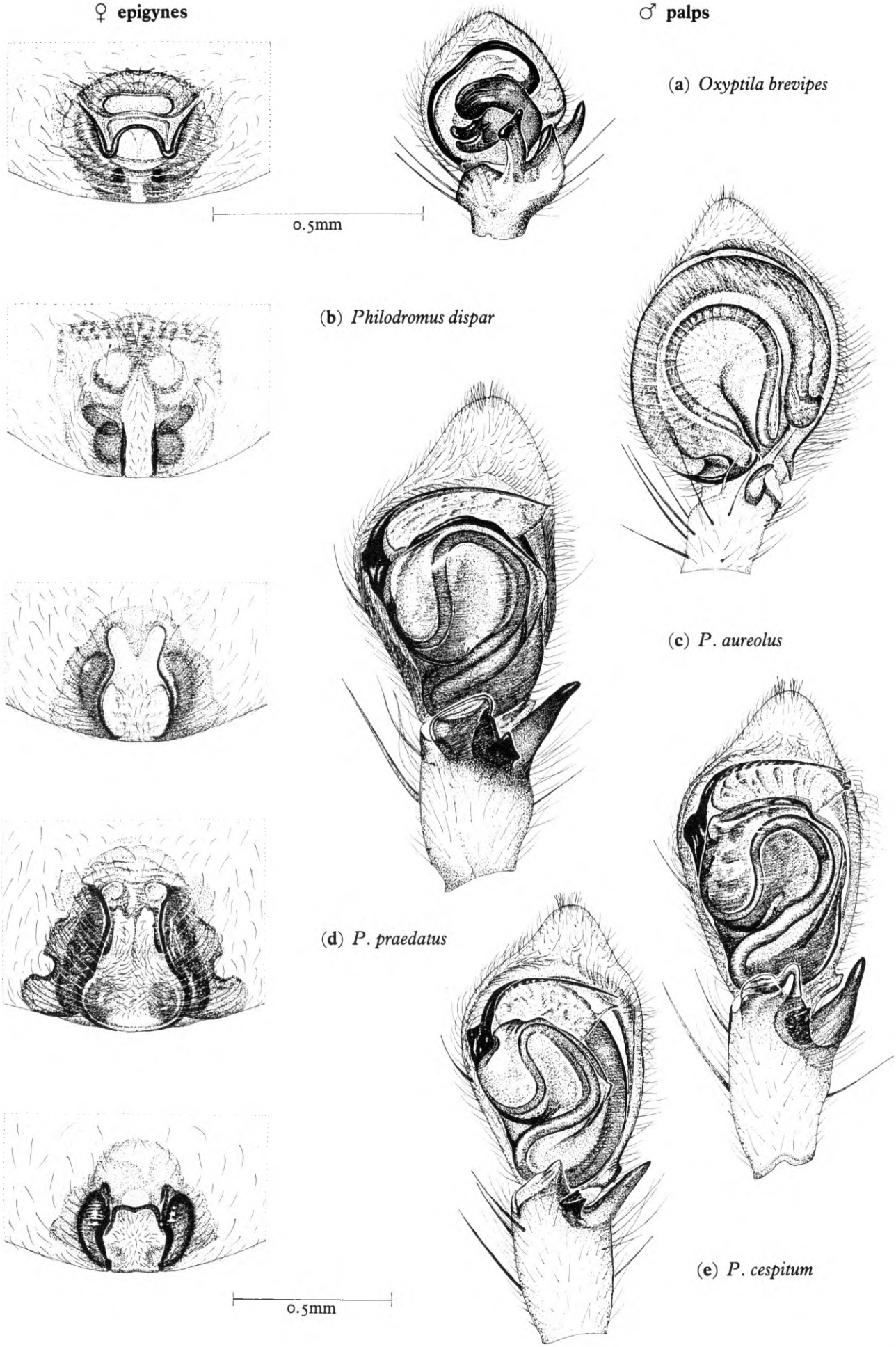
Philodromus cespitum (Walckenaer, 1802)

Plate 51; Text Fig. 43e

Length: ♀: 5–6mm; ♂: 4mm.

Females vary both in the depth of colour and in the amount of red in the abdominal pattern; often uniformly pale beige dorsally. Male similar to that of *P. aureolus* (Plate 45b).

Text Figure 43



Philodromus buxi Simon, 1884
Text Fig. 44a
Length: ♀: 5–7mm; ♂: 4mm.
General appearance as for *P. aureolus* and *P. cespitum*.

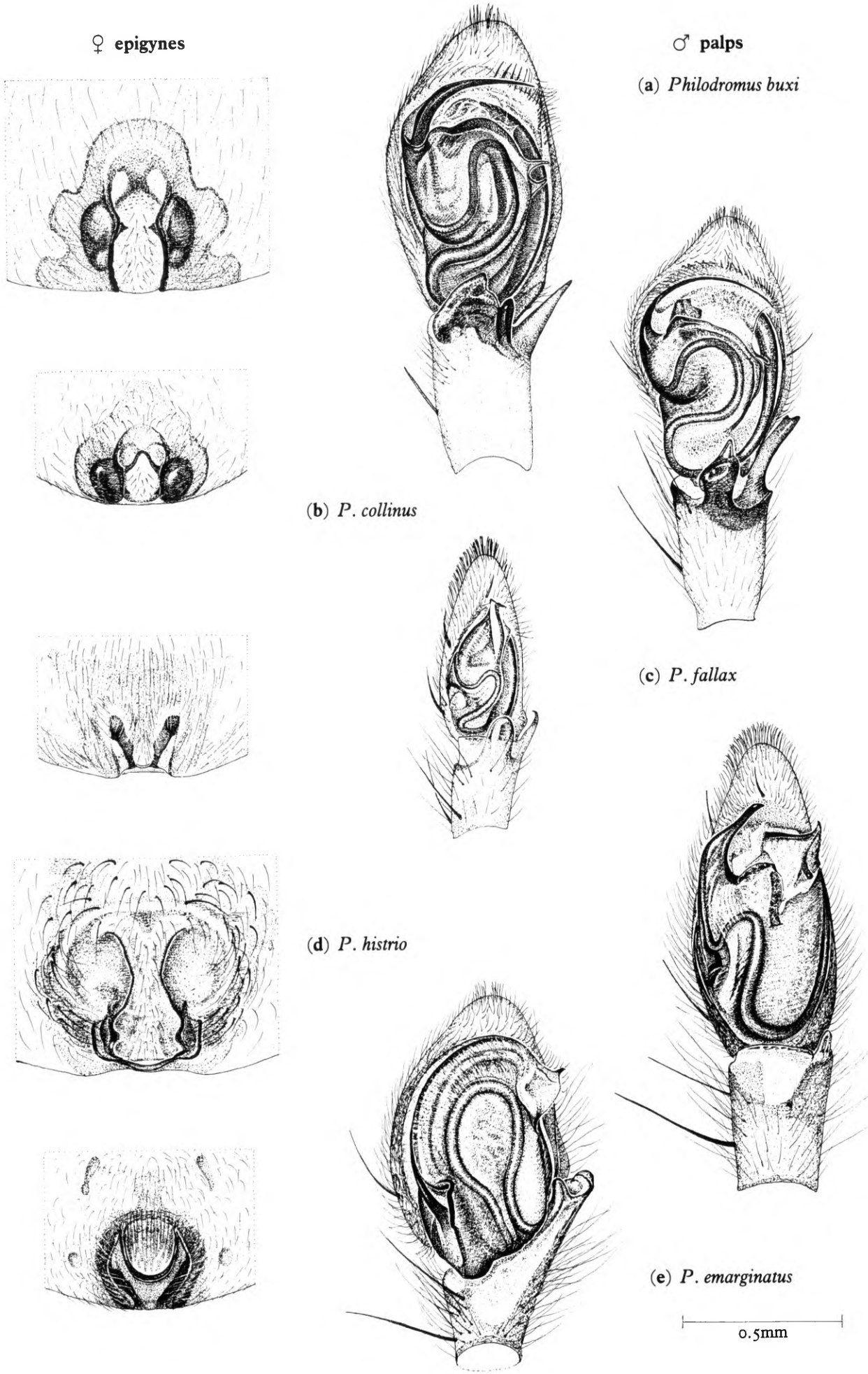
Philodromus collinus C. L. Koch, 1835
Text Fig. 44b
Length: ♀: 4–5mm; ♂: 3–3.5mm.
General appearance as for *P. aureolus* and *P. cespitum*.

Philodromus fallax Sundevall, 1833
Plate 52; Text Fig. 44c
Length: ♀: 4.5–6mm; ♂: 4–5mm.
The sandy coloration is characteristic and similar in male and female, although the male has a smaller abdomen and is a little darker. Epigyne is often obscured by light hairs.

Philodromus histrio (Latreille, 1819)
Plate 46a; Text Fig. 44d
Length: ♀: 6–7mm; ♂: 5–6mm.
Sexes similar in colour, but the male is a little darker.

Philodromus emarginatus (Schrank, 1803)
Text Fig. 44e
Length: ♀: 5–6mm; ♂: 4–5mm.
General appearance as for *P. aureolus* and *P. cespitum* but with rather duller cream and pinkish brown markings which are darker in males.

Text Figure 44



Philodromus rufus Walckenaer, 1825
Text Fig. 45a
Length: ♀: 3.5–4mm; ♂: 3mm.
Similar to *P. aureolus* and *P. cespitum* but paler and smaller.

Philodromus margaritatus (Clerck, 1757)
Text Fig. 45b
Length: ♀: 5–6mm; ♂: 4–5mm.
A life-size illustration of male appears next to that of its palp. The markings in both male and female are dark brown to black on a whitish background and, although very clear in males, tend to be more mottled in females.

DISTINGUISHING THE SPECIES

The only real difficulty is with males of *P. aureolus*, *P. praedatus*, *P. cespitum*, *P. buxi* and *P. collinus*. Of these *P. aureolus* and *P. cespitum* are common and almost certain to be encountered first. Study of the tibial apophysis and the form and disposition of palpal organs in these two species should permit identification with confidence. It is a good plan to keep a few palps of these two species in a reference collection so that they can be compared, directly under the microscope, with future material collected. This practice will enhance the usefulness of the illustrations in the event of the other rarer species turning up.

DISTRIBUTION

P. aureolus and *P. cespitum* are both widely distributed and by far the commonest species of this genus. *P. dispar* is fairly common, especially in the South of England but its range does not appear to extend into Scotland. *P. fallax* is widespread in England and Wales but only occurs in coastal sandy areas, such as in dunes, where its colour and markings make it rather difficult to find. *P. emarginatus* has a widespread but rather local distribution, and is usually found on conifers, sometimes in large numbers. *P. histrio* occurs on heather and other low plants and, although widespread throughout the country, is an uncommon species except on southern heathland. *P. rufus* and *P. collinus* are southern woodland species and are rare. Of the remaining species – *P. praedatus* and *P. buxi* are apparently very rare and so far known only from a few, mainly southern, localities, although they may well have been overlooked in the past, and *P. margaritatus* is also rare, found mainly on tree trunks in the south, but also recorded once from Scotland.

Genus *Thanatus* C. L. Koch, 1837

There are only two British species in this genus. They are not particularly crab-like in appearance.

Thanatus striatus C. L. Koch, 1845
Plate 53; Text Fig. 45c
Length: ♀: 4–5mm; ♂: 3–4mm.
This spider has an unmistakable appearance. Males are similar to females but very slightly darker.

Thanatus formicinus (Clerck, 1757)
Text Fig. 45d
Length: ♀: 7–9mm; ♂: 5–7mm.
A life-size illustration of female appears next to that of its epigyne. Overall colour is brownish with a conspicuous dark brown lanceolate mark on abdomen followed by a pair of longitudinal dark lines. Males are similar.

DISTINGUISHING THE SPECIES

The size, overall appearance and genitalia make confusion of these two impossible.

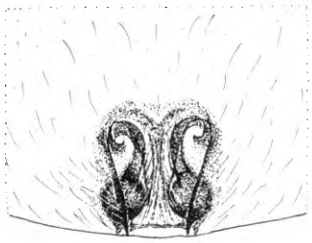
DISTRIBUTION

T. striatus is probably widely distributed throughout England and, although it may occur frequently in some areas, as for example on grassland on sandy soil in Sherwood Forest, and on wet heathland and in fens, it is generally rather uncommon. *T. formicinus* is very rare and known from only two southern localities, both on wet heathland.

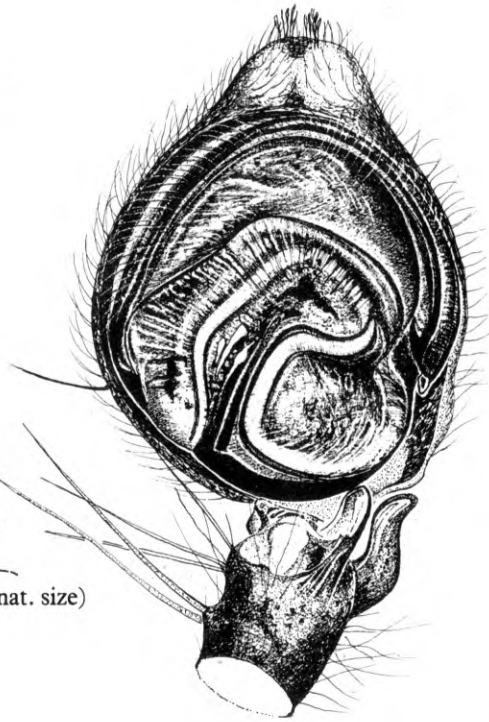
Text Figure 45

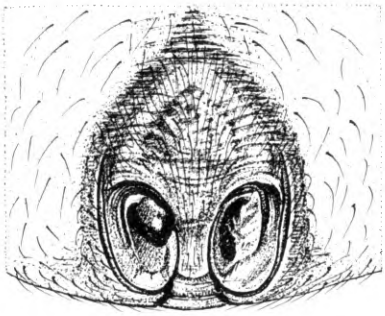
♀ **epigynes**

♂ **palps**

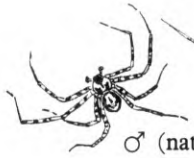


(**a**) *Philodromus rufus*



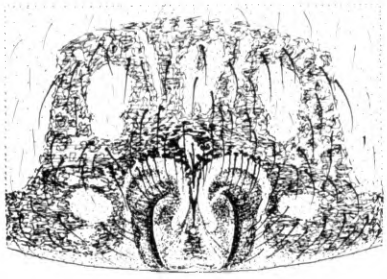


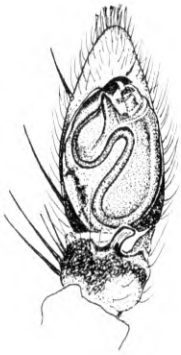
(**b**) *P. margaritatus*



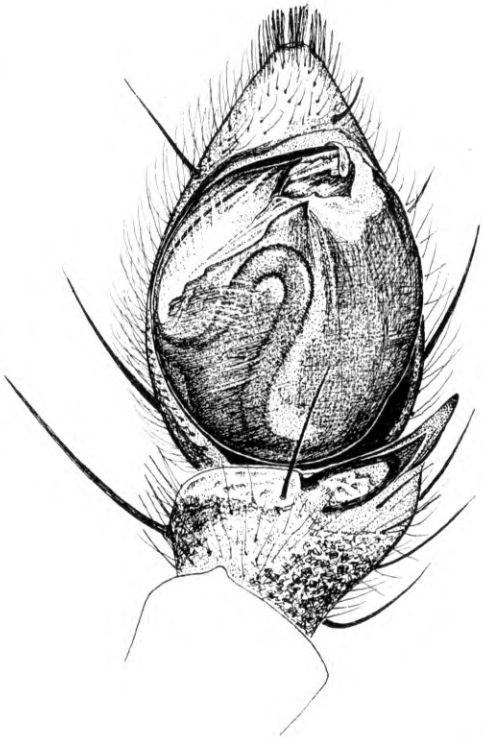
♂ (nat. size)

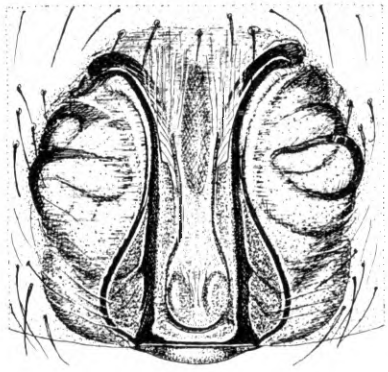
0.5mm



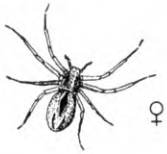


(**c**) *Thanatus striatus*



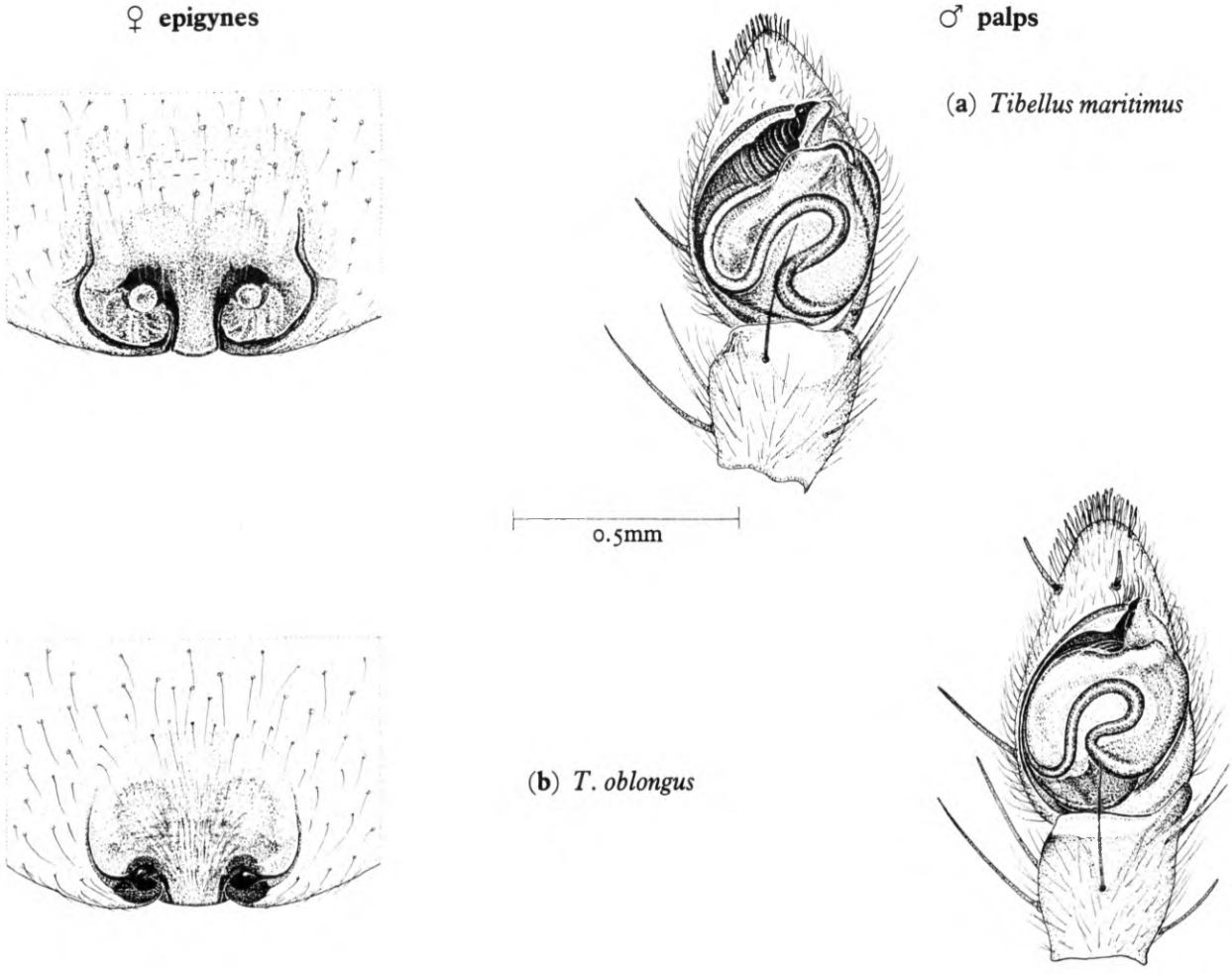


(**d**) *T. formicinus*



♀ (nat. size)

Text Figure 46



Genus *Tibellus* Simon, 1875

The two British representatives of this genus have a highly characteristic general appearance which is practically identical in the two species. The elongated shape and the colouring make them inconspicuous on coarse grasses, especially when the latter are yellowish and dry. Their habit of fully extending the legs, two pairs forwards two pairs backwards, along the stems when at rest adds to the camouflage. The female guards the egg sac which is usually attached to a blade of grass.

Tibellus maritimus (Menge, 1875)

Text Fig. 46a

Length: ♀: 8–10mm; ♂: 7–8mm.

General appearance as for *T. oblongus*, but often with a series of paired dark spots laterally along carapace and abdomen.

Tibellus oblongus (Walckenaer, 1802)

Plate 54; Text Fig. 46b

Length: ♀: 8–10mm; ♂: 7–8mm.

Female abdomen is often longer and wider than in specimen illustrated. Male similar, but abdomen shorter and slimmer, with overall colour slightly darker and more greyish.

DISTINGUISHING THE SPECIES

The genitalia allow easy separation of the two species. Epigynes are distinctly different and male palps have very different emboli, that of *T. maritimus* being thick and screw-like. Markings on carapace and abdomen are not reliable as means of identification.

DISTRIBUTION

Both species are widely distributed throughout the British Isles, but *T. oblongus* is generally commoner, especially inland. They occur mainly among long grass, *T. maritimus* most often on sand-dunes.

Family SALTICIDAE

There are thirty-four British species in this family in fifteen genera. As their family name suggests, they have the ability to jump. The proficiency with which this is exercised varies from one species to another, the rather small, short-legged *Attulus saltator* being probably the best in this country.

A salticid spider is easily recognizable, even in the field, by its square-fronted carapace on the front of which are two pairs of large eyes, rather like headlamps. Behind these is a third pair of small eyes, sometimes obscured by hairs, and, still farther back, there is a fourth pair of medium-sized eyes which face posterolaterally. In effect these spiders have almost all-round vision, although it would seem that they are able to see in more detail with the anterior median eyes. If an object enters the field of vision from behind or to the side, the spider will quickly jump around to focus the large anterior eyes upon it. This is easily demonstrated, and in fact they are rather amusing creatures to study. They have an uncanny way of looking at you, often raising the front of the carapace to do so. Many species are clothed with iridescent squamose hairs, and other hairs of varying colours, lengths and denseness, which make them very attractive. The combination of their coloration and good eyesight finds the most expressive use in the elaborate courtship displays in which most species indulge. Salticids are hunting spiders, first fixing the gaze of the large anterior eyes on the prey, stalking it, and then, when close enough, leaping to complete the capture.

As the markings and coloration of most species are largely determined by the covering of hairs, it follows that immersion in spirit, or any liquid, will alter their appearance considerably from that in life in which the pattern of hairs and furriness predominate. The colour illustrations prepared for these spiders attempt to give a balanced view somewhere between the appearance in life, and that in spirit. In each case, the drawing was first completed with the specimen in spirit. Following this, the specimen was removed from the alcohol and allowed to dry for a short time and examined again in this state. The high intensity lamp used for microscope work speeds up the drying process considerably, and during this procedure the individual white or coloured hairs gradually spring up from their wet, matted state and the whole spider assumes the appearance as in life. One then has a couple of minutes to add these hairs to the drawing before the specimen starts to shrivel up. In many cases, if one were to add *all* the hairs it would obscure other underlying markings and taxonomic characters normally seen in spirit specimens – hence the compromise.

TAXONOMIC NOTE

It has been suggested that the genus *Aelurillus* Simon, 1884, is synonymous with *Phlegra* Simon, 1876 (Harm, 1977). Whilst there are some grounds for this, the proposal has met with some dissent and for the moment the two British representatives, *Aelurillus v-insignitus* (Clerck) and *Phlegra fasciata* (Hahn), are left in their respective genera.

It has also been suggested that the genus *Hyctia* Simon, 1876, is synonymous with the genus *Marpissa* C. L. Koch, 1846 (Harm, 1981). This view is accepted here and the single British species, *Hyctia nivoyi* (Lucas) now becomes *Marpissa nivoyi* (Lucas).

Specimens thought to be of *Marpissa pomatia* (Walckenaer), collected in the British Isles, have been shown to be incorrectly identified and are in fact *M. radiata* (Grube). The latter species therefore replaces *M. pomatia* in the British list.

Key to Genera of the SALTICIDAE

1 Ant-like spiders (Plates 69, 70); both species rather rare 2
– Spiders not obviously ant-like 3

2(1) Ocular trapezium longer than broad ..... *Synageles* (p. 130)
– Ocular trapezium slightly broader than long ..... *Myrmarachne* (p. 130)

3(1) Spiders with largely black and white coloration which on the abdomen forms broad oblique lateral stripes (Plate 55) and without stout spines on ventral aspect of tibia and metatarsus I ..... *Salticus* (p. 116)
– Stout ventral spines present on tibia and metatarsus I 4

4(3) Dense brushes of hairs (scopulae) present on tarsus I to about two-thirds of length (as on Plate 68) 5
– Scopulae less developed or absent 6

5(4) Abdomen almost as wide as long; colour basically black, white and grey with pattern particularly clear in ♂ as a white central stripe on black background .. *Aelurillus* (p. 128)
– Abdomen more oval; pattern of two brown longitudinal stripes on pale background in ♀ only. ♂ abdomen blackish, with glossy hairs and no pattern ..... *Phlegra* (p. 130)

6(4) Distance between posterior lateral eyes greater than total width across anterior lateral eyes 7
– Distance between posterior lateral eyes less than total width across anterior lateral eyes 9

7(6) Legs pale yellowish with clear black longitudinal streaks on at least some segments and usually with black spots and annulations in addition ..... *Ballus* (p. 120)
– Legs not as above 8

8(7) Abdomen brownish with clear pattern, in ♀ ♂, comprised of a central white stripe followed by three white spots ..... *Pellenes* (p. 130)
– Abdomen with no clear pattern ..... *Bianor* (p. 120)

9(6) Posterior lateral eyes (viewed from side or directly above) situated more or less midway between anterior and posterior margins of carapace *Neon* (p. 122)
– Posterior lateral eyes obviously closer to the anterior margin of carapace than the posterior 10

10(9) Sternum roughly oval, but considerably narrower at the front with anterior margin only about the same width as the labium ..... *Marpissa* (p. 120)
– Sternum not narrowed anteriorly 11

11(10) Total length of patella and tibia of leg IV about equal to that of leg III 12
– Total length of patella and tibia of leg IV considerably greater than that of leg III 13

12(11) Fairly large spiders (5–8mm) ..... *Evarcha* (p. 128)
– Small spider (2–3mm) ..... *Euophrys aequipes* (Plate 66a) (p. 124)

13(11) Tibia IV about three times as long as tibia III; a small, very squat spider.....*Attulus* (p. 128)
– Tibia IV about twice as long as tibia III .....*Sitticus* (p. 126)
– Tibia IV about one and a half times as long as tibia III 13
14(13) Carapace more or less uniformly black..... *Heliophanus* (p. 118)
– Carapace with the area between and around the eyes darker than the portion behind the eyes ..... *Euophrys* (part) p. 122

Genus *Salticus* Latreille, 1804

The four British species in this genus have a similar overall appearance. *S. scenicus*, the zebra spider, is probably the most familiar of all the British salticids and can usually be found on sunny walls of buildings. Males have greatly elongated and projecting chelicerae (Plate 65b).

Salticus scenicus (Clerck, 1757)

Plates 55, 65b; Text Fig. 47a

Length: ♀: 5–7mm; ♂: 5–6mm (including chelicerae).

In life the pattern is clearer than illustrated with the squamose hairs really shining white. The legs appear black and white in life, due to hairs, but often appear quite yellow in spirit.

Salticus cingulatus (Panzer, 1797)

Text Fig. 47b

Length: ♀: 5–7mm; ♂: 5–6mm (including chelicerae).

General appearance as *S. scenicus*, but abdomen usually marked more heavily with white hairs at the sides and in the midline where there are sometimes white chevrons.

Salticus zebraneus (C. L. Koch, 1837)

Text Fig. 47c

Length: ♀: 3–4mm; ♂: 3–3.5mm (including chelicerae).

Slightly less obviously striped than *S. scenicus* but otherwise similar.

Salticus mutabilis Lucas, 1846

Text Fig. 47d

Length: ♀: 4–5mm; ♂: 3–4mm.

Similar to *S. scenicus*.

DISTINGUISHING THE SPECIES

The genitalia permit easy separation of the species even allowing for the slight variation in shape and pigmentation that occurs with the epigynes.

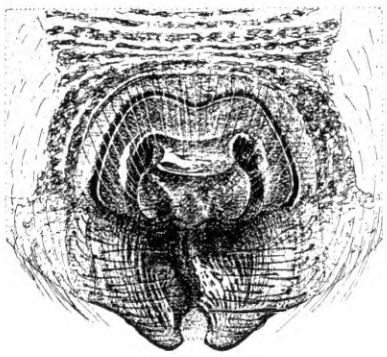
DISTRIBUTION

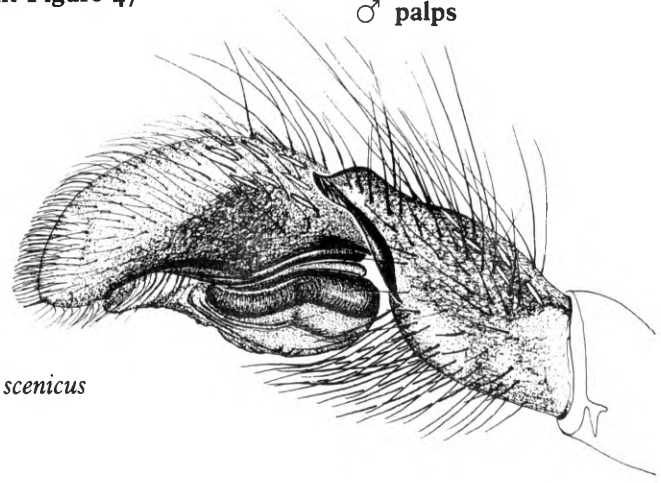
S. scenicus is widespread and common, usually being found on the walls of houses, window-frames and fences, but quite often away from habitations. *S. cingulatus* is also widespread but occurs on tree trunks in woodland and is appreciably less common. The other two species are very rare, *S. zebraneus* being known from eight localities, mostly on pine trunks, and *S. mutabilis* from one locality, in the south.

Text Figure 47

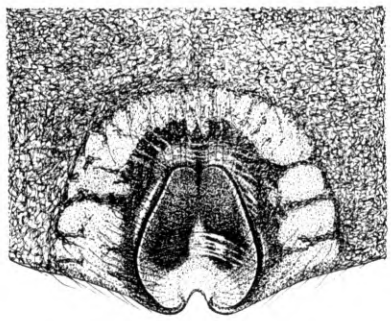
♀ epigynes

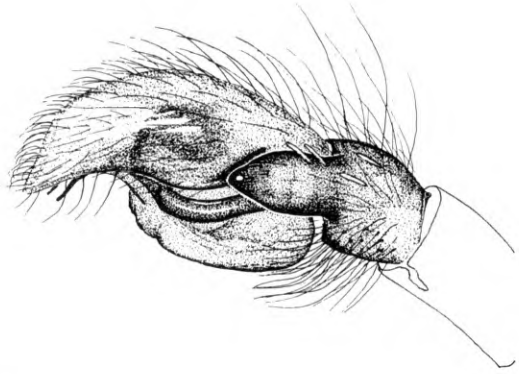
♂ palps





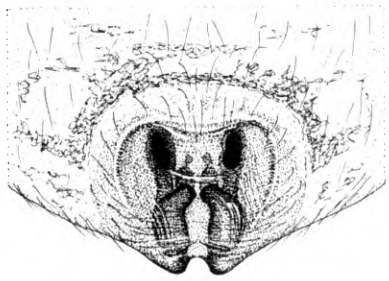
(**a**) *Salticus scenicus*

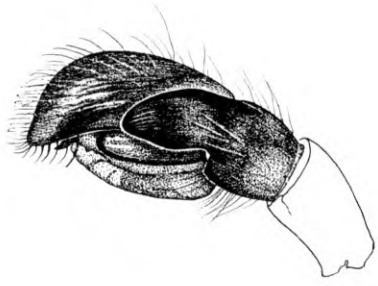




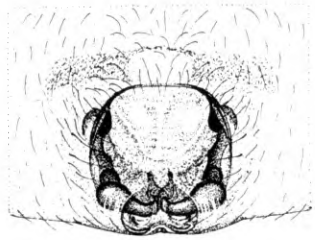
(**b**) *S. cingulatus*

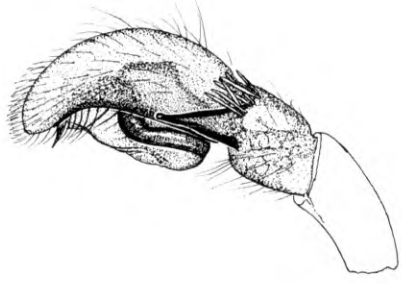
0.5mm





(**c**) *S. zebraneus*





(**d**) *S. mutabilis*

Genus *Heliophanus* C. L. Koch, 1833

The four British species in this genus have black bodies (with markings of white hairs) and yellow or brown legs. Sometimes both the black and yellow parts of the spider have a distinctly greenish tinge, and the carapace has a metallic sheen. They occur mostly on low vegetation.

Heliophanus cupreus (Walckenaer, 1802)

Plate 66b; Text Fig. 48a

Length: ♀: 5–6mm; ♂: 3.5–4mm.

Female is similar to that of *H. flavipes* (Plate 56) except that the legs have black streaks prolaterally and retrolaterally along the length of femur and tibia I to IV, and the abdomen usually has one or two pairs of white patches in the posterior half.

Heliophanus flavipes C. L. Koch, 1848

Plate 56; Text Fig. 48b

Length: ♀: 5–6mm; ♂: 3.5–4mm.

Usually only coxa IV and part of femur IV are marked with black, as illustrated (*cf. H. cupreus*). Male is similar to that of *H. cupreus* (Plate 66b).

Heliophanus auratus C. L. Koch, 1835

Text Fig. 48c

Length: ♀: 4.5–5mm; ♂: 3.5–4.5mm.

Similar to *H. flavipes* and *H. cupreus*.

Heliophanus melinus L. Koch, 1867

Text Fig. 48d

Length: ♀: 6–7mm; ♂: 4mm.

This species, although having a similar appearance to *H. flavipes* and *H. cupreus* is distinguished, in both male and female, by having two longitudinal rows of shining white hairs on the abdomen as well as the transverse white line on the anterior end of abdomen which extends around the sides.

DISTINGUISHING THE SPECIES

Only two species, *H. flavipes* and *H. cupreus*, are likely to be encountered with any frequency. Epigyne of *H. cupreus* illustrated has a pair of irregular bodies (dried reddish exudate) within the opening. In some specimens this exudate may completely obscure the epigyne. *H. flavipes* has a distinctly different epigyne and the legs lack the pronounced black streaks present in *H. cupreus*. Male palps have both tibial and femoral apophyses. The femoral apophysis is bifid in *H. flavipes* but not in *H. cupreus* and there are many other differences in tibial apophyses and palpal organs. In the event of the very rare *H. auratus* or *H. melinus* being collected, the epigynes will be seen to be distinct, and the male palps can be distinguished from each other, and from the commoner species, by consideration of palpal organs, tibial apophyses and femoral apophyses, *H. melinus* having an additional blunt femoral apophysis mesoventrally. Abdominal markings of *H. melinus* are also distinctive.

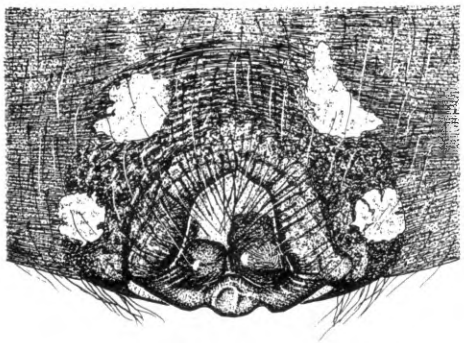
DISTRIBUTION

H. cupreus and *H. flavipes* are widely distributed and common. *H. melinus* and *H. auratus* are very rare and known only from a single locality each, in South and South-east England respectively.

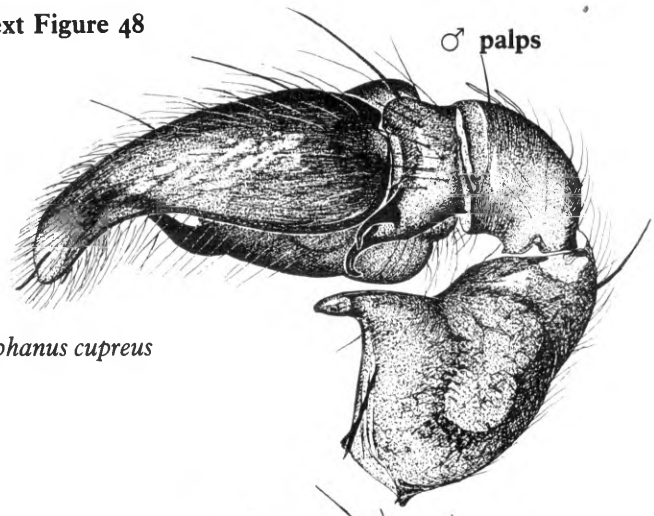
Text Figure 48

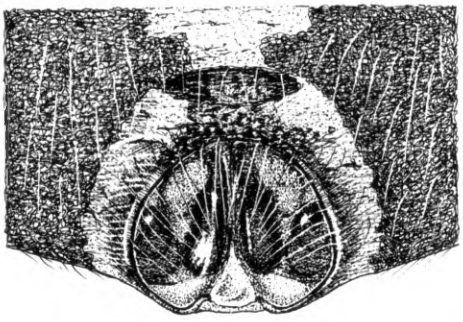
♀ epigynes

♂ palps

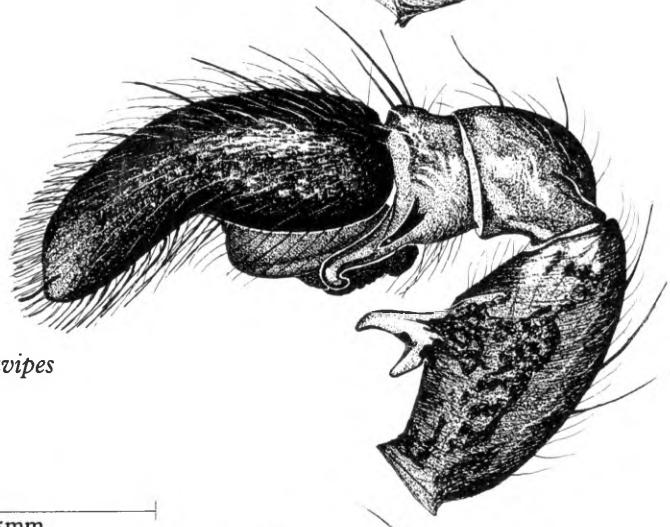


(a) *Heliophanus cupreus*





(b) *H. flavipes*



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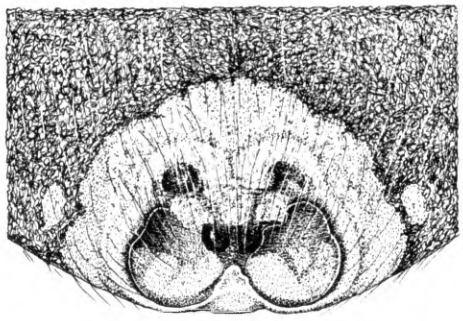
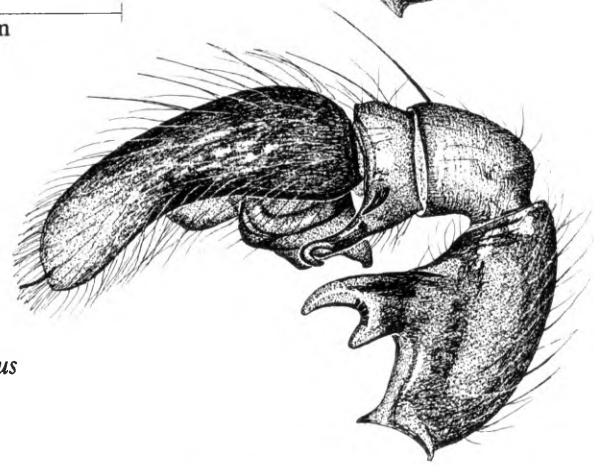
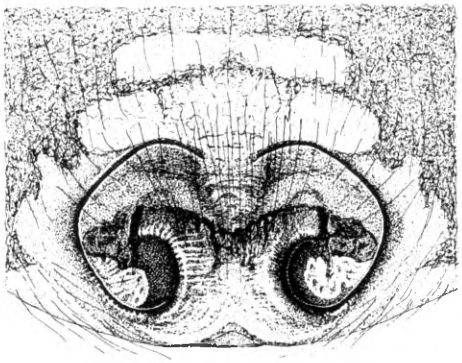
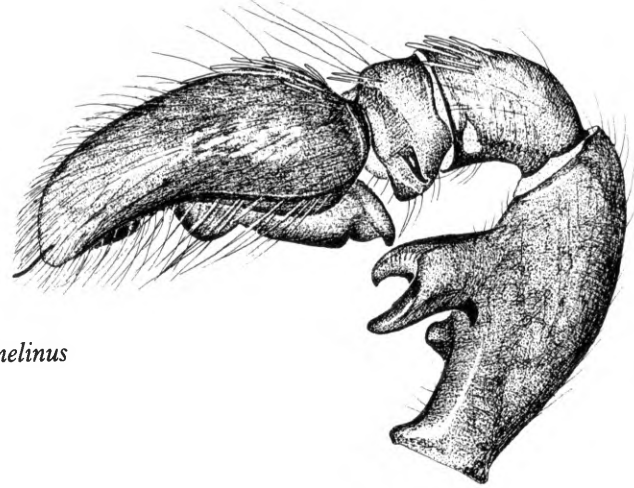


(c) *H. auratus*





(d) *H. melinus*



Genus *Marpissa* C. L. Koch, 1846

The three British species in this genus have a highly characteristic appearance. The abdomen is elongated, somewhat flattened dorsoventrally (especially in the first two species), and is often prettily marked. The first pair of legs are noticeably darker and larger than the rest.

Marpissa muscosa (Clerck, 1757)

Plate 57; Text Fig. 49a

Length: ♀: 8–10mm; ♂: 6–8mm.

Male similar to female, but abdomen is smaller. In life this spider has a more greyish brown, furry appearance due to the covering of hairs.

Marpissa radiata (Grube, 1859)

(Not *Marpissa pomatia* (Walckenaer); see Taxonomic Note on p. 115)

Text Fig. 49b

Length: ♀: 8–10mm; ♂: 6–7mm.

A life-size illustration of female appears next to that of the epigyne (Text Fig. 49b). Abdomen usually has a brownish yellow central band flanked by a pair of longitudinal black bands and many lighter hairs. Male similar but has fewer light hairs.

Marpissa nivoyi (Lucas, 1846)

(= *Hyctia nivoyi* (Lucas); see Taxonomic Note on p. 115)

Plate 58; Text Fig. 49c

Length: ♀: 4–6mm; ♂: 4–5mm.

Sometimes in female the three longitudinal rows of dark blotches are confluent, forming dark lines; the light areas are in life accentuated by whitish hairs. Male similar to female but a little darker; sometimes the dark blotches on posterior end of abdomen are joined together to form chevrons.

DISTINGUISHING THE SPECIES

M. nivoyi is readily distinguished from the other two species by virtue of its general appearance, size and genitalia. The two larger species, *M. muscosa* and *M. radiata*, are easily distinguished by male palps and epigynes, although the latter vary in both the form and degree of visibility of the coiled ducts.

(NOTE. The genitalia of *M. nivoyi* are illustrated (Text Figure 49c) at a greater magnification than those of the other two species.)

DISTRIBUTION

All three species seem to occur only in the southern half of the country. *M. muscosa* is the commonest, usually being found on or under the bark of trees and on drystone walls. *M. radiata* is rarer and seems mainly confined to reed-beds in fens. The rare *M. nivoyi* occurs in marram on coastal sand-hills, but is also recorded from marshy areas and occasionally is found inland.

Genus *Bianor* G. & E. Peckham, 1885

There is only one British representative of this genus.

Bianor aurocinctus (Ohlert, 1865)

(= *Bianor aenescens* (Simon, 1868))

Plate 65c; Text Fig. 49d

Length: ♀: 3.2–4mm; ♂: 3–3.5mm.

Male is similar to female except that the anterior part of carapace is even more rugose and abdomen is darker with a few orange hairs anteriorly. The femur and tibia of leg I are dark brown in colour and swollen in both sexes, but more so in male. The rest of the legs are yellowish brown with some darker markings. The spider has a rather dull coppery appearance in life and this general appearance, and the form of epigyne and male palp, make confusion of this species with any other unlikely.

DISTRIBUTION

This spider is rare and has only been found in about a dozen localities in England, usually on grassland and amongst stones.

Genus *Ballus* C. L. Koch, 1850

The single British species in this genus has a highly characteristic appearance.

Ballus depressus (Walckenaer, 1802)

Plate 59; Text Fig. 49e

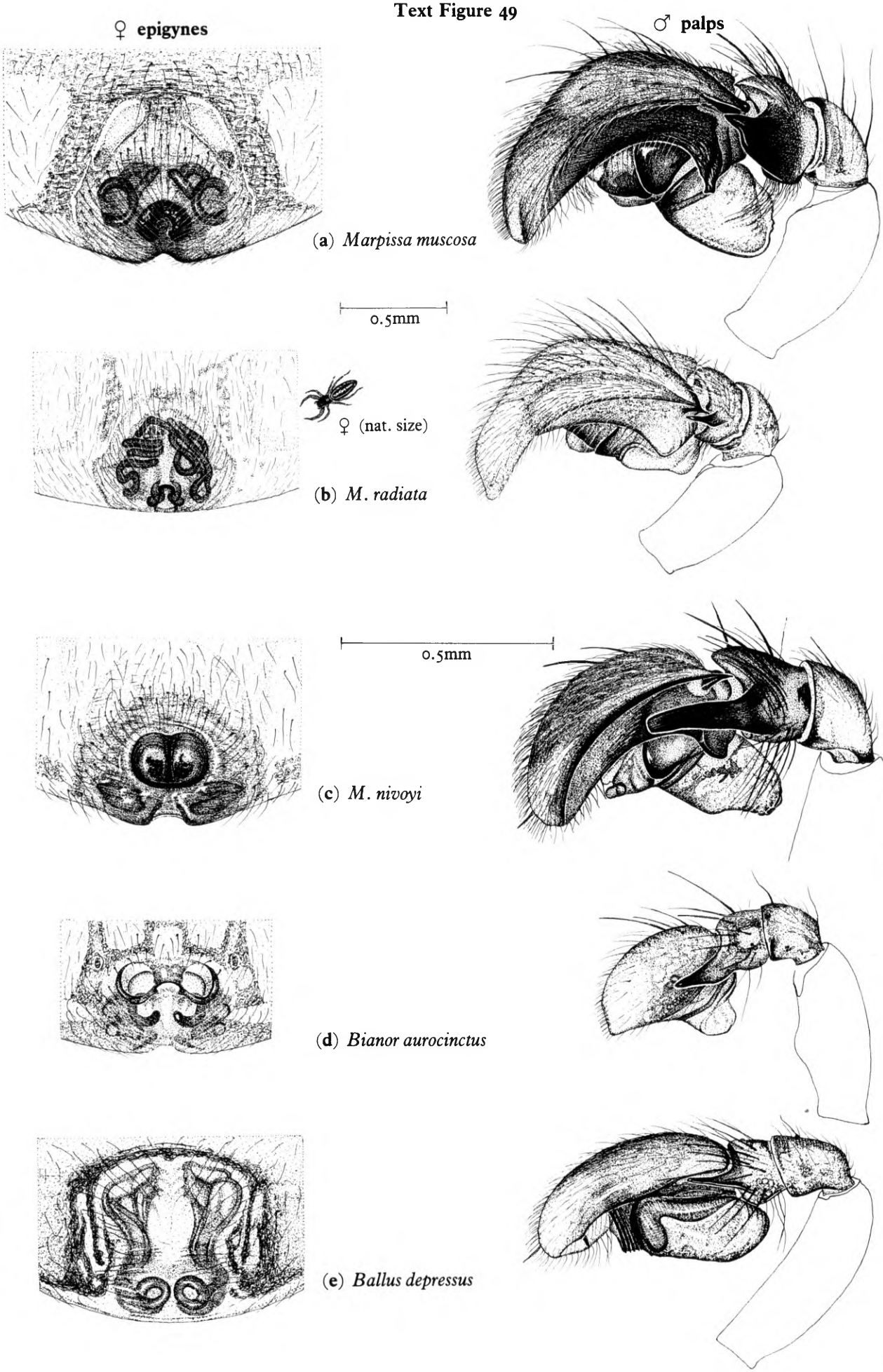
Length: ♀: 4.5–5mm; ♂: 3–4mm.

Male differs from female in having a darker, more rugose carapace and a reddish brown abdomen with virtually no pattern. Also femur and tibia of leg I are swollen and blackish in colour with a metallic sheen. Epigyne and male palp are distinctive.

DISTRIBUTION

This woodland species is usually collected from bushes and trees and, although recorded from the North of England, occurs with any frequency only in the south.

Text Figure 49



Genus *Neon* Simon, 1876

There are only two British species in this genus and they are small spiders, very similar in general appearance.

Neon reticulatus (Blackwall, 1853)

Plate 60; Text Fig. 50a

Length: ♀: 2–3mm; ♂: 2–2.5mm.

Male similar to female except that carapace is darker and has a rather metallic sheen anteriorly, abdomen has clearer markings and tibia and metatarsus of leg I are blackish. In life abdomen of both male and female often appears greyish, sometimes with a green tinge.

Neon valentulus Falconer, 1912

Text Fig. 50b

Length: ♀: 2–3mm; ♂: 2–2.5mm.

This species is very similar to *N. reticulatus* but is normally darker, in both sexes, with the legs more heavily marked.

DISTINGUISHING THE SPECIES

Epigynes are similar but can be easily and reliably distinguished by the relative proportions of the openings and the seminal receptacles. Male palps are also easily distinguished, especially when viewed mesally.

DISTRIBUTION

N. reticulatus is widespread and common, usually being collected by sieving leaf-litter in woods. *N. valentulus* is rare and has been recorded only from a small number of localities (mainly fens) in South-east England and East Anglia.

Genus *Euophrys* C. L. Koch, 1834

A combination of the parallel-sided ocular trapezium, position of the eyes, the tendency for the carapace to be much darker between and around the eye group, the relatively strong leg spines, the abdominal pattern and shape and rather small size separates the seven British species in this genus from the other genera. *E. frontalis*, *E. herbigrada*, *E. petrensis* and *E. aequipes* have closely similar genitalia. *E. erratica* and *E. lanigera* have epigynes with relatively larger openings, and U-shaped seminal receptacles, and male palpal tibiae with a stronger apophysis. *E. browningi* appears somewhat intermediate between these two groups.

Euophrys frontalis (Walckenaer, 1802)

Plates 61, 62; Text Fig. 50c

Length: ♀: 3–5mm; ♂: 2–3mm.

Note the sexual dimorphism; the male is smaller, has a relatively smaller abdomen and the first pair of legs are almost black apart from the white tarsi. The male palps have a thick covering of white hairs and the anterior eyes are fringed with orange hairs. These contrasting hairs are more striking in life, and are lacking in *E. herbigrada*.

Euophrys herbigrada (Simon, 1871)

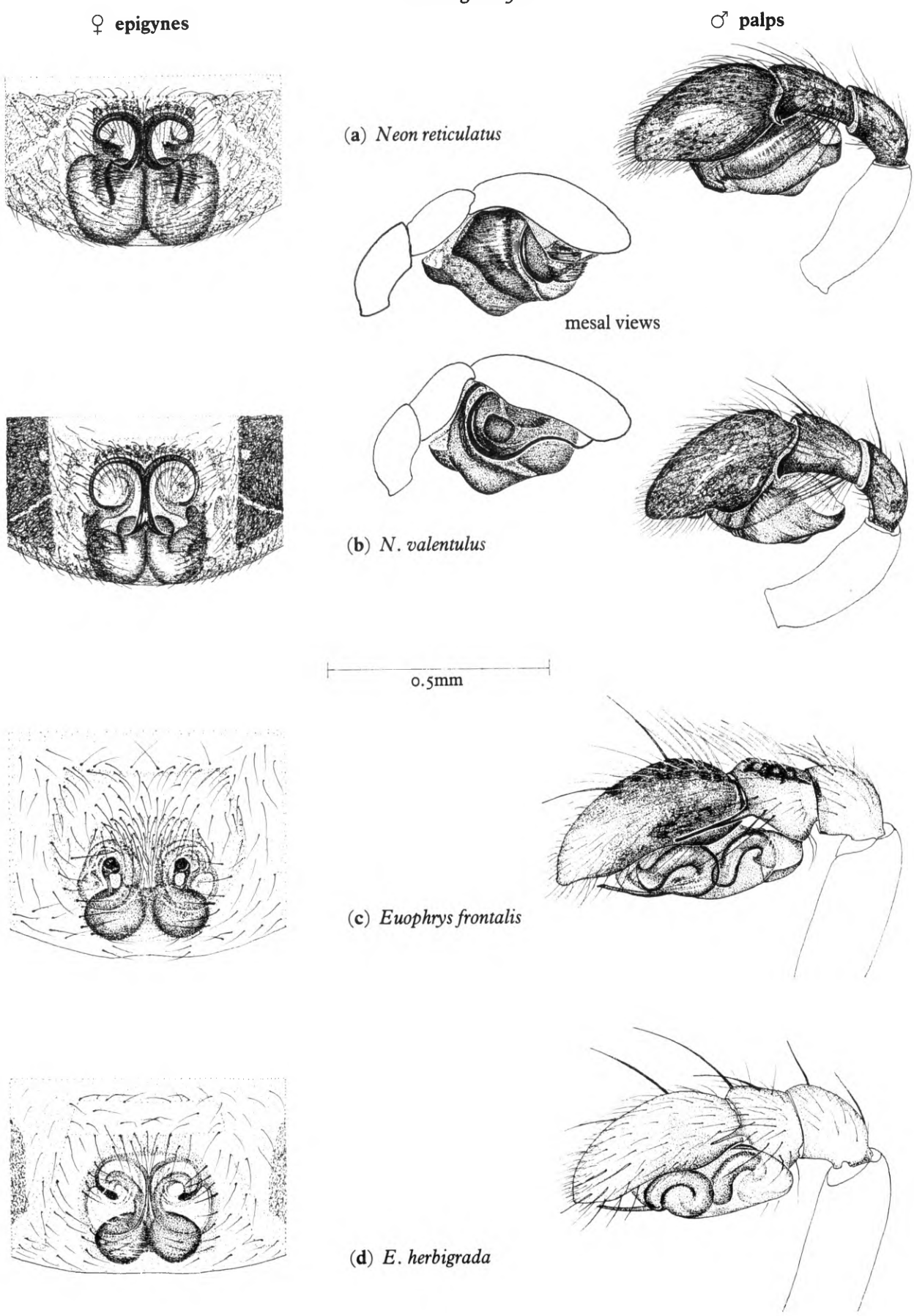
Text Fig. 50d

Length: ♀: 3–4mm; ♂: 2.5mm.

Very similar in general appearance to *E. frontalis*. Abdomen of female *E. herbigrada* has pattern similar to that illustrated for male *E. frontalis* (Plate 62), but is a little darker. Male is also darker than *E. frontalis*.

NOTE. It is possible that *E. herbigrada* has been overlooked in the past as it was erroneously stated (Locket & Millidge, 1951) that male palp lacked a tibial apophysis. However, a very small tibial apophysis is present and there are other differences in the palpal organs, not previously illustrated.

Text Figure 50



Euophrys petrensis C. L. Koch, 1837
Text Fig. 51a

Length: ♀ ♂: 3mm.

Both sexes of this species are almost uniformly black in colour. Male palps with long white hairs which contrast with orange hairs on the front of the carapace, around the anterior eyes.

Euophrys erratica (Walckenaer, 1825)
Text Fig. 51b

Length: ♀♂: 3–4mm.

Male and female similar in appearance and resembling *E. lanigera* (Plate 65a). Carapace blackish between the eyes and brownish posteriorly; abdomen marked with an inverted Y to about the midpoint which is flanked by darker areas and followed by a series of chevrons of diminishing size. In life the spider appears dark brown, marked with light brown and orange hairs on head region of carapace, in patches on abdomen and ringing the legs.

Euophrys aequipes (O. P.-Cambridge, 1871)
Plate 66a; Text Fig. 51c

Length: ♀: 2–3mm; ♂: 2–2.5mm.

General appearance characteristic; a very small species. Male similar to female. Legs yellow, annulated with black. Male femur I black. Both sexes covered with yellowish hairs in life.

Euophrys lanigera (Simon, 1871)
Plate 65a; Text Fig. 51d

Length: ♀: 4–5mm; ♂: 3.5–4mm.

Female similar to male, but abdomen has a less pronounced pattern with the light areas smaller and less conspicuous.

Euophrys browningi Millidge & Locket, 1955
Text Fig. 51e

Length: ♀: 3–3.5mm; ♂: 2.5–3mm.

Carapace in both male and female black anteriorly and dark brown posteriorly. Abdomen of male black with very faint lighter chevrons posteriorly whilst female has abdomen rather like that illustrated for *Sitticus caricis* (Plate 64).

DISTINGUISHING THE SPECIES

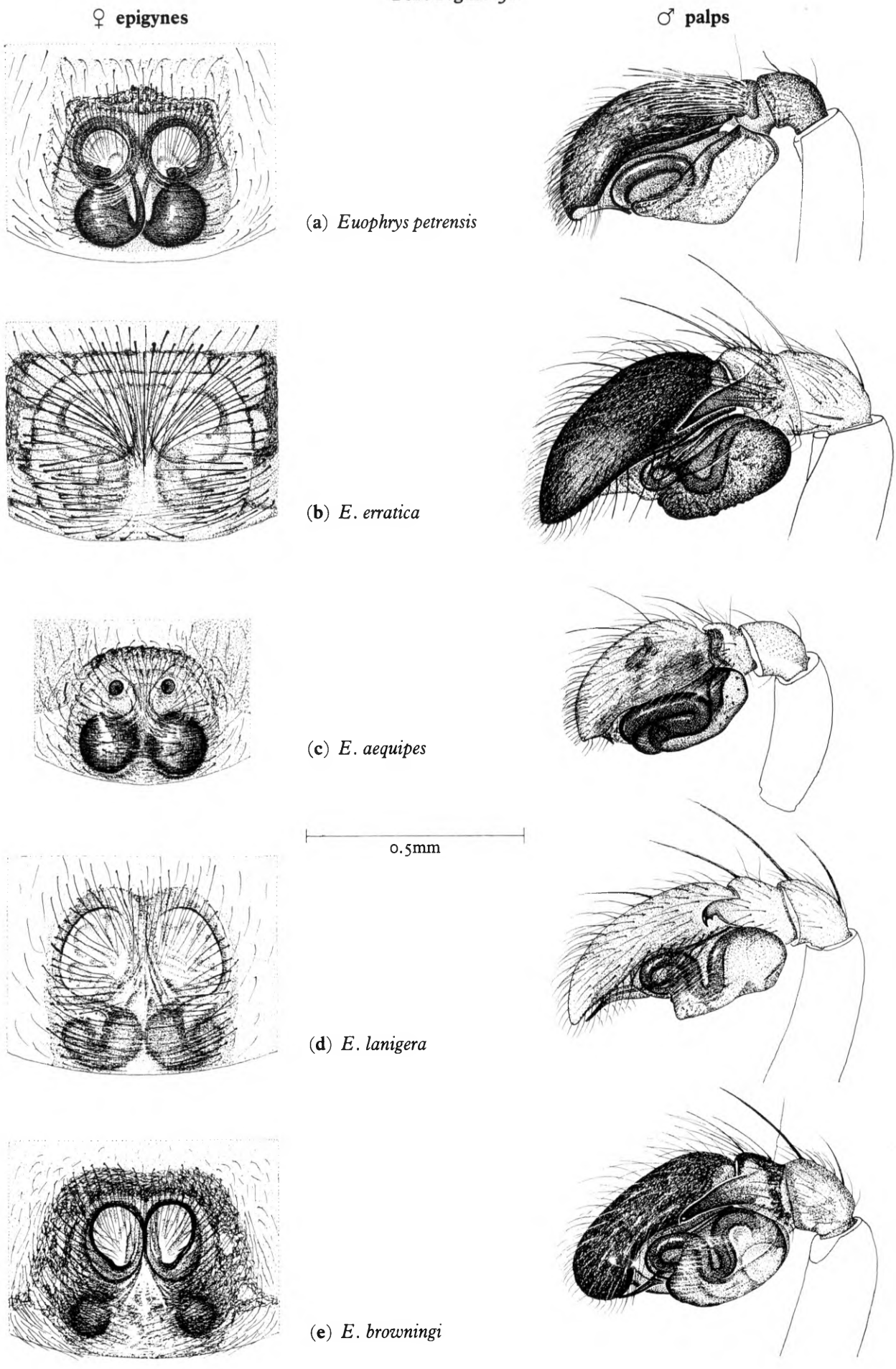
Euophrys frontalis is the commonest species in this genus and is likely to be encountered before any of the others. Both male and female of *E. frontalis* have a highly characteristic appearance (Plates 61, 62) which could be confused only with *E. herbigrada*, which is a rare species but which may hitherto have been overlooked. Epigynes of these two species, although similar, have a distinctive and fairly constant appearance. The male palps are also similar but, as well as slight but constant differences in palpal organs, have different tibial apophyses, that of *E. frontalis* being much longer. In *E. herbigrada* the rather short tibial apophysis may be practically transparent and difficult to see at first, especially if obscured by hairs. The male *E. herbigrada* lacks the orange hairs around the eyes, and the white hairs on the palp, which are found in *E. frontalis*.

The other species can be separated easily by consideration of the genitalia and general appearance.

DISTRIBUTION

E. frontalis is widespread and common, being found in low vegetation and under stones. *E. erratica* occurs less frequently and is commoner in the north where it is often found on walls. *E. petrensis* and *E. aequipes* are uncommon and, although recorded from some northern counties, are encountered with any frequency only in the south, *E. petrensis* mainly on heathland and *E. aequipes* rather more on grassland. The same is true of *E. lanigera* which is found only on or near houses, often rooftops. *E. herbigrada* and *E. browningi* are known from only a few localities, mainly in the South-west on coastal grassland and the South-east of England on shingle beaches respectively.

Text Figure 51



Genus *Sitticus* Simon, 1901

There are four British spiders included in this genus. The species *Sitticus pubescens* differs from the other three in the form of the genitalia and in its biology; in some respects it seems closer to the genus *Salticus*.

Sitticus pubescens (Fabricius, 1775)

Plate 63; Text Fig. 52a

Length: ♀: 4–5mm; ♂: 4mm.

The female illustrated has a rather small abdomen; other specimens have abdomen relatively larger, as shown by the small line-drawing underneath, with the spinners projecting slightly. Sometimes there are more brown hairs present on the abdomen. Male similar to female, but abdomen smaller. The light hairs are more pronounced in life, both on carapace and abdomen.

Sitticus caricis (Westring, 1861)

Plate 64; Text Figs 52b,e

Length: ♀ ♂: 3–4mm.

Male similar to female, but abdomen smaller. Orange and white hairs more pronounced in life; darker specimens may have a purplish sheen.

Sitticus floricola (C. L. Koch, 1837)

Text Figs 52c,f

Length: ♀: 4.5–6mm; ♂: 4–4.5mm.

Female carapace dark reddish brown, with the anterior part almost black, and abdomen brownish with a pair of very striking white patches composed of white hairs at about the midpoint, and with two smaller pairs of white patches anterior and posterior to these. Male carapace reddish brown, with a slightly metallic tinge anteriorly, and with a central longitudinal white line of hairs. The conspicuous white patches on abdomen are present as in female.

Sitticus rupicola (C. L. Koch, 1837)

Text Figs 52d,g

Length: ♀: 6–7mm; ♂: 4–5mm.

This species resembles *S. floricola* in general appearance but is a little darker in colour; the white spots on abdomen not as conspicuous but a number of white hairs are present laterally.

DISTINGUISHING THE SPECIES

S. pubescens is easily distinguished from the other three species in this genus, and from *Salticus scenicus* which often shares the same habitat, by the genitalia. The male palp could perhaps be confused with that of *S. zebraneus* (Text Fig. 47c, p. 117) but consideration of its general appearance should make this unlikely. *Sitticus caricis* is distinguished from *S. floricola* and *S. rupticola* by its smaller size and lack of pronounced white patches on abdomen. These three species can also be separated by their genitalia, as follows:

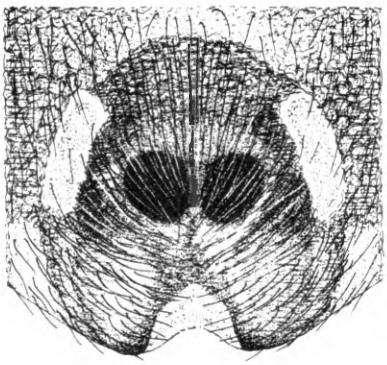
Epigynes. Apart from its shape, the epigyne of *S. caricis* is most easily distinguished by being furnished with rather coarse black hairs – the other two species have the epigyne covered with long white hairs which may need to be partially rubbed off before the epigyne can be seen. This is best done with a needle whilst examining the specimen under the microscope. The illustrations for *S. floricola* and *S. rupicola* show the appearance when some of the hairs have been thus removed.

Male palps. Viewed from the side, the margin of the cymbium can be seen to have a broad lip extending ventrally in *S. floricola*. This is not as large in *S. rupicola* and is barely perceptible in *S. caricis*. The tibial apophysis is characteristic in *S. floricola* but those of *S. caricis* and *S. rupicola* cannot be reliably distinguished. Viewed from below, *S. floricola* has quite distinct palpal organs, but those of *S. caricis* and *S. rupicola* are rather similar. However, *S. rupicola* has the tip of the palp slightly more rounded and furnished with a more distinct tuft of hairs.

DISTRIBUTION

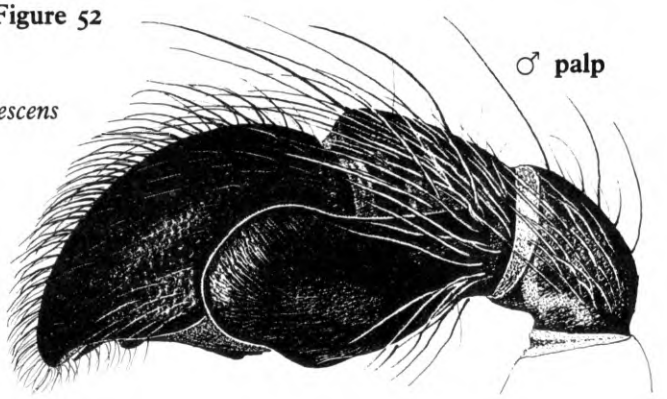
S. pubescens is widespread, common and usually occurs on and around buildings. *S. caricis* is rather uncommon, although fairly widely distributed, and usually occurs in grass and moss in swampy areas. *S. floricola* is known only from one swampy locality in Cheshire, two areas in Ireland and one in Scotland. *S. rupicola* has been found amongst shingle in a small number of localities on the south and south-east coast.

Text Figure 52



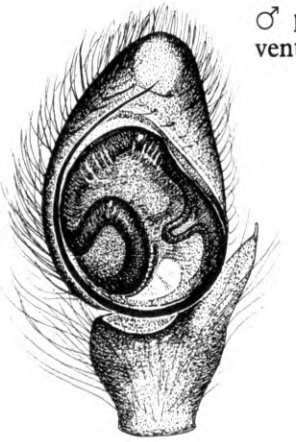
(a) *Sitticus pubescens*

♀ **epigyne**

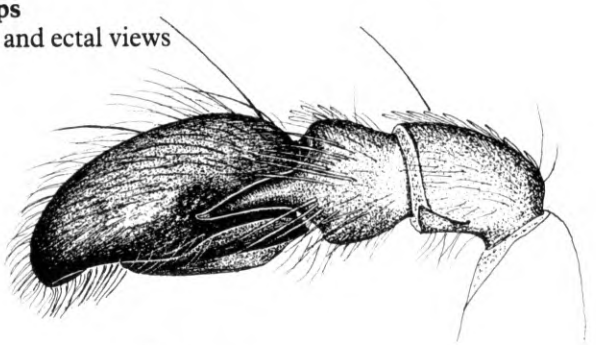


♂ **palp**

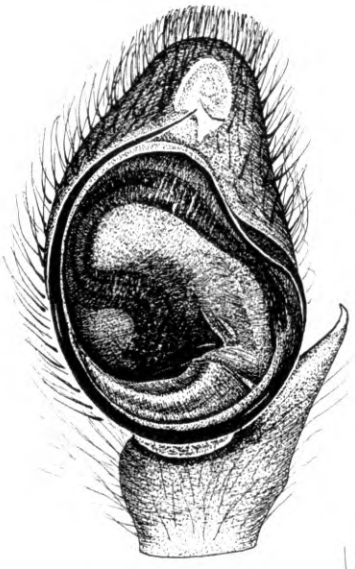
0.5mm

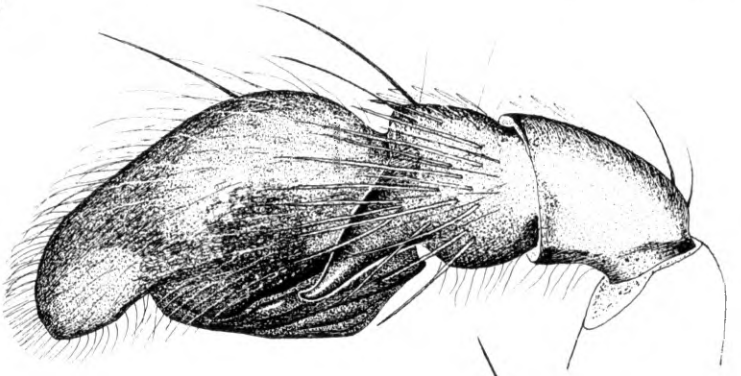


♂ **palps**
ventral and ectal views

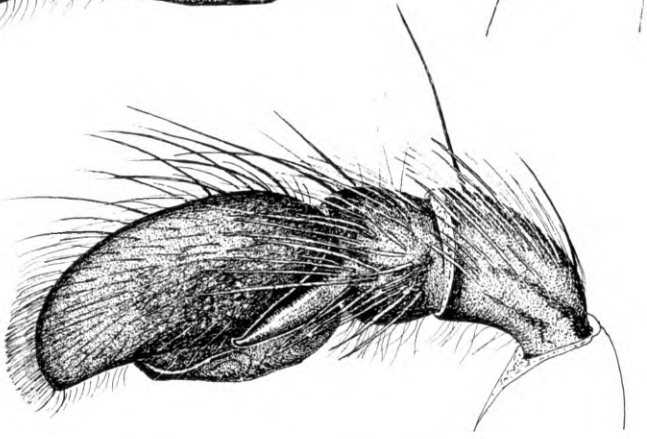


(b) *S. caricis*



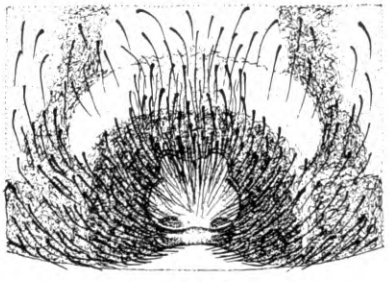


(c) *S. floricola*

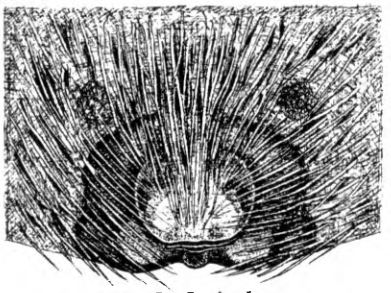


(d) *S. rupicola*

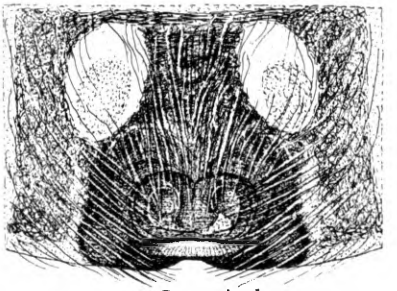
♀ **epigynes**



(e) *S. caricis*



(f) *S. floricola*



(g) *S. rupicola*

Genus *Attulus* Simon, 1889

The single British species in this genus is a small spider with a rather squat appearance and the fourth pair of legs much longer than the rest.

Attulus saltator (Simon, 1868)

Plate 66c; Text Fig. 53a

Length: ♀: 3–4mm; ♂: 3mm.

In life the species has a more sandy appearance than illustrated due to the covering of hairs. Male similar to female, but the lighter patches on abdomen are more clearly marked with white hairs. Legs of both sexes are yellowish brown with faint annulations. Epigyne and male palp are distinctive. In life the light parts of abdominal pattern are reinforced by white hairs; these hairs are also present on carapace, laterally and as a thin median line.

DISTRIBUTION

Occurs mostly on sand-hills mainly in the southern half of the country and is not commonly encountered. This may in part be due to its small size and colour. Sometimes occurs inland on sandy heaths but most records are from coastal localities.

Genus *Evarcha* Simon, 1902

The two British species in this genus are spiders of moderate size (5–8mm) and have a characteristic general appearance.

Evarcha falcata (Clerck, 1757)

Plates 66d, 67; Text Fig. 53b

Length: ♀: 6–8mm; ♂: 5mm.

Abdomen of female appears brownish orange in life due to coloured hairs. The same is true of the head part of male carapace, and the central band on male abdomen.

NOTE. The colour illustrations of the male and female are to a different scale but the small line-drawings below them give a clear indication of actual life-size.

Evarcha arcuata (Clerck, 1757)

Text Fig. 53c

Length: ♀: 6–8mm; ♂: 5–6mm.

Female similar to *E. falcata* although the pattern of lighter spots is usually a little clearer and there are usually two or three broad, dark streaks extending obliquely to each side. Male darker than that of *E. falcata* with abdomen unicolorous brown-black and a covering of hairs giving it a glossy appearance.

DISTINGUISHING THE SPECIES

Epigynes are similar, but easily distinguished by consideration of the width and shape of the dark area posterior to the opening. Male palps are most easily distinguished by their tibial apophyses.

DISTRIBUTION

E. falcata is fairly common and widespread throughout the British Isles, usually being found in wooded areas on low vegetation, particularly on young birch trees. *E. arcuata* occurs only in the South of England on low vegetation, especially heather, often in damp places.

Genus *Aelurillus* Simon, 1884

The single British species in this genus has a highly characteristic appearance.

Aelurillus v-insignitus (Clerck, 1757)

Plate 68; Text Fig. 53d

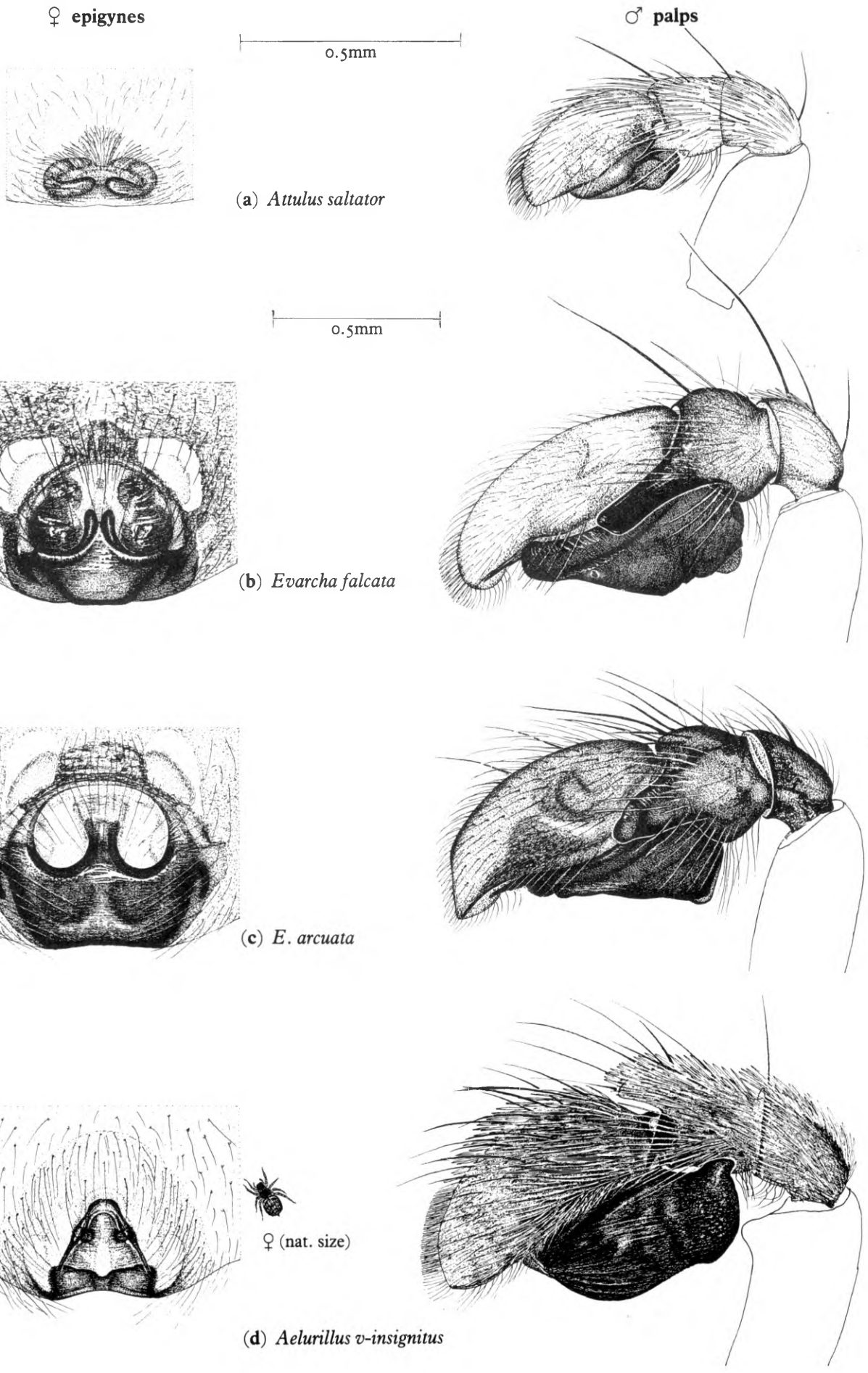
Length: ♀: 6–7mm; ♂: 4–5mm.

A life-size drawing of the female appears next to the epigyne. Note the rather short abdomen. The white inverted V or U is usually only present on the male carapace. Legs I and II have scopulae which extend to over half the length of the tarsi. The epigyne and male palp are easily distinguished from any other species.

DISTRIBUTION

This spider is usually found in open areas on heathland where it is sometimes conspicuously active in sunshine. It is uncommon and most records are from the south, although it has been found in Scotland.

Text Figure 53



Genus *Phlegra* Simon, 1876

The single British species in this genus has scopulae on legs I and II which extend to over half the length of tarsi.

Phlegra fasciata (Hahn, 1826)
Plate 65d; Text Fig. 54a
Length: ♀: 6–7mm; ♂: 5–6mm.
Appearance of female is highly characteristic. Legs are orange and annulated with dark brown or black. Males are much darker; carapace shows hardly any signs of the paler stripes and abdomen is blackish with shiny hairs which give it a glossy appearance. Epigyne and male palp are characteristic, although the bulb of the palp is variable in outline ventrally.

DISTRIBUTION
This species has only rarely been collected from sand-hills and other dry coastal habitats in a few localities on the south coast.

Genus *Synageles* Simon, 1876

The single British species in this genus is ant-like with ocular trapezium longer than broad (*cf. Myrmarachne*).

Synageles venator (Lucas, 1836)
Plate 69; Text Fig. 54b
Length: ♀: 3.5–4mm; ♂: 3mm.
Female is sometimes a little paler than male; a life-size illustration of it appears next to the epigyne. There is some variation in the shape of epigyne but nevertheless it is quite characteristic, as also is male palp.

DISTRIBUTION
This rare spider has been found only in a few localities in the south; mainly on coastal sand-hills, but has occurred inland in fens. It both looks and runs about like an ant.

Genus *Myrmarachne* MacLeay, 1839

The single British species in this genus is ant-like with ocular trapezium approximately square (*cf. Synageles*). Males have elongated chelicerae.

Myrmarachne formicaria (Degeer, 1778)
Plate 70; Text Fig. 54c
Length: ♀: 5–6mm; ♂: 5–6.5mm (including chelicerae).
This spider has an unmistakable appearance. Note the palps of female which have the tibia and tarsus swollen and flattened. A life-size illustration of male appears next to that of male palp; its general coloration is similar to that of female. The chelicerae of males are elongated and project anteriorly, often being as long as carapace. The length of male chelicera, and of the male palpal tibia, is rather variable due to allometric growth. The epigyne and male palp are characteristic.

DISTRIBUTION
This rare species is known from about fifteen localities on the south coast and in south-eastern England, sometimes amongst damp vegetation near the sea, and on chalk grassland. Like *Synageles venator*, this species is difficult to distinguish from an ant in the field, and is often found in company with ants.

Genus *Pellenes* Simon, 1876

The single British species in this genus has a distinct pattern.

Pellenes tripunctatus (Walckenaer, 1802)
Text Fig. 54d
Length: ♀: 6–6.5mm; ♂: 4–5mm.
Life-size illustrations of both female and male appear next to those of the epigyne and male palp. Carapace and abdomen are brownish. Abdomen has a central longitudinal white band followed by three white spots, a white line extending transversely, on each side, from the first spot. Epigyne and male palp are quite distinctive.

DISTRIBUTION
Very rare in this country, only three specimens having been taken on shingle beaches in Kent.

Family OXYOPIDAE

There is only one British species in this family in the genus *Oxyopes*. It is a rare spider and has an unmistakable appearance.

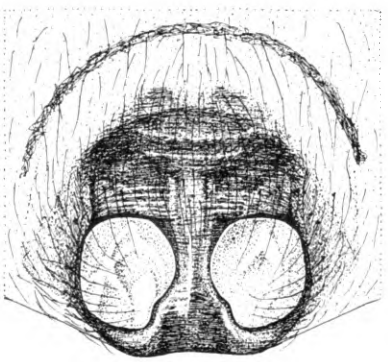
Genus *Oxyopes* Latreille, 1804

Oxyopes heterophthalmus Latreille, 1804
Plate 71; Text Fig. 55a
Length: ♀: 5–8mm; ♂: 5.5–6.5mm.
Note arrangement of the eyes, tapering abdomen and presence of scale-like, as well as normal, hairs on carapace and abdomen. The long spines on legs are often more erect than in the specimen illustrated, and are then even more striking. Male similar to female, but generally a richer, more reddish brown colour. Epigyne and male palp are distinctive.

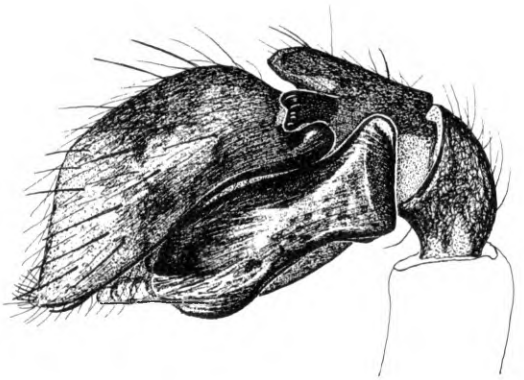
DISTRIBUTION
This spider has occurred in only five localities in the South of England. It is a hunting spider and runs about on the ground and on heather in search of prey.

Text Figure 54

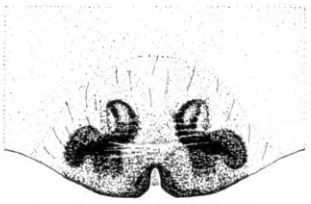
♀ **epigynes** ♂ **palps**



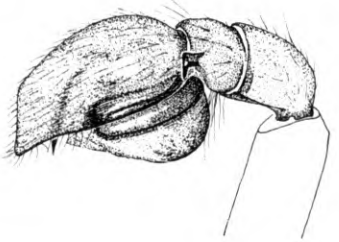
0.5mm



(**a**) *Phlegra fasciata*

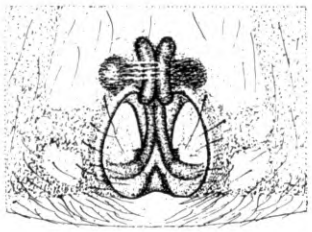


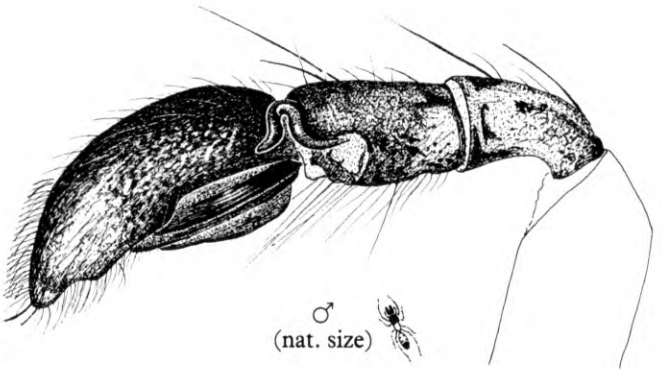
♀ (nat. size)



(**b**) *Synageles venator*

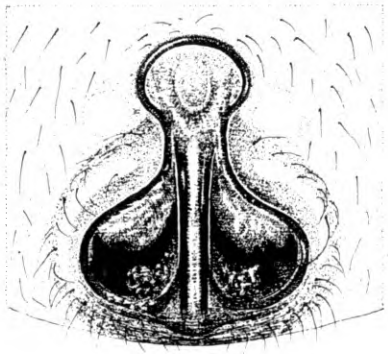
0.5mm



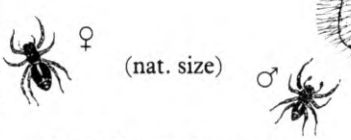


♂ (nat. size)

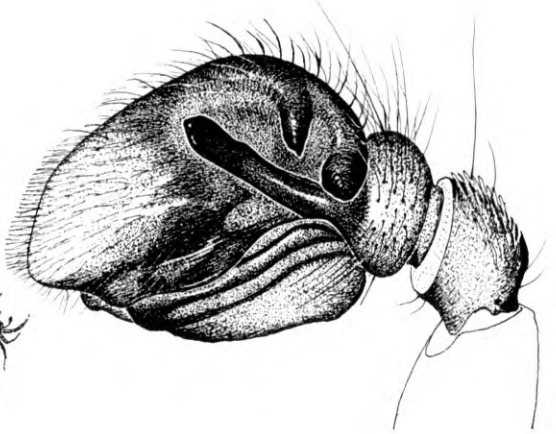
(**c**) *Myrmarachne formicaria*



0.5mm



♀ (nat. size) ♂



(**d**) *Pellenes tripunctatus*

Family LYCOSIDAE

There are thirty-six British species in this family, in nine genera. Commonly called wolf spiders, they spin no snare but run about in search of prey. Females do not even build a retreat for their eggs and young as do some other hunting spiders such as the Salticidae. Instead, the egg sac is carried about attached to the spinners and, later, the newly hatched young cling *en masse* to the female's abdomen for the first week or so of their life. Most lycosids have good eyesight and some species indulge in elaborate courtship displays.

A lycosid spider is easily recognized by the arrangement of the eyes – a row of four small eyes on the front of the carapace, and four larger eyes which form a trapezium which is slightly narrower anteriorly (Text Figs 7d–g; p. 40). (*Cf.* Pisauridae in which this trapezium is much narrower anteriorly (Text Figs 7h,i).) Apart from the Pisauridae the only other spider likely to be confused with a lycosid, especially in the field, is *Textrix denticulata* (Agelenidae) (Plate 90), but the very long posterior spinners in this species are obvious even to the naked eye.

As with other hairy spiders, their appearance in life is different from that in spirit and the illustrations are a compromise between the two.

Introduction to Genera of the LYCOSIDAE

It is very difficult to construct a generic key to this family that can be interpreted unambiguously by anyone beginning a study of spiders, due to the homogeneity of the Lycosidae. Anyone with experience would not need a key at all, and the novice would almost certainly end up by looking at the illustrations. Accordingly, it is considered more useful for there to be a brief note on each genus which can be read whilst reference is made to the colour plates or line-drawings. Alternatively, a very quick method of identification would be to examine the epigyne or male palp, preferably also making a quick sketch, and then to look through the illustrations of the genitalia.

1 *Pardosa* (Plates 72, 73, 74a–c) ..... (p. 133)
Note carapace which is rather elevated anteriorly, with almost vertical sides, and has lighter lateral and median bands. The former may be broken or continuous and the latter may be pointed or dilated in front. The abdominal pattern is of the same basic design in all species, but the emphasis and depth of colour varies. Legs IV are noticeably longer than the others. Of the thirteen British species each is broadly similar to at least one of the *Pardosa* illustrated. Egg sacs slightly flattened and brownish, greenish or bluish in colour with a pale seam. Several British species are common.

2 *Hygrolycosa* (Plate 76) ..... (p. 140)
Note carapace which is less elevated anteriorly than in *Pardosa*, and which has very distinct markings as also has the abdomen. Although the single British species of *Hygrolycosa* varies in the depth of colour from a lighter and yellowish hue to a deeper orange, it should be easily recognizable from the illustration. It is a rather rare species.

3 *Xerolycosa* (Plates 74d, 75) ..... (p. 142)
Carapace has an almost parallel-sided light median band covered with white hairs which extends to the front. The lateral light bands are usually only present on posterior half of carapace and may be partly or wholly due to white hairs. Legs fairly long and slender (*cf. Alopecosa*). Tarsi each have a group of four trichobothria: two long and two short, arranged alternately (*cf. Alopecosa*). Size: ♀: 4.5–7.5mm; ♂: 4.5–6mm (*cf. Alopecosa*). There are only two British species of *Xerolycosa*, both of which are uncommon.

4 *Alopecosa* (Plates 77, 78) ..... (p. 142)
Note the median light band on carapace which has a covering of white hairs and contains no darker marks (*cf. Trochosa, Pirata*). The lateral bands are usually continuous but not always well-defined. Abdominal pattern is sometimes much more distinct than illustrated in Plate 77. All legs stout and relatively short (*cf. Xerolycosa*) and each tarsus has a single long trichobothrium (*cf. Xerolycosa*). Genitalia similar to those of *Trochosa*. Males of some species have tibiae I swollen, darkened or provided with long dark hairs (*cf. Trochosa*). Size: ♀: 6–16mm; ♂: 5–12mm (*cf. Xerolycosa*). There are four British *Alopecosa* species, two of which are common.

5 *Trochosa* (Plate 79) ..... (p. 144)
Note the carapace markings – especially the median light band which lacks white hairs and contains a pair of

longitudinal dark bars anteriorly (*cf. Alopecosa*). Abdominal pattern broadly similar in all species but less reddish in some, and sometimes with the central lanceolate mark paler and yellowish. There are *no* tufts of white hairs on the abdomen (*cf. Pirata*). Legs stout and relatively short; tibiae, metatarsi, and sometimes tarsi, of legs I usually darkened in males (*cf. Alopecosa*). Genitalia similar to those of *Alopecosa*. The four British species of *Trochosa* are fairly large spiders (7–18mm) and two of the species are common. Egg sacs spherical and brownish in colour.

6 *Arctosa* (Plates 80, 81) ..... (p. 148)
Carapace lacks a definite median band; a roughly diamond-shaped area can often be made out behind the posterior eyes. A yellowish lanceolate mark is often present on abdomen. Legs usually spotted or annulated with black. There are four British *Arctosa* species. The commonest, *A. perita*, has a highly characteristic appearance despite great variability in colour and markings, and usually occurs in sandy areas.

7 *Pirata* (Plates 82, 83, 84) ..... (p. 150)
Carapace often has a pair of dark bands extending forwards from the fovea to form an elongated V or U (*cf. Alopecosa*). Note the series of paired white spots on abdomen (*cf. Trochosa*). These are tufts of white hairs and sometimes appear bluish. All but one of the six British species of *Pirata* inhabit wet marshy areas. Egg sacs spherical and pure white, often turning pink when immersed in spirit.

8 *Tricca* (Text Fig. 67a) ..... (p. 153)
The single British species of *Tricca* is a very rare spider and has been found in this country only in the Cairngorms above 3000 feet. It has a reddish brown carapace, with two oblique black bars at the juncture of the cephalic and thoracic regions, and the abdomen is brownish with a conspicuous light lanceolate stripe.

9 *Aulonia* (Plate 85) ..... (p. 153)
The single British species of *Aulonia* is rare, known from only one locality in England, and has a highly characteristic appearance. Note the white palpal patella, darkened femur I and rather long posterior spinners.

Genus *Pardosa* C. L. Koch, 1848

There are thirteen British species in this genus, amongst which are the most common and abundant of the lycosids. They are daytime hunters and run very rapidly, especially on hot sunny days. *P. nigriceps* runs about on low vegetation and bushes, but all the other species confine their activities to ground level.

During the preparation of this work a very large number of *Pardosa* specimens from different parts of the British Isles and from abroad were examined so that the degree of intraspecific geographical variation could be assessed. Many species of *Pardosa* show great variability in somatic and genitalic structure both within and between different populations. This can present considerable taxonomic problems as discussed in Chapter II (p. 31) and below.

TAXONOMIC NOTE

P. agricola (Thorell, 1856) and *P. arenicola* (O. P.-Cambridge, 1875) have previously been considered distinct species. More recently *P. arenicola* has been considered as being a form of *P. agricola*. Examination of large numbers of these spiders revealed enormous variation in carapace markings and genitalia. Using the same criteria previously used to separate *P. agricola* and *P. arenicola* it would have been possible to 'create' several new species or subspecies. My present view is that there is but one highly polytypic species, the name *Pardosa agricola* (Thorell) having priority. There is so much variation in markings and genitalia (with many intermediates) that the designation of various forms or subspecies becomes an arbitrary and perhaps rather pointless exercise at the present time.

P. agrestis (Westring, 1861) and *P. purbeckensis* F. O. P.-Cambridge, 1895, have also been previously considered distinct species. Again there is enormous variation in somatic and genitalic structure with many intermediate forms. Examination of large collections leads me to consider that there is one highly polytypic species, the name *Pardosa agrestis* (Westring) having priority.

Other *Pardosa* species are equally variable in general appearance and genitalia but have so far escaped splitting by taxonomists. Examination of large numbers of these species showed that it would be possible, applying the criteria used to separate *P. agrestis* and *P. purbeckensis*, to 'discover' several new species or subspecies. Indeed, the extreme forms often appear very distinctly different and to warrant separate status until one sees the whole range of intermediates. Apart from different selection pressures, different habitats may influence the number of ecdyses taken for the species to reach maturity, which may affect both the size and appearance of adults. Occasional hybridization between certain closely related species may be a source of further confusion.

I am aware of current research which uses ethological methods to delimit sibling species. However, the present work is confined to delimiting species which are reliably separable on morphological grounds.

Pardosa agricola (Thorell, 1856)

(= *P. agricola* (Thorell) and *P. arenicola* (O. P.-Cambridge). See Taxonomic Note, above)

Text Figs 55b, 56

Length: ♀: 5.5–8mm; ♂: 4.5–6.5mm.

Carapace markings vary considerably, particularly in the female. Some females are clearly marked with brown and pale yellow with a carapace pattern similar to that of *P. hortensis* (Plate 74b). Other females, and most males, have less distinct markings, are darker, and appear similar to *P. amentata* (Plate 73). Further examples of male and female carapaces appear in Text Fig. 56. Occasionally the lateral bands are continuous as in *P. agrestis* and *P. monticola*.

Epigynes and male palps are highly variable (Text Figs 55b, 56), both between and within different populations. There appears to be no definite correlation between different markings and differences in genitalia.

Pardosa agrestis (Westring, 1861)
(= *P. agrestis* (Westring) and *P. purbeckensis* F. O. P.-Cambridge. See Taxonomic Note, p. 133)
Text Figs 55c, 57a,b
Length: ♀: 6–9mm; ♂: 4.5–7mm.
This species is also highly variable. Some specimens appear very like *P. monticola* (Plate 74a) with the median band pointed anteriorly. On each side of the median band, near the front end, can be seen a pair of roughly semicircular areas, outlined with black. In both *P. monticola* and *P. agrestis* these areas may be brown, as illustrated, or pale, the median band thus becoming dilated anteriorly. The lateral bands on the carapace are usually continuous but may occasionally be broken as in *P. hortensis* (Plate 74b). Specimens taken on mud-flats and shores of estuaries in this country are usually darker, have the median carapace band pointed anteriorly, and males often have long hairs on metatarsi and tarsi I. This form has previously been known as *P. purbeckensis* F. O. P.-Cambridge. There is a full range of intermediates between 'typical' *P. agrestis* and the form *purbeckensis*. Even within the form *purbeckensis* there is great variability in markings and genitalia. Juveniles within typical *purbeckensis* populations frequently have *P. agrestis* markings. Males may lack the hairs on metatarsi and tarsi I whilst others have these segments profusely covered with long hairs; again there are many intermediate states. Epigynes and male palps also highly variable, both within and between different populations (Text Figs 55c, 57a).

Pardosa monticola (Clerck, 1757)
Plate 74a; Text Figs 55d, 57c
Length: ♀: 4–6mm; ♂: 4–5.5mm.
This species also shows great variability in markings and genitalia. Carapace usually as illustrated (Plate 74a) but occasionally the median band is dilated anteriorly as described for *P. agrestis* (see above). Lateral bands are usually unbroken, as in illustration, and continue round the side of the eyes; occasionally they may be broken as in *P. hortensis* (Plate 74b). Male palps highly variable as also are the epigynes. The latter are often very similar to the epigynes of *P. agrestis*. The variability of palps and epigynes is not illustrated but it is of the same order as the range in *P. agricola* (as illustrated) and *P. agrestis*.

Pardosa palustris (Linnaeus, 1758)
Text Figs 57d, 58a
Length: ♀: 4.5–6mm; ♂: 4.5–5.5mm.
General appearance very like *P. monticola* (Plate 74a). Lobes of epigyne and its posterior border are often more rounded, as shown in Text Fig. 57d. As with *P. monticola*, *P. palustris* exhibits considerable variation in markings. The form *herbigrada* (Blackwall, 1857), commonly found on dark soil in heathery places, was once regarded as a separate species and more recently as a distinct variety. Intermediates however occur frequently and the various forms have long been known to interbreed.

Pardosa pullata (Clerck, 1757)
Plate 72; Text Fig. 58b
Length: ♀: 4–6mm; ♂: 4–5mm.
Male similar to female.

Pardosa prativaga (L. Koch, 1870)
Text Fig. 58c
Length: ♀: 4–6mm; ♂: 4–5mm.
Very similar to *P. pullata* but legs are more clearly annulated and the abdomen has clearer markings due to light and dark hairs.

Pardosa amentata (Clerck, 1757)
Plate 73; Text Fig. 58d
Length: ♀: 5.5–8mm; ♂: 5–6.5mm.
Male similar to female but markings usually clearer. A life-size illustration of female, with egg sac, appears next to that of its epigyne.

Pardosa nigriceps (Thorell, 1856)
Plate 74c; Text Fig. 59a
Length: ♀: 5–7mm; ♂: 4–5mm.
Note the thick covering of black hairs on the male palps. Female similar in general appearance to male illustrated, but with a larger abdomen, and yellow bands on carapace more clearly marked.

Pardosa lugubris (Walckenaer, 1802)
Text Fig. 59b
Length: ♀: 5–6mm; ♂: 4–5mm.
Similar in general appearance to *P. pullata* (Plate 72). Male with a very distinct pale central band, formed by white hairs, on carapace (rather like a small *Xerolycosa nemoralis* (Plate 74d)).

Pardosa hortensis (Thorell, 1872)
Plate 74b; Text Fig. 59c
Length: ♀: 4.5–5.5mm; ♂: 3.5–4.5mm.
Female with legs clearly annulated apart from the tarsi. Male darker than female and legs less clearly annulated.

Pardosa proxima (C. L. Koch, 1848)
Text Fig. 59d
Length: ♀: 5.5–6.5mm; ♂: 4.5–5mm.
Female similar to that of *P. hortensis* (Plate 74b) but with median band of same shape as illustrated for *P. monticola*. Male similar but darker.

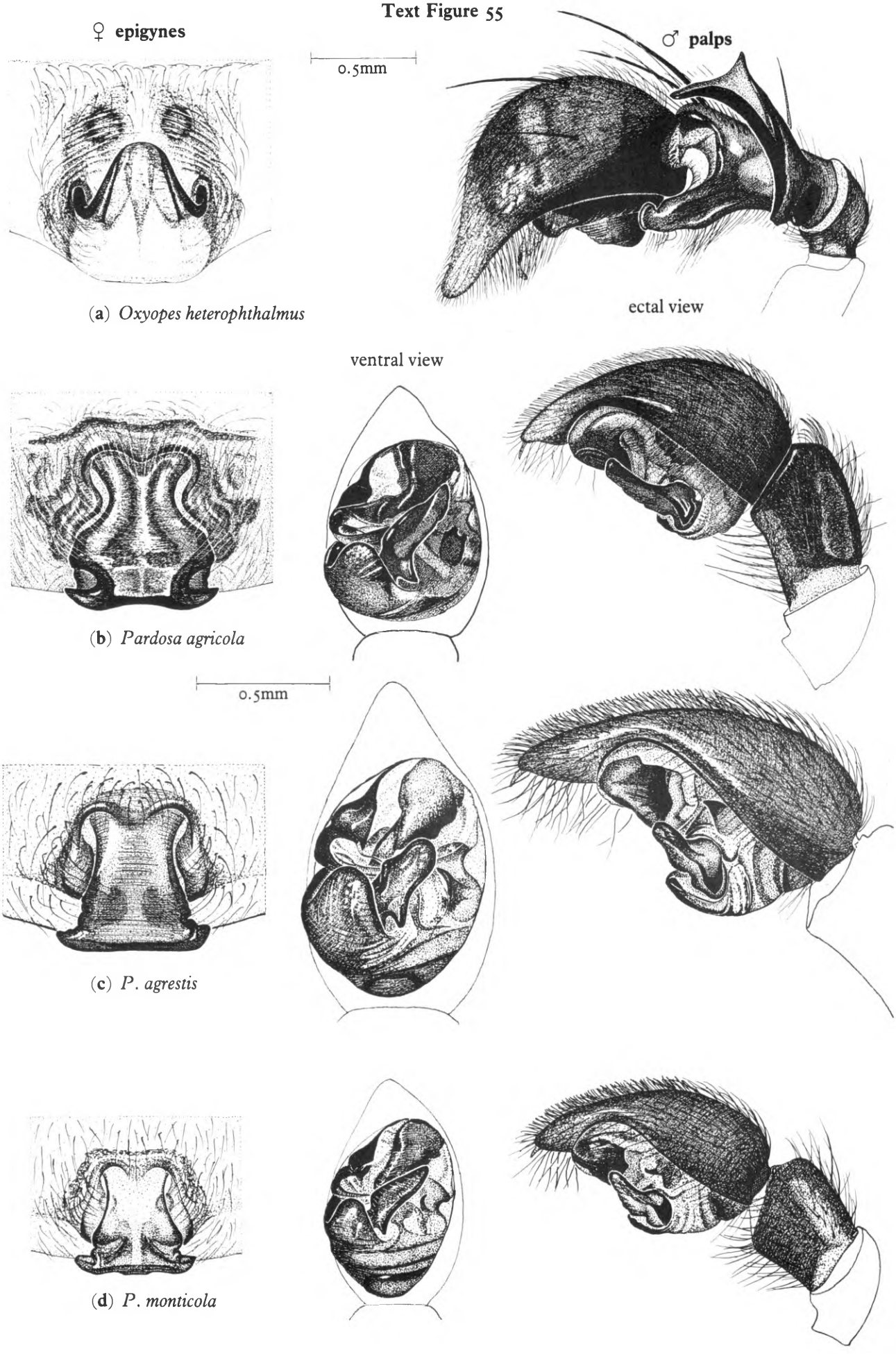
Pardosa trailli (O. P.-Cambridge, 1873)
Text Fig. 60a
Length: ♀: 7–8.5mm; ♂: 6.5–7mm.
Similar in general appearance to *P. amentata* (Plate 73).

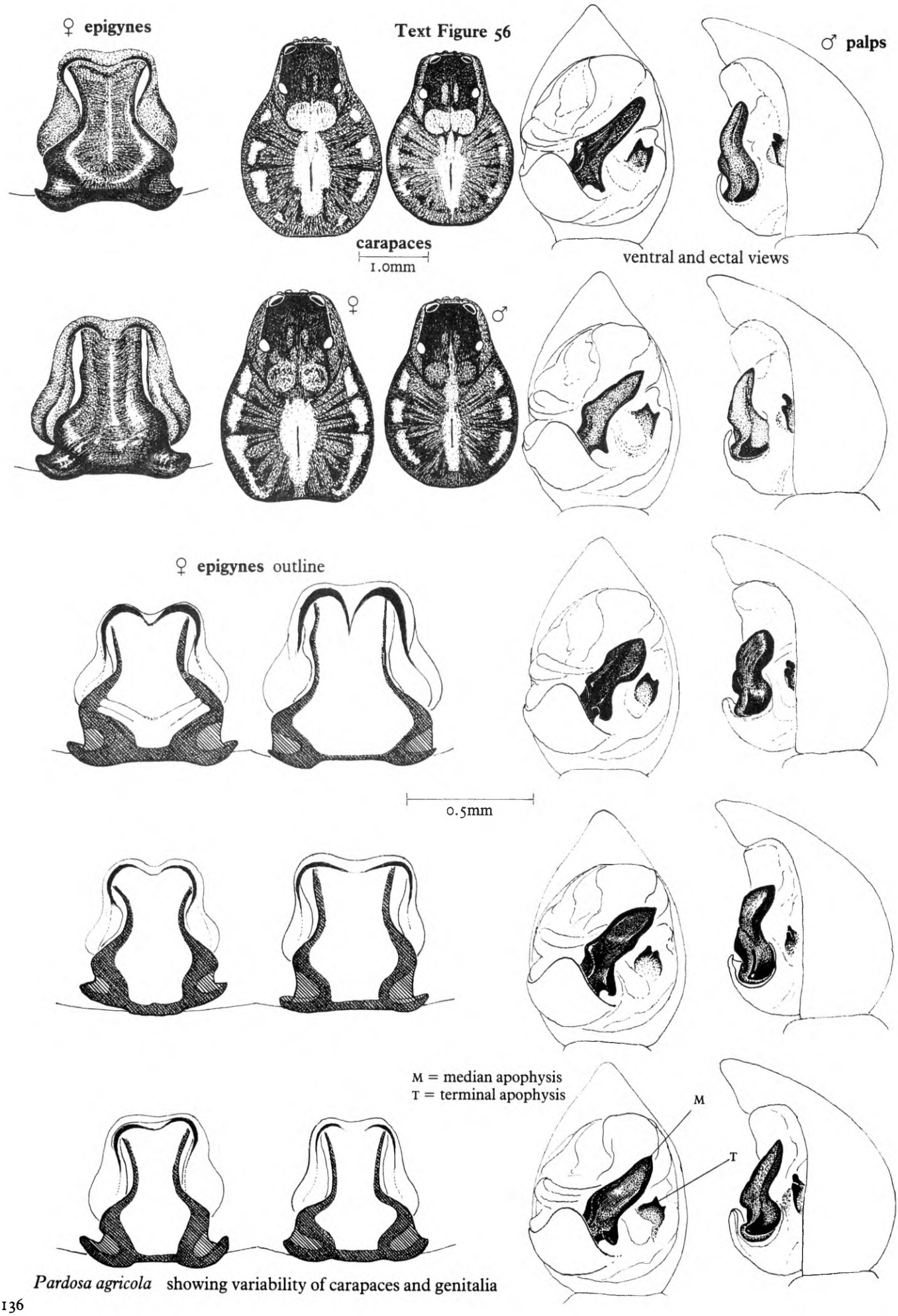
Pardosa paludicola (Clerck, 1757)
Text Fig. 60b
Length: ♀: 8–9mm; ♂: 7mm.
Similar in general appearance to *P. pullata* and *P. amentata* (Plates 72, 73) but larger and darker.

DISTINGUISHING THE SPECIES

P. pullata and *P. amentata*, being the most widespread,

Text Figure 55

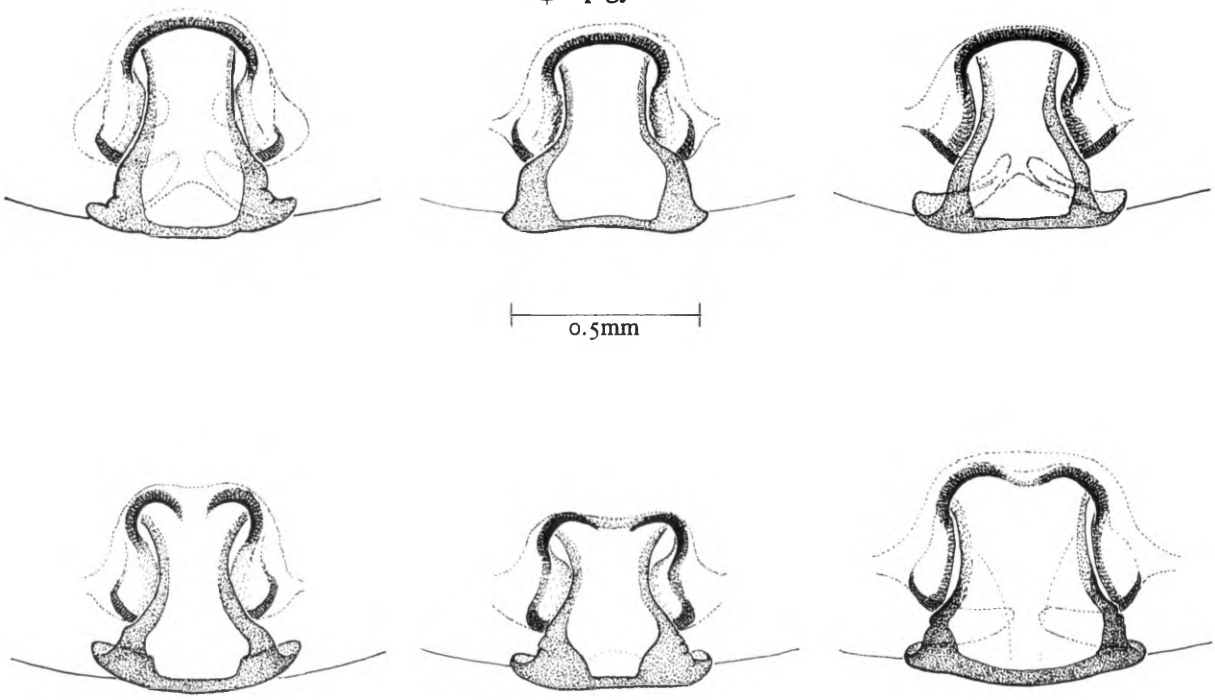




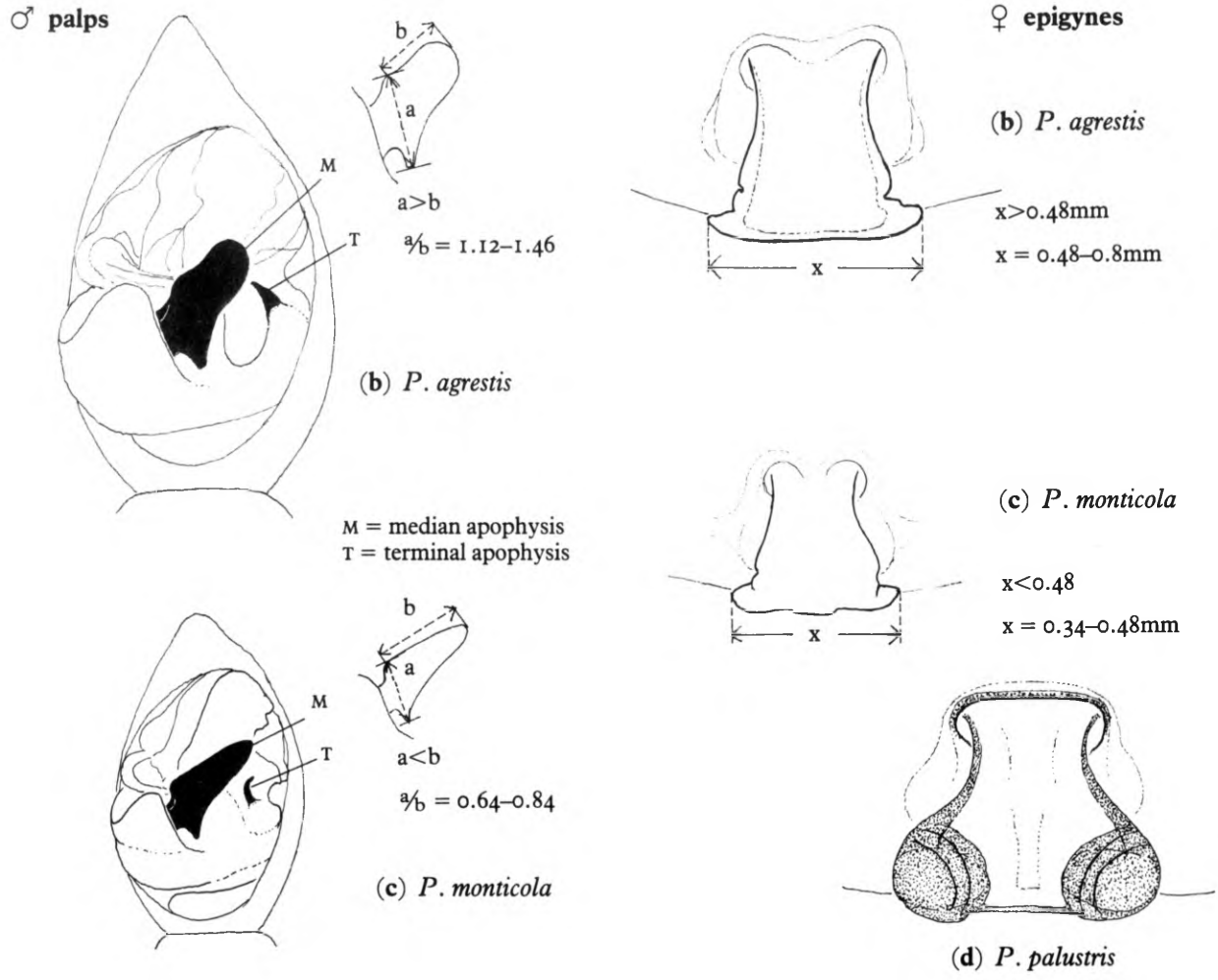
Pardosa agricola showing variability of carapaces and genitalia

Text Figure 57

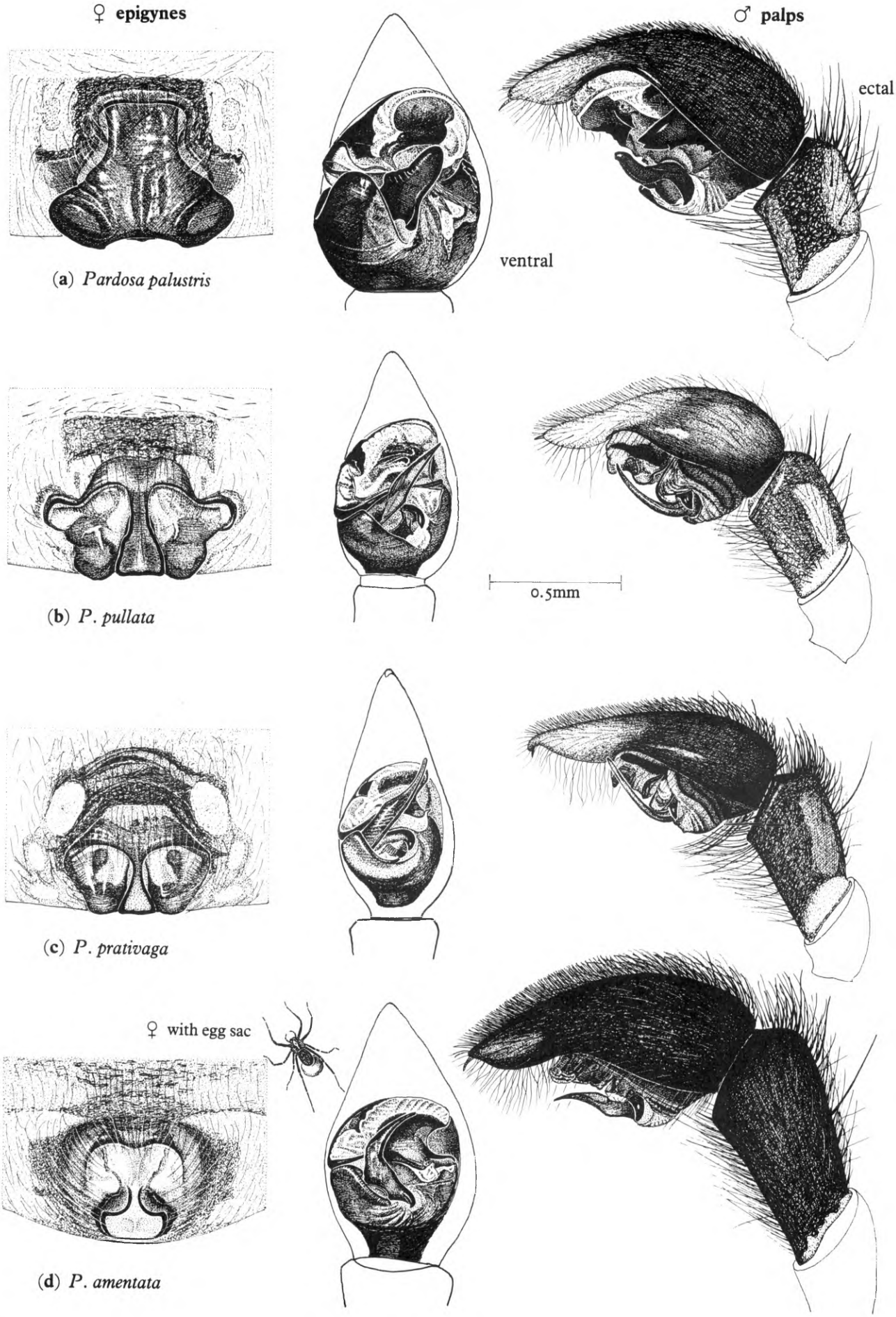
♀ epigynes



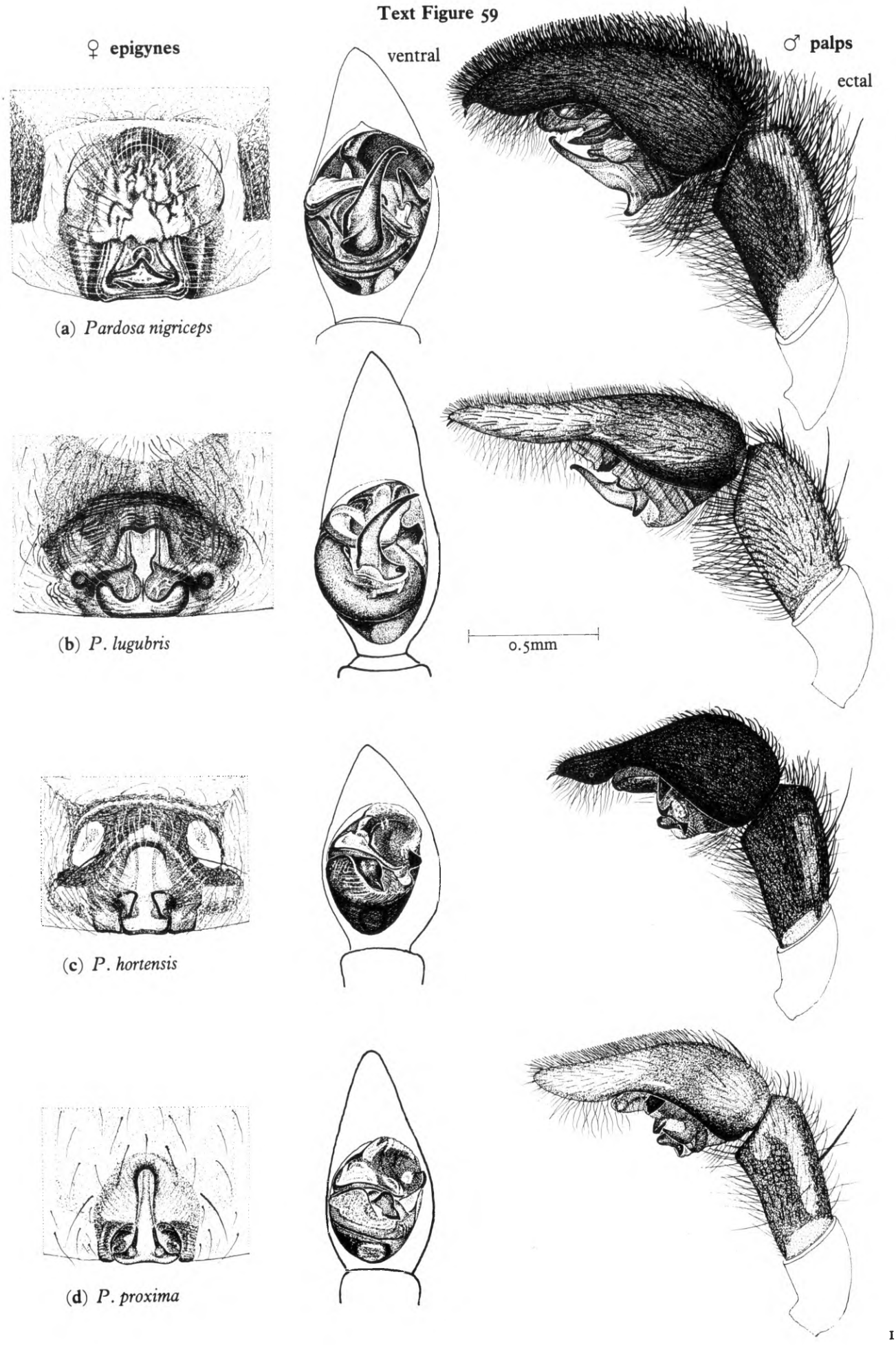
(**a**) *Pardosa agrestis* showing variability of epigynes



Text Figure 58



Text Figure 59



common and abundant species in this genus, are likely to be encountered first. The genitalia afford the best means of identification of the species, and although colour, markings and size are a useful check they can vary a great deal and should not be relied on. Overall size of genitalia is also variable.

P. agricola, *P. agrestis*, *P. monticola* and *P. palustris* have very similar genitalia which show considerable variation. Epigynes of all four species have a large, reddish, chitinized tongue. Epigynes of *P. agricola* and *P. palustris* easily distinguished (Text Figs 55b, 56; 57d, 58a) but those of *P. agrestis* and *P. monticola* occasionally present difficulty. The width across the posterior part of the chitinized tongue (Text Figs 57b,c) seems to afford reliable separation in practically every case. Male palp of *P. agricola* has a distinctive, though variable terminal apophysis (T) (Text Figs 55b, 56) and that of *P. palustris* has a jagged process extending ventrally from under the lateral margin of cymbium (Text Fig. 58a). This process is a variable but reliable distinguishing feature. Male palps of *P. agrestis* and *P. monticola* can usually be distinguished by shape of terminal apophysis (T) (Text Figs 55c,57b; 55d,57c) but this can show considerable variation. The median apophysis (M) (Text Figs 57b,c) also varies considerably in its *shape*, but measurement of the proportions shown affords reliable means of separation.

For those who wish to continue recognition of *P. purbeckensis* as a distinct species, the simplest, most reliable method of separating it is by consideration of its habitat – mud-flats and shores of estuaries.

P. pullata and *P. prativaga* have similar genitalia. The central tongue of epigyne is variable and often parallel-sided in *P. pullata* and the epigynes of these species are best distinguished by the form of the anterior and lateral margins. The slender median apophysis of male palps is extremely variable and not reliable, although the small tooth at its base is broader in *P. pullata*. The palps of these two species are best distinguished by their overall appearance and the most useful single character is probably the tip of the palpal tarsus which is slightly hooked in *P. prativaga*, as well as having the terminal spine.

P. amentata is readily identifiable by its genitalia, although the covering of hairs on male palp not always as thick as illustrated. *P. nigriceps* has an epigyne which, although variable (particularly in depth of chitinization), is readily identifiable. Male palp of *P. nigriceps* is also characteristic.

P. lugubris, *P. hortensis* and *P. proxima* have similar epigynes which, in the event of great variation from the illustrations, can be distinguished by the width and form of anterior arch. Male palps of these three species easily identified by overall appearance as well as by the various apophyses.

P. trailli and *P. paludicola* are readily identifiable by their genitalia. Epigyne of *P. paludicola*, which is similar to that of *P. proxima* but larger, sometimes has the posterior part of central tongue more rectangular than triangular in appearance.

DISTRIBUTION

P. amentata and *P. pullata* are both widespread and very common. *P. nigriceps* is almost as common but, in contrast to the terrestrial habits of all the other species, is usually found on low vegetation such as gorse and heather. *P. palustris* and *P. monticola* have a widespread but rather local distribution mainly on heathland and meadows respectively and the same applies to *P. lugubris* which occurs in or near woods. *P. agrestis* occurs, usually in the form *purbeckensis*, on mud-flats and the shores of estuaries around the coast of England, Wales, Scotland and Ireland. Although having a local distribution, it can at times be found abundantly. It has only rarely been found inland in the southern part of England. *P. prativaga* and *P. agricola* are widespread but less common, the latter usually being associated with habitats on the coast or the banks of lakes and rivers. *P. hortensis* and *P. proxima* are encountered with any frequency only in the southern half of Britain, in a variety of habitats. *P. trailli* and *P. paludicola* are both rare spiders, the former being found on mountains and the latter in a few localities in the southern half of England, in damp situations.

Genus *Hygrolycosa* F. Dahl, 1908

The single British species in this genus differs from *Pardosa* in the degree of elevation of the front of the carapace and in the genitalia.

Hygrolycosa rubrofasciata (Ohlert, 1865)

Plate 76; Text Fig. 60c

Length: ♀: 5.5–6mm; ♂: 5–5.5mm.

Appearance unmistakable in both male and female. Note how the dark stripes on carapace continue anteriorly to form a black stripe on the chelicerae. Depth of background colour varies from pale yellow (some females) to a deeper brownish orange (most males). Female epigyne rather small and partly obscured by light hairs. Male palp is easily recognizable and has a rather bulbous tibia.

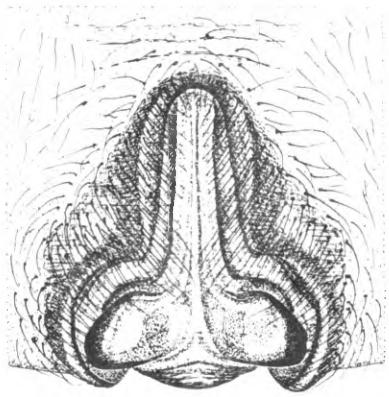
DISTRIBUTION

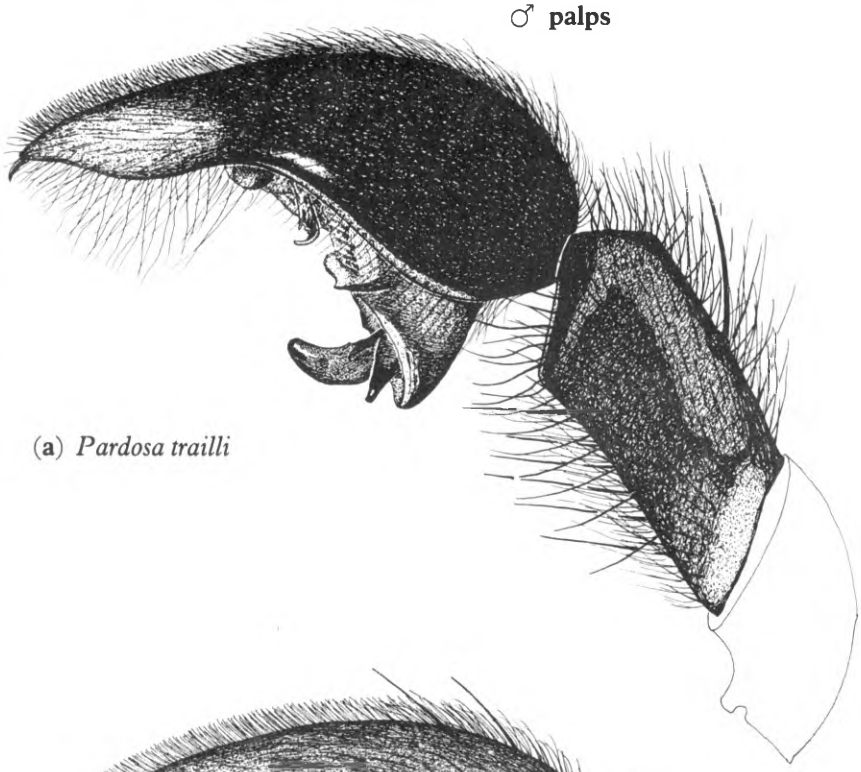
This spider has been found in only a few localities, in central, eastern and southern England, mainly in fens.

Text Figure 60

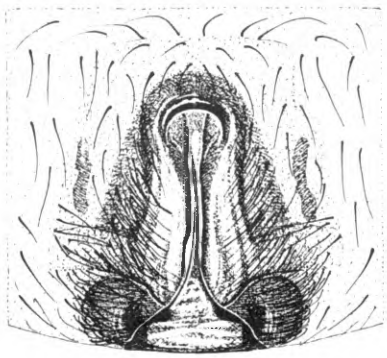
♀ epigynes

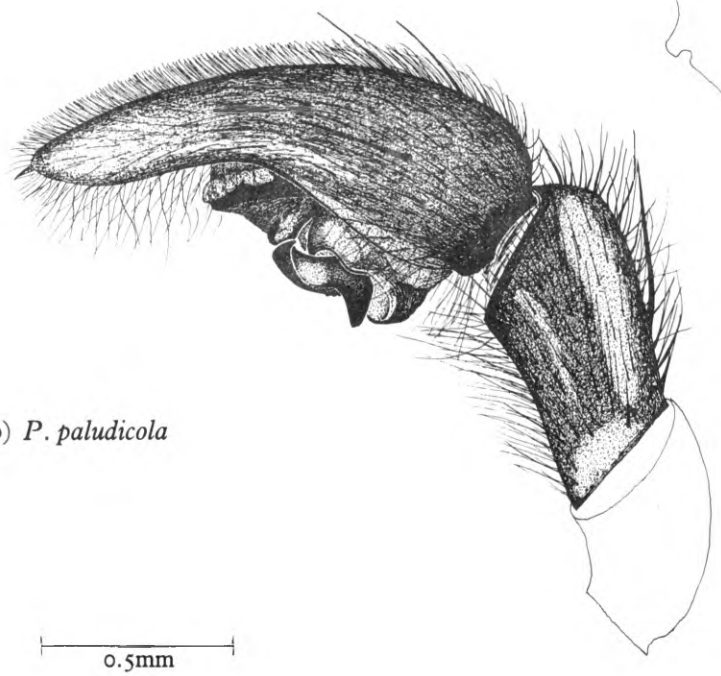
♂ palps





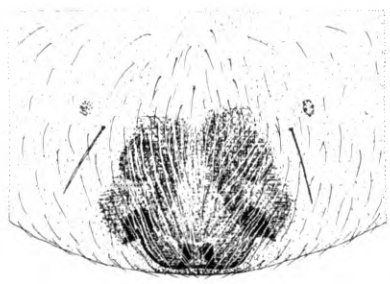
(a) *Pardosa trailli*

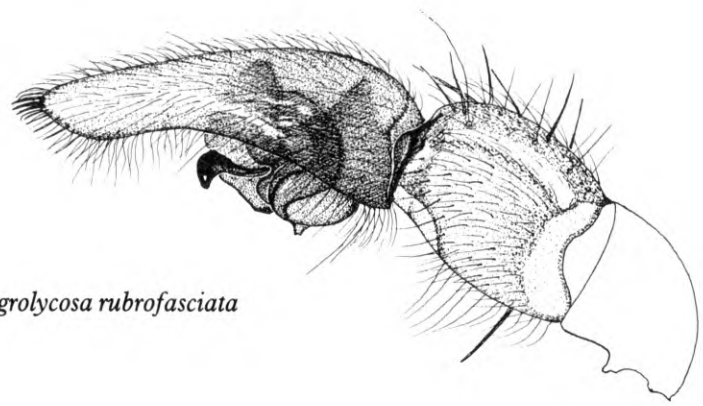




(b) *P. paludicola*

0.5mm





(c) *Hygrolycosa rubrofasciata*

Genus *Xerolycosa* F. Dahl, 1908

The two British species in this genus have a similar and fairly characteristic appearance. The arrangement of the tarsal trichobothria is discussed in the Introduction to Genera (p. 132).

Xerolycosa nemoralis (Westring, 1861)

Plate 74d; Text Fig. 61a

Length: ♀: 4.5–7.5mm; ♂: 4.5–6mm.

Female similar to the male illustrated. Note that the lateral bands on the posterior half of carapace are mainly due to white hairs.

Xerolycosa miniata (C. L. Koch, 1834)

Plate 75; Text Fig. 61b

Length: ♀: 5.5–6.5mm; ♂: 4.5–5.5mm.

Male similar to the female illustrated. Note the lateral bands on carapace, which are due to paler pigmentation as well as light hairs, and the slight constriction of the median band.

DISTINGUISHING THE SPECIES

The carapace markings are helpful (see above): *X. nemoralis* is usually reddish in overall appearance whilst *X. miniata* tends to be a more speckled sandy colour. Epigynes distinguished by consideration of size and shape of the openings relative to central tongue, and male palps by careful comparison of palpal organs. *X. nemoralis* looks rather like a male *Pardosa lugubris* in the field.

DISTRIBUTION

Both species are uncommon and have a very local distribution. *X. nemoralis* has been found in a number of localities in the South and South-east of England; on sparsely vegetated heathland, chalk grassland and in clearings in woods. *X. miniata* extends farther north into Scotland but occurs only on coastal sand-hills.

Genus *Alopecosa* Simon, 1885

The four British species in this genus are fairly large spiders with relatively short, stout legs. Other characters are noted in the Introduction to Genera (p. 132).

Alopecosa pulverulenta (Clerck, 1757)

Plate 77; Text Fig. 61c

Length: ♀: 6.5–10mm; ♂: 5–8mm.

Male similar to female illustrated, but abdomen smaller. In life, the markings of both sexes are usually much clearer due to the light hairs being more conspicuous. Male has tibia and metatarsus of leg I similar to those of female with no swelling or distinctive hairs (*cf. A. cuneata* and *A. accentuata*).

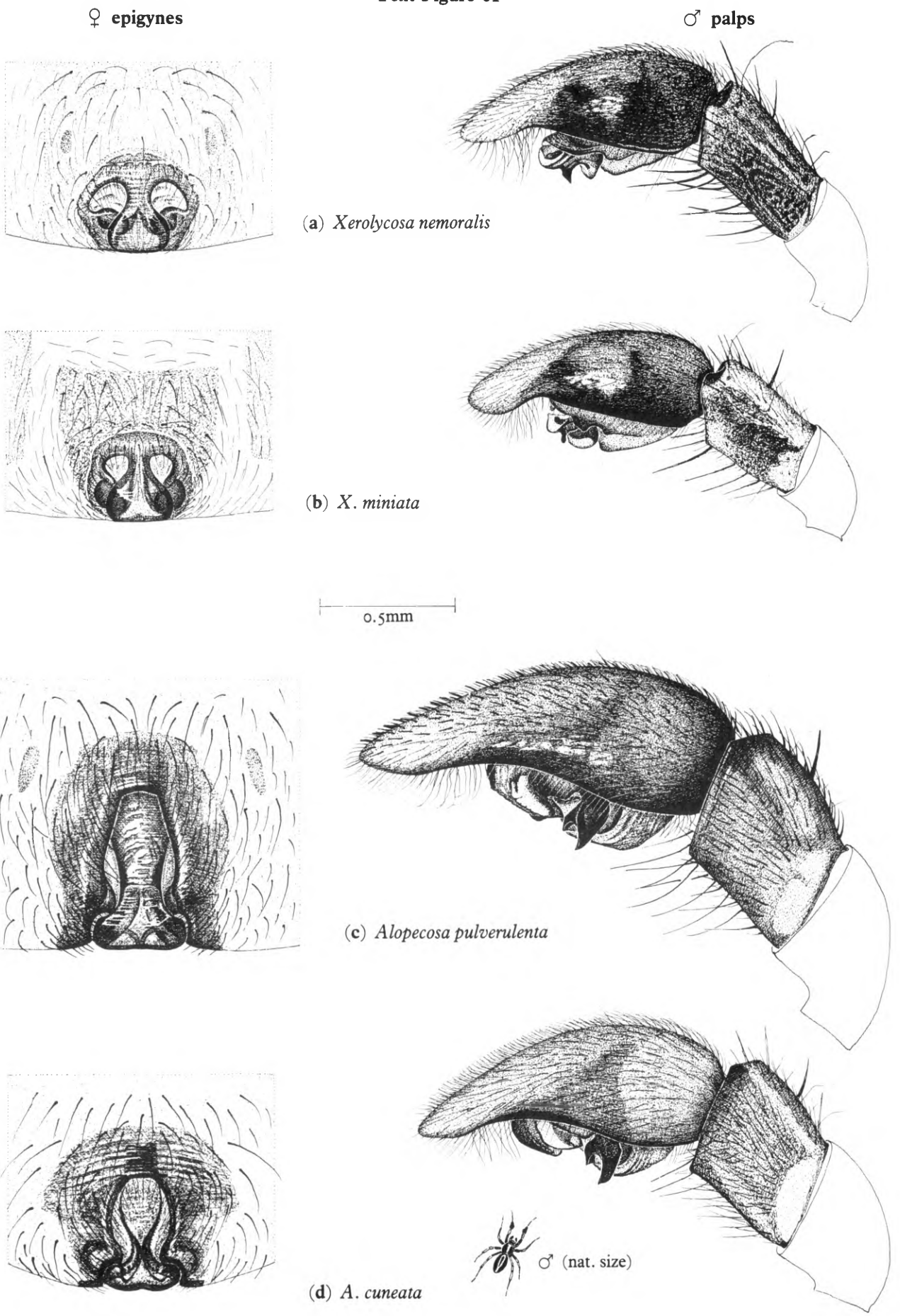
Alopecosa cuneata (Clerck, 1757)

Text Fig. 61d

Length: ♀: 6–8mm; ♂: 6–7.5mm.

Females similar to *A. pulverulenta* but the light areas on the abdomen, bordering the central stripe, are much lighter, often yellowish and are much more clearly defined. This can be seen on the life-size illustration of male which appears next to that of its palp, and which also shows the short swollen tibiae on its first pair of legs which enable male to be identified even in the field (*cf. A. accentuata* Plate 78).

Text Figure 61



Alopecosa accentuata (Latreille, 1817)
Plate 78; Text Fig. 62a
Length: ♀: 8–12mm; ♂: 7.5–9mm.
Note the darkened, swollen tibia I and the long dark hairs present on both tibia and metatarsus I. Female lacks this modification but is otherwise similar. Female also similar to *A. pulverulenta* (Plate 77) except that abdomen has transverse bars more pronounced and forming more distinct chevrons.

Alopecosa fabrilis (Clerck, 1757)
Text Fig. 62b
Length: ♀: 13–16mm; ♂: 10–12mm.
This large spider has similar markings to *A. accentuata*. A life-size illustration of the male appears next to that of its palp. Note that the first pair of tibiae are not specially modified (*cf. A. accentuata* and *A. cuneata*).

DISTINGUISHING THE SPECIES
The only difficulty likely to be experienced is in distinguishing between the genitalia of *A. pulverulenta* and *A. cuneata*. Although male palps of these two are rather similar, the short, swollen tibia of leg I readily identifies male of *A. cuneata*. The abdominal pattern also clearer in *A. cuneata* in both male and female. Epigyne of *A. cuneata* smaller than that of *A. pulverulenta*. In addition, the narrowest point of central tongue measures only about one-third of width across the widest part of opening in *A. cuneata*, whereas in *A. pulverulenta* it is over half the width and often fills opening completely.

DISTRIBUTION
A. pulverulenta is common and widespread. *A. accentuata* is as widespread but has a more local distribution, mainly on open heathland and grassland. *A. cuneata* is less common and has a mainly southern distribution, mainly on chalk grassland and sand-dunes, although it has occurred in north-west England. *A. fabrilis* is a rare species known only from two heathland localities in the south.

Genus *Trochosa* C. L. Koch, 1846

The four British species in this genus are fairly large spiders with relatively short, stout legs and have a broadly similar appearance. In two of the species the central abdominal stripe is the same colour as the rest of the abdomen and in the other two it is of a paler yellowish colour. These spiders spend the daytime under stones and leaves, only coming out to hunt at night.

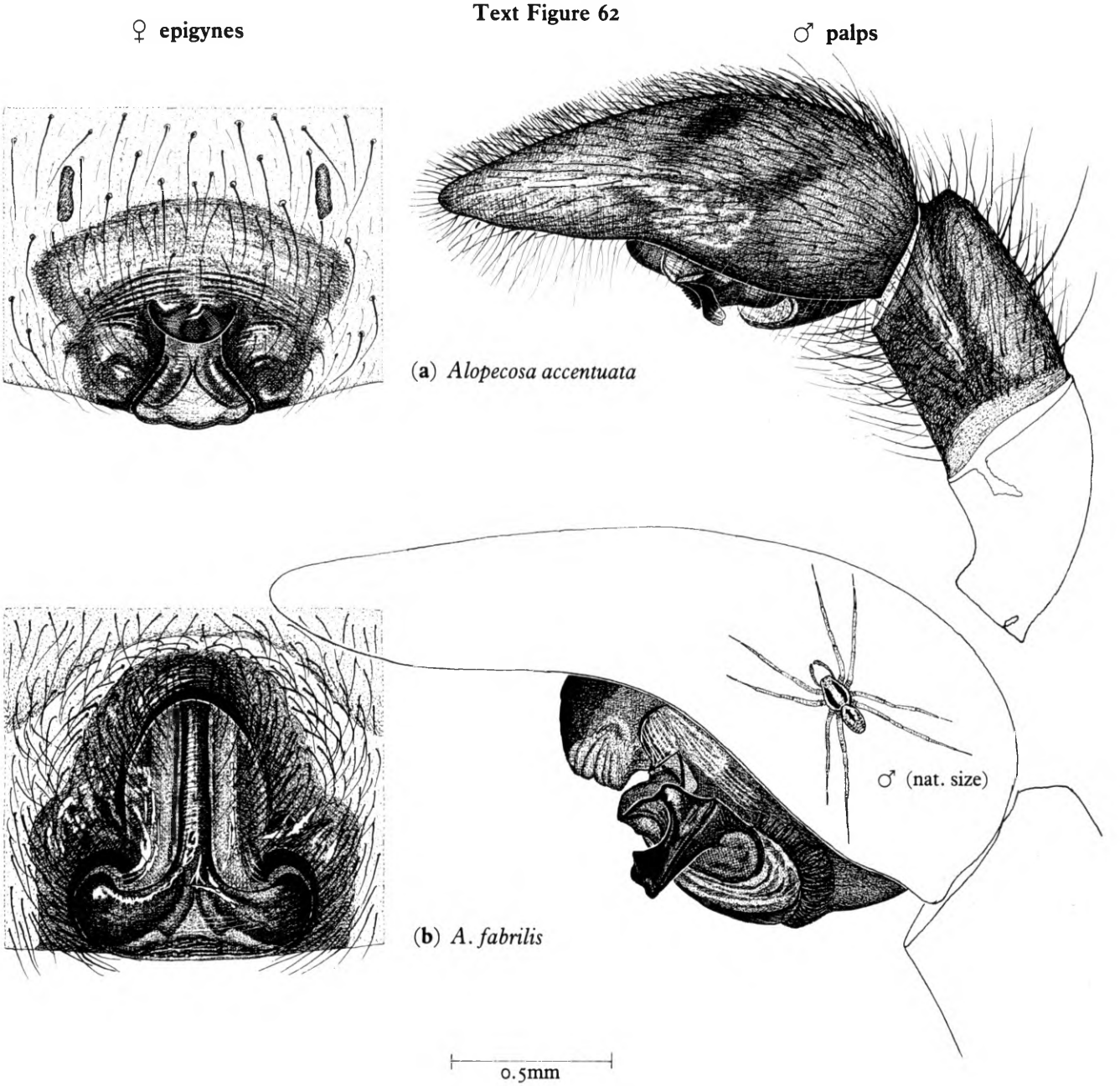
Trochosa ruricola (Degeer, 1778)
Text Figs 62c, 63a
Length: ♀: 9–14mm; ♂: 7–9mm.
Similar in general appearance to *T. terricola* (Plate 79) but abdomen is more olive-brown in colour with central lanceolate stripe pale yellow and distinct, rather like that of *Arctosa leopardus* (Plate 81).

Trochosa robusta (Simon, 1876)
Text Figs 62d, 63b
Length: ♀: 11–18mm; ♂: 9–18mm.
Similar to *T. ruricola* in that dorsal lanceolate stripe on the abdomen is yellowish and fairly distinct.

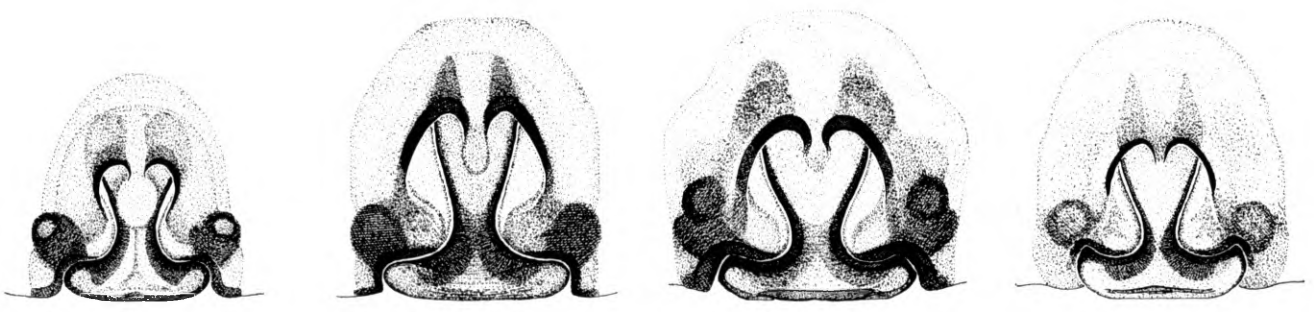
Trochosa terricola Thorell, 1856
Plate 79; Text Figs 62e, 63c
Length: ♀: 7–14mm; ♂: 7–9mm.
Male similar to female. Overall reddish colour of abdomen usually characteristic but in some specimens it may be more brownish. Central lanceolate stripe less distinct and of roughly the same colour as the general background.

Trochosa spinipalpis (F. O. P.-Cambridge, 1895)
Text Figs 62f, 63d
Length: ♀: 9–11mm; ♂: 8–10mm.
Similar to *T. terricola*, but usually has a darker brown abdomen with the dorsal stripe ill-defined and of the same colour as the general background. The whole spider often has a darker, more reddish brown appearance than *T. terricola*.

Text Figure 62



Trochosa ♀ **epigynes** hairs omitted



(c) *T. ruricola* (d) *T. robusta* (e) *T. terricola* (f) *T. spinipalpis*

DISTINGUISHING THE SPECIES

T. ruricola and *T. terricola* are the commonest and hence are more likely to be encountered first. All four species have very similar genitalia which are subject to considerable individual variation. When examining the epigyne or male palp of a specimen it is best, initially, to compare the *overall impression* of the structure with the illustrations, rather than to concentrate on one or two details. I have been unable to find any formula involving comparative measurements of parts which reliably separates the species, and the most satisfactory method of identification is as follows:

1 Dorsal abdominal stripe yellowish and noticeably lighter than the rest of abdomen. Male palp with terminal claw ..... *T. ruricola* and *T. robusta*

2(1) Dorsal abdominal stripe reddish or brown, the same as the general background. Male palp without terminal claw ..... *T. terricola* and *T. spinipalpis*

The species within these two groups can then be separated, with reference to Text Figs 62 and 63, as follows:

1 *T. ruricola* and *T. robusta*:

(a) *Epigynes*. Note the pair of chitinized arches anteriorly and compare the way in which they curve around laterally in relationship to the central tongue, and their relative thickness. Note also the width of the central tongue as it disappears anteriorly under each arch and compare this with the maximum width across the lateral margins formed by the arch. Comparison of the shape of the paired dark areas anterior to the arch can also be useful.

(b) *Male palps*. Note the tooth-like median apophysis on the palpal organs and the claw at the tip of palp. These two structures are of roughly the same size in *T. ruricola*, but in *T. robusta* the median apophysis is considerably larger than the claw. The tip of the palp is slightly more bulbous in *T. ruricola* than in *T. robusta* and there are also slight differences in the palpal organs.

2 *T. terricola* and *T. spinipalpis*:

(a) *Epigynes*. Note and compare the chitinized arches, the shape of the paired dark areas anterior to these and the outline of the seminal receptacles on each side. The widest (posterior) part of the central tongue has a characteristic shape in *T. spinipalpis*, being, on each side, rather like the tip of a Dutch clog.

(b) *Male palps*. The tip of the palp is noticeably more bulbous in *T. terricola*, and in *T. spinipalpis* there is usually a group of stout spines on the ventro-mesal aspect of the palpal tibia. There are also slight differences in the palpal organs and median apophyses.

DISTRIBUTION

T. ruricola and *T. terricola* are both widespread and common throughout the British Isles. *T. spinipalpis* is widely distributed throughout England and Wales, and in Scotland, but is apparently rare, occurring mainly in damp places. (I have come across specimens mixed in with collections of *T. terricola*, so part of the 'rarity' may be due to failure of identification.) *T. robusta* is known from about a dozen localities, spread throughout England, mainly on chalk grassland, and is rare.

Text Figure 63

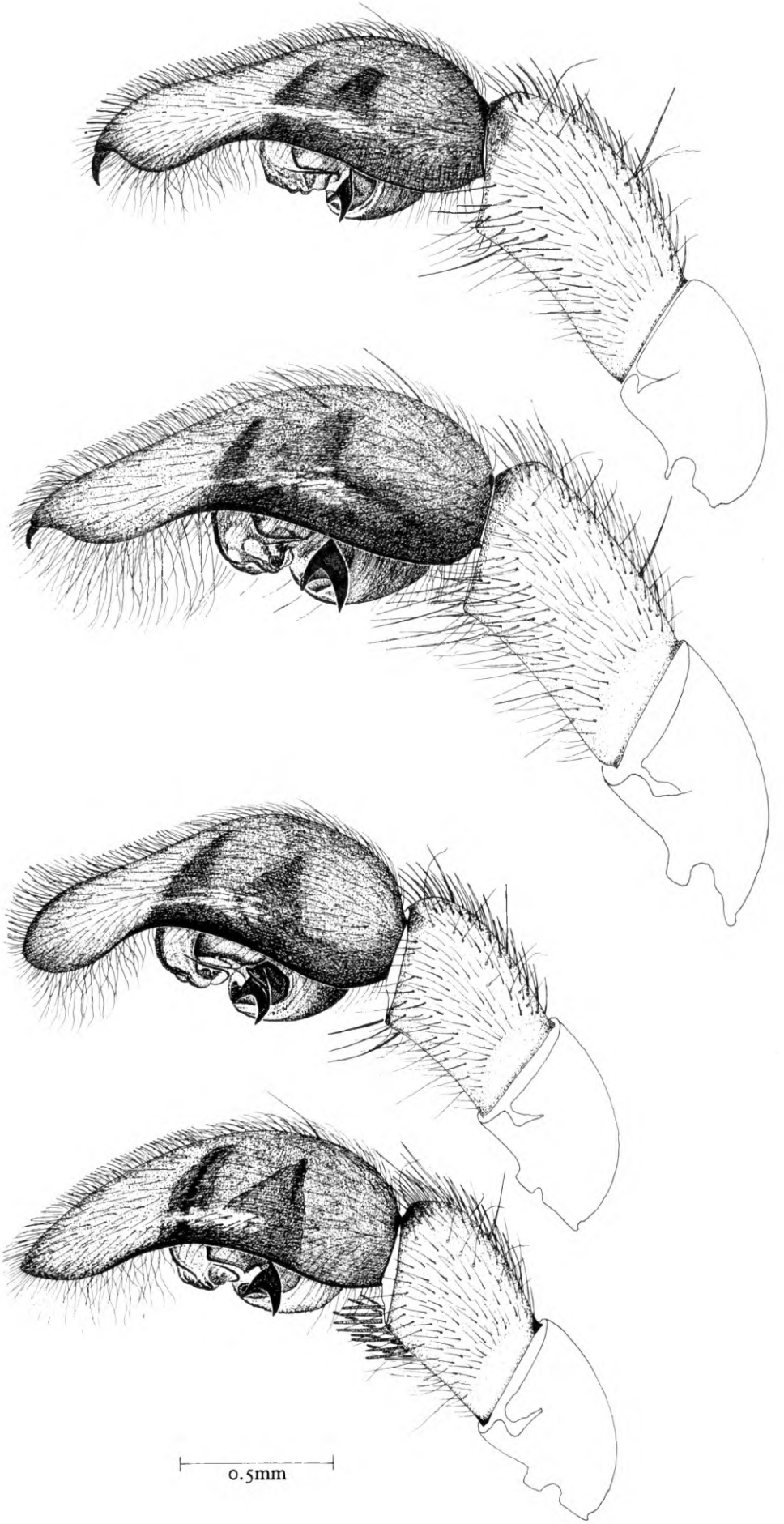
♂ **palps**

(**a**) *Trochosa ruricola*

(**b**) *T. robusta*

(**c**) *T. terricola*

(**d**) *T. spinipalpis*



Genus *Arctosa* C. L. Koch, 1848

The characteristics of the four British species in this genus are given in the Introduction to Genera (p. 133).

Arctosa fulvolineata (Lucas, 1846)

Text Fig. 64a

Length: ♀: 10–12mm; ♂: 7.5–8.5mm.

A life-size illustration of female appears next to that of its epigyne. Carapace orange-brown; abdomen brownish with clear yellow lanceolate mark and darker markings similar to those of *A. leopardus* (Plate 81). The lateral dark patches on abdomen are sometimes confluent, especially in males, when they then form a pair of longitudinal dark bands.

Arctosa perita (Latreille, 1799)

Plate 80; Text Fig. 64b

Length: ♀ ♂: 6.5–9mm.

The overall blotchy pattern is variable (and sometimes suffused with red) but is nearly always characteristic and the spider is well camouflaged on sand. Some almost black specimens have been found on coal-tips and on burnt heathland. Males similar in general appearance to females.

Arctosa leopardus (Sundevall, 1833)

Plate 81; Text Fig. 64c

Length: ♀: 8.5–9.5mm; ♂: 6.5–7mm.

Male similar to the female illustrated but abdomen almost black with central yellow lanceolate mark reaching to the midpoint.

Arctosa cinerea (Fabricius, 1777)

Text Fig. 64d

Length: ♀: 12–17mm; ♂: 12–14mm.

A life-size illustration of female appears next to that of epigyne. The pattern is made up of various shades of brownish grey and black.

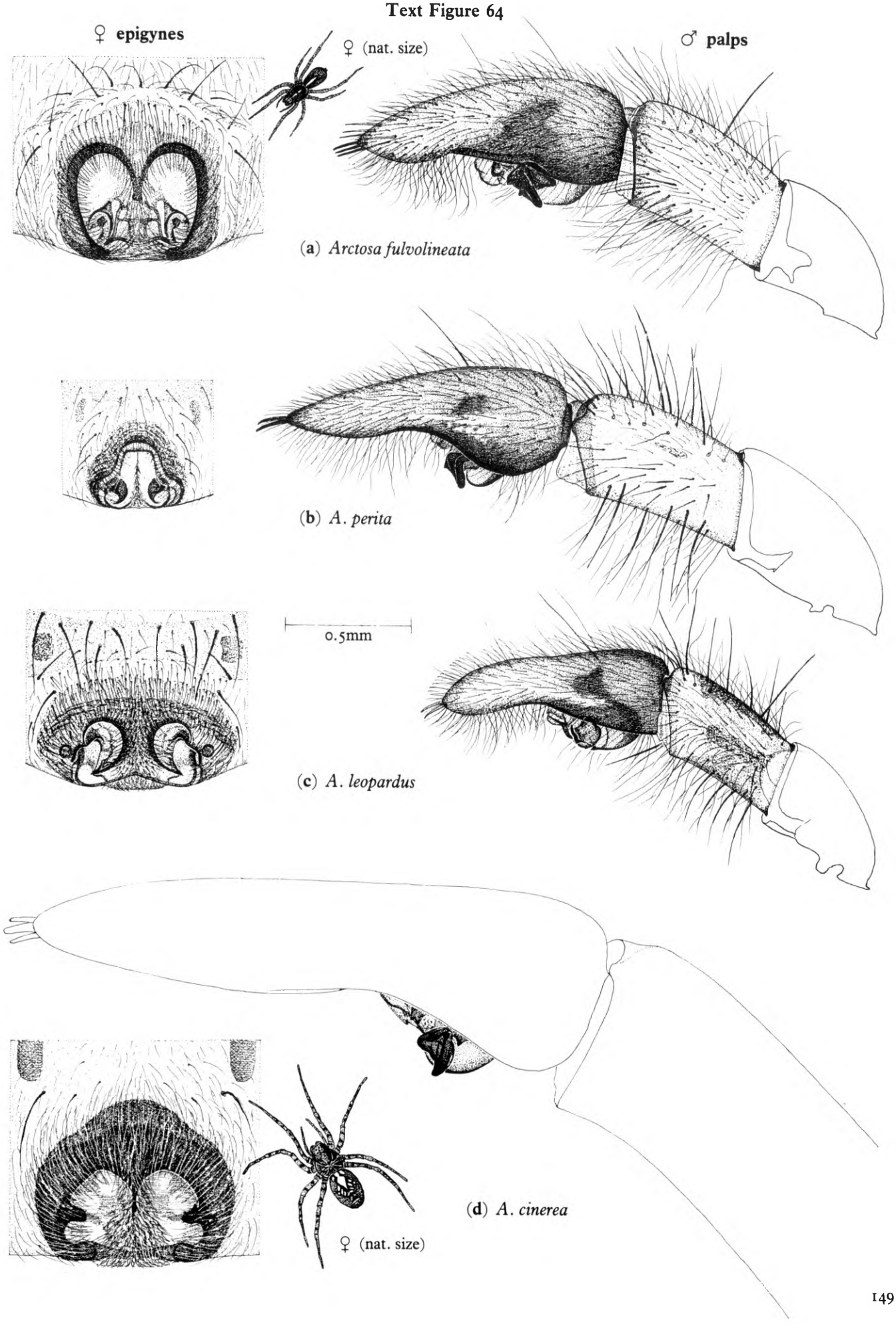
DISTINGUISHING THE SPECIES

Consideration of general appearance, size and the genitalia makes identification of the species easy.

DISTRIBUTION

A. perita is widely distributed, fairly common, and occurs especially in sandy areas, both on the coast and inland, and on dry heaths. It forms a burrow in the loose ground and when running about in sunshine is very well camouflaged. *A. leopardus* is also widely distributed but is less common, usually occurring in wet areas where it constructs a retreat in moss and leaves. *A. cinerea* has a more northern distribution and occurs in riverbeds and lakesides where it constructs a burrow, which usually opens under a stone, and which may be submerged for considerable periods of time. *A. fulvolineata* is rare and known in Britain from only a few localities in southern England and East Anglia, on salt-marshes.

Text Figure 64



Genus *Pirata* C. J. Sundevall, 1833

The six British species in this genus have a dark, elongated V or U-shaped mark on the carapace extending anteriorly from the fovea, within the median light band, and/or a series of paired tufts of white or bluish hairs on the abdomen. The latter are very clear in the living spider, but less so in spirit. There is also often a fringe of white hairs around the carapace.

Pirata piscatorius (Clerck, 1757)

Text Fig. 65a

Length: ♀: 5–10mm; ♂: 4.5–8.5mm.

This species has a dark reddish brown carapace with rather ill-defined paler median and lateral bands. The margins of the carapace are fringed with white hairs, especially striking in living males. Abdomen dark brown to black with, usually, a yellowish brown lanceolate mark on the anterior half. In life the spider usually appears black with a white border around the carapace, and tiny white paired spots on the abdomen.

Pirata piraticus (Clerck, 1757)

Plate 82; Text Figs 65b, 66b

Length: ♀: 4.5–9mm; ♂: 4–6.5mm.

General appearance highly characteristic but very similar to *P. tenuitarsis* (*q.v.*). The white spots on abdomen often distinctly bluish. Male similar to female.

Pirata hygrophilus Thorell, 1872

Plate 83; Text Fig. 65c

Length: ♀: 5–6.5mm; ♂: 4.5–5.5mm.

This species is usually noticeably darker than *P. piraticus*. Male similar to female.

Pirata uliginosus (Thorell, 1856)

Text Fig. 65d

Length: ♀: 5–6mm; ♂: 4–5mm.

Very similar in general appearance to *P. hygrophilus* (Plate 83).

Pirata latitans (Blackwall, 1841)

Plate 84; Text Fig. 65e

Length: ♀: 4–5mm; ♂: 2.5–4.5mm.

In life the abdomen appears uniform velvety-brown apart from the white spots. Male similar to female but femur, patella and tibia of leg I usually darkened.

Pirata tenuitarsis Simon, 1876

Text Figs 66a,c

Length: ♀: 4.5–8mm; ♂: 4–6mm.

Very similar to *P. piraticus* in both general appearance and genitalia.

DISTINGUISHING THE SPECIES

P. piraticus and *P. tenuitarsis* are very similar and, until 1977, were confused in British collections. The epigynes are similar and variable in both species, but that of *P. piraticus* is usually darker, a little larger, and has the lateral receptacles angled at about 45° to the epigastric furrow (*cf.* Text Figs. 66b,c). Males can be separated by consideration of the structure of the palpal organs viewed ventrally (*cf.* Text Figs 66b,c).

The remaining species, apart from differences in general appearance, are readily identified by their genitalia. Epigynes rather variable in shape and depth of pigmentation but, despite this, should present little difficulty.

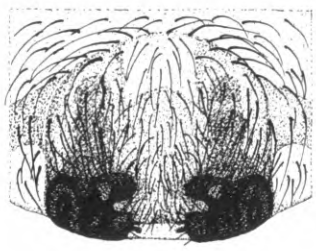
DISTRIBUTION

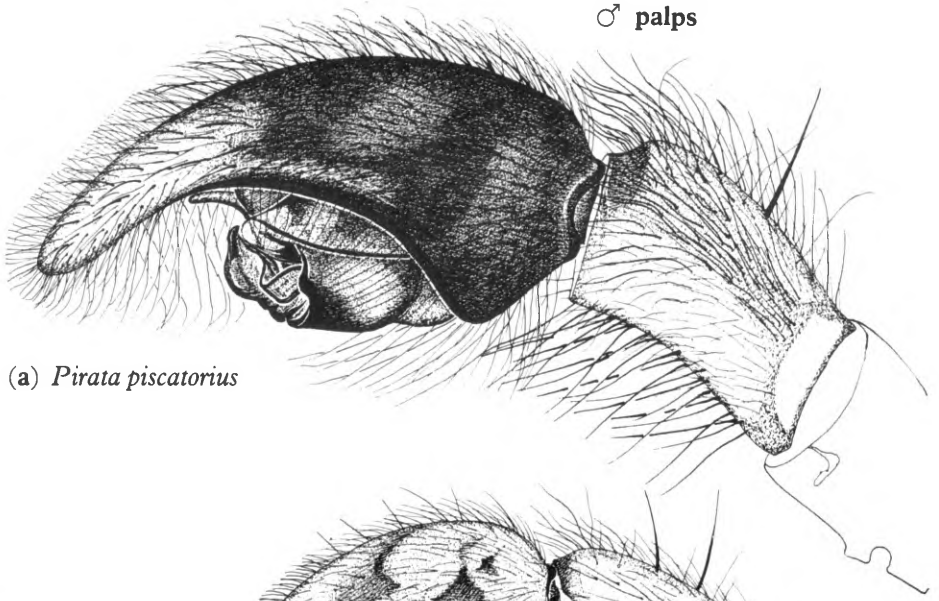
Apart from *P. uliginosus*, which often occurs in fairly dry situations, all the other species occur in wet, marshy areas or at the edges of ponds, etc. They often build silken tubes, within moss and similar vegetation, which open at, or just above the water level. The egg sacs are spherical, pure white, and render females running about with them very conspicuous.

All six British species probably have a fairly widespread distribution. *P. hygrophilus* and *P. piraticus* are both common and may occur together. Records of *P. tenuitarsis* since its discovery in British collections in 1977 have been few, but it is likely to occur in similar situations to, and possibly together with, *P. piraticus*. So far, most records of *P. tenuitarsis* are from sphagnum bogs. *P. latitans* has a rather local distribution but, where it does occur, may be the dominant species and present in very large numbers. *P. piscatorius* and *P. uliginosus* are the least common but, again, may be locally frequent.

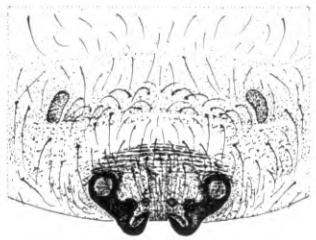
Text Figure 65

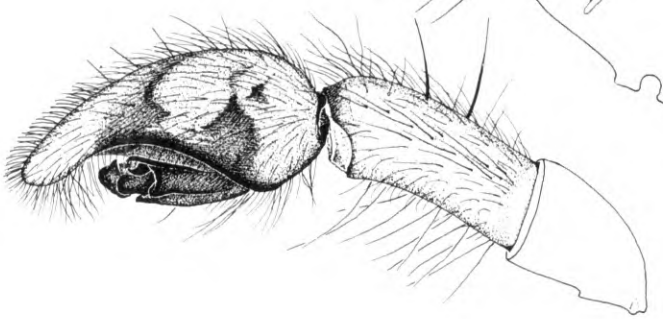
♀ **epigynes** ♂ **palps**



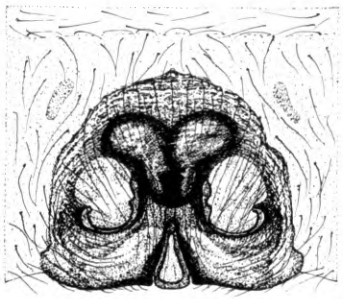


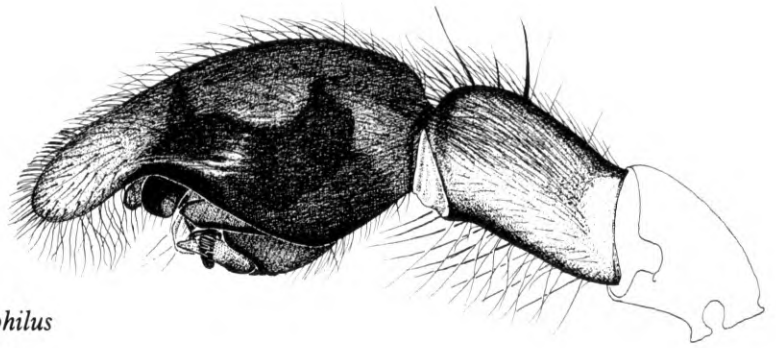
(**a**) *Pirata piscatorius*



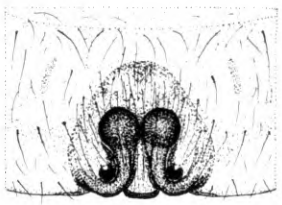


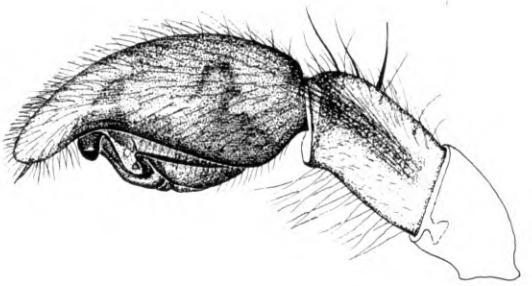
(**b**) *P. piraticus*





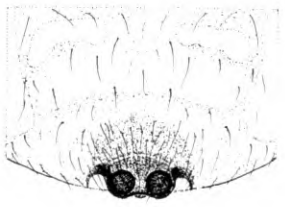
(**c**) *P. hygrophilus*

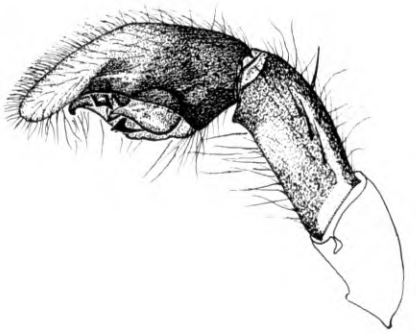




(**d**) *P. uliginosus*

0.5mm

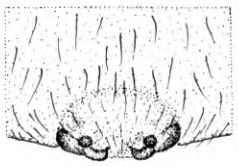




(**e**) *P. latitans*

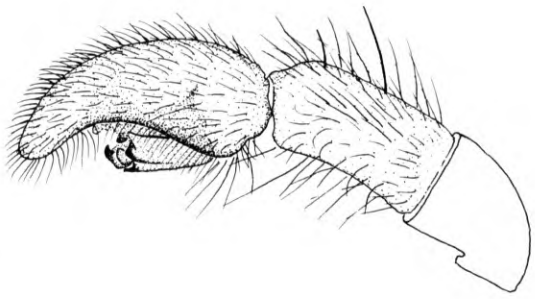
Text Figure 66

♀ **epigyne**



0.5mm

♂ **palp**



(**a**) *Pirata tenuitarsis*

distinguishing *P. piraticus* and *P. tenuitarsis*

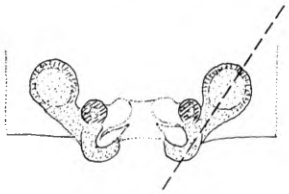
♂ **palps**
ventral view

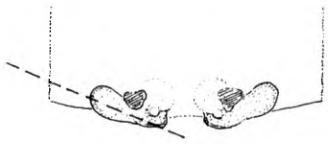
(**b**) *P. piraticus*

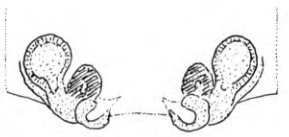
0.5mm

(**c**) *P. tenuitarsis*

♀ **epigynes**







Genus *Tricca* E. Simon, 1888

There is but one British species in this genus.

Tricca alpigena (Doleschall, 1852)

Text Fig. 67a

Length: ♀: 9–10mm; ♂: 7–8mm.

A life-size illustration of the male appears next to that of its palp. Carapace deep orange-brown with a pair of dark bars at the junction of the cephalic and thoracic regions. Abdomen brownish, with a rather broad lanceolate stripe, composed of white hairs, which is edged with black. Lateral to the midpoint of the lanceolate mark are two pairs of black marks which sometimes continue posterolaterally as dark lines. Similar dark marks also occur posterior to the light central stripe. Whole of body and legs well furnished with whitish hairs. Genitalia are quite characteristic, male palp having the tip of tarsus slightly hooked as well as being provided with a pair of short, stout spines.

DISTRIBUTION

This rare species has hitherto been found only in the Cairngorms, above 3000 feet.

Genus *Aulonia* C. L. Koch, 1848

There is only one British representative of this genus.

Aulonia albimana (Walckenaer, 1805)

Plate 85; Text Fig. 67b

Length: ♀: 3.5–4.5mm; ♂: 3–3.5mm.

This species has a highly characteristic appearance with palpal patella white in both sexes. Note also the darkening of femora I and the rather long posterior spinners. Male often much darker than the female illustrated. Genitalia distinctively characteristic.

DISTRIBUTION

This species has been found in only one locality in Somerset, in a gravel pit. The site may no longer exist (P. Merrett, pers.comm.).

Family PISAURIDAE

There are three British species in this family, in two genera. They can be distinguished easily from the Lycosidae by the arrangement of the eyes. The male palpal tibiae have an apophysis which is not present in the Lycosidae, and females of the family carry their egg cocoons with chelicerae and palps, and not attached to the spinners. The British members of the genera *Pisaura* and *Dolomedes* are easily recognizable.

TAXONOMIC NOTE

A separate family, Dolomedidae, has been proposed (Lehtinen, 1967). This would contain the genus *Dolomedes*. However, a formal definition of the Dolomedidae is lacking and its validity as a taxon is still under discussion. The obvious similarities in both morphology and biology between the genera *Pisaura* and *Dolomedes*, and the uncertainty of the new proposals, seem good reasons for leaving them both in the Pisauridae for the present.

Genus *Pisaura* Simon, 1885

There is only one British species in this genus.

Pisaura mirabilis (Clerck, 1757)

Plate 86; Text Fig. 67c

Length: ♀: 12–15mm; ♂: 10–13mm.

General appearance and coloration as illustrated; very variable in depth of colour but unmistakable. Males tend to be darker, with more distinct markings. Epigyne and male palp distinctive.

DISTRIBUTION

This species is common, widely distributed and usually found in long grass, shrubs and hedgerows. The female carries her large off-white egg cocoon in the chelicerae and also grips it with the palps. When the eggs are about to hatch, the cocoon is partially opened, attached to a plant and covered over with a silken tent which the female guards at its base. These 'tents' are often very conspicuous in summer as, not only are they fairly large, they may also be present in considerable numbers.

Genus *Dolomedes* Latreille, 1804

There are two British representatives of this genus.

Dolomedes fimbriatus (Clerck, 1757)

Plate 87; Text Fig. 67d

Length: ♀: 13–20mm; ♂: 9–15mm.

The markings and colour of this species are highly characteristic. The female illustrated (Plate 87) has a rather small abdomen but another female is figured, life-size, next to its epigyne and the male palp. The light stripes on carapace and abdomen are partly due to white hairs and are more striking in life.

Dolomedes plantarius (Clerck, 1757)

Text Fig. 67e

Length: ♀: 13–20mm; ♂: 10–16mm.

This species is usually a little paler than *D. fimbriatus*, with the light stripes less well-defined. A life-size illustration of the female appears beside the figure of its epigyne.

DISTINGUISHING THE SPECIES

D. fimbriatus is much more widely distributed than *D. plantarius* and is therefore far more likely to be encountered. Male palps easily distinguished by consideration of the tibial apophysis. Epigynes also quite distinct although rather variable, that of *D. fimbriatus* having the central part covered with fairly light hairs.

DISTRIBUTION

D. fimbriatus has a fairly wide, but extremely local distribution over the British Isles and occurs only in wet areas such as swamps, pools and similar habitats. It can run on the surface of the water and also submerge if disturbed. *D. plantarius* is a rare species which, in England, is known only from one fen in East Anglia and is on the protected species list. Both species make small tent-like structures, similar to those of *Pisaura*, for the protection of newly hatched spiderlings. The egg sacs are carried about by the female, in the same way as *Pisaura*. The young stages of *D. fimbriatus* live in much drier situations than the adults and may be found on bushes and low branches of trees, always near water.

Family ARGYRONETIDAE

The single British species in this family, in the genus *Argyroneta*, is the well known water spider. The tracheal spiracles are easily visible just behind the epigastric fold.

TAXONOMIC NOTE

The genus *Argyroneta* has in the past been included by different authors in the families Agelenidae, Cybaeidae and Argyronetidae. Lehtinen (1967) considered it a subfamily of the Dictynidae (see Taxonomic Note on p. 48). In this respect it is interesting to compare the genitalia of *Argyroneta aquatica* (Text Fig. 68a) with those of *Argenna patula* (Dictynidae) (Text Fig. 16b, p. 55). The issues are still being discussed.

Genus *Argyroneta* P. A. Latreille, 1804

There is but one British species in this genus.

Argyroneta aquatica (Clerck, 1757)

Plate 88; Text Fig. 68a

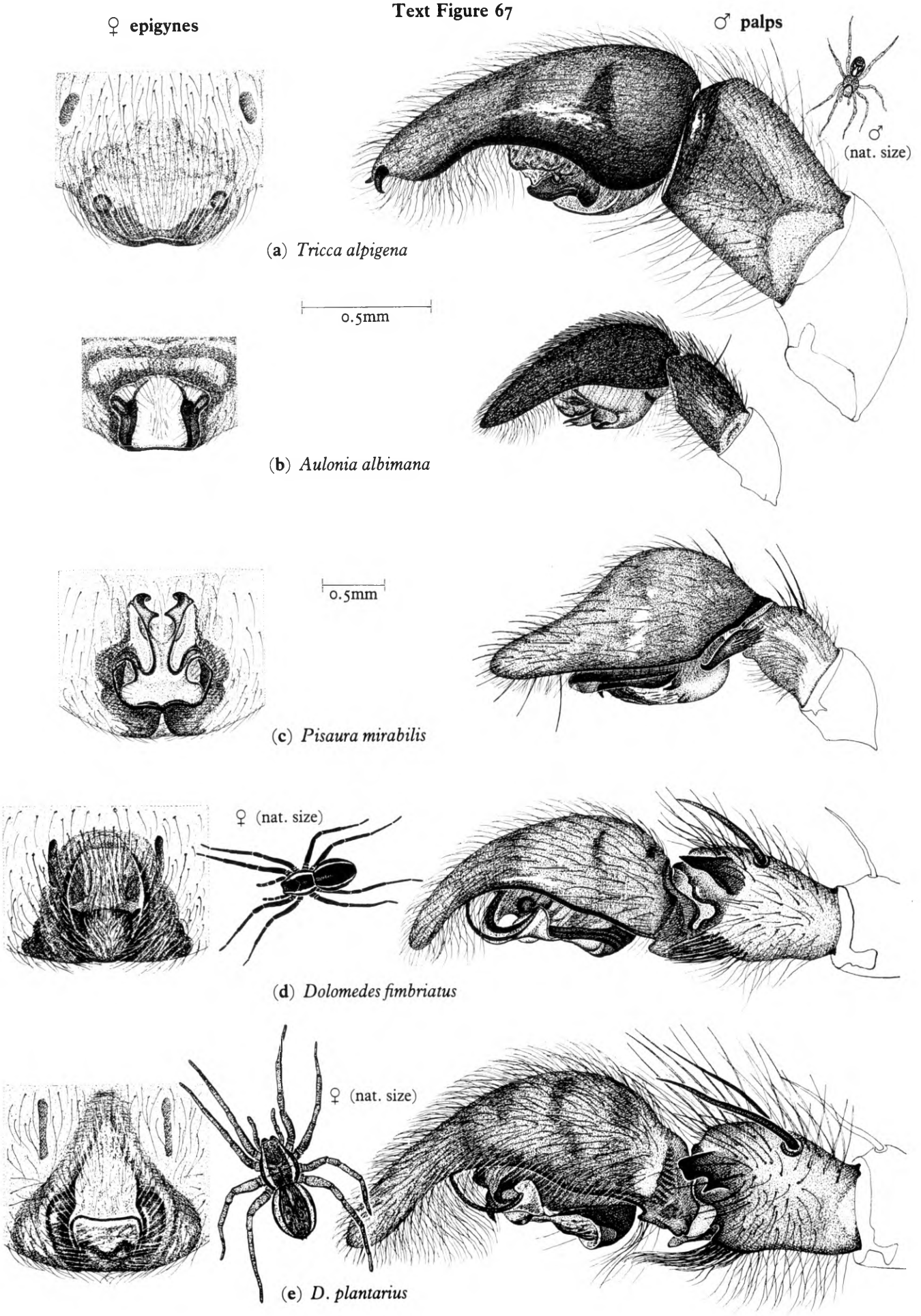
Length: ♀: 8–15mm; ♂: 9–12mm.

This species has a highly characteristic appearance. Note the thick covering of short dark hairs on abdomen, the lines of short hairs on carapace and the long hairs on posterior legs. Genitalia also unmistakable. Furthermore, as this species is the only entirely aquatic spider known and is usually collected from ponds with a net, the habitat alone provides identification.

DISTRIBUTION

A. aquatica is widely distributed over the British Isles and is found in well-vegetated ponds, shallow lakes, slow-flowing streams and ditches. It survives under water by building an inverted air-filled retreat amongst water plants. The spider carries air, as a bubble around the hairy abdomen and sternum, down from the surface and fills its retreat, which becomes bell-shaped. Bubbles of oxygen from aquatic plants also get trapped in the bell. The spider does not have to replenish the air as there is continuous diffusion of gases into and from the surrounding water.

Text Figure 67



Family AGELENIDAE

This family contains sixteen British species in eight genera. They have the posterior spinners longer than the anterior ones and of two segments (Text Figs 8b–g, p. 41). The tracheal spiracle lies close to the spinners and is often difficult to see (*cf.* Argyronetidae and Hahniidae). These spiders are commonly called cobweb weavers, but the name funnel-web is perhaps more appropriate. The web is a sheet, which can be quite large in *Agelena* and *Tegenaria*, with a tubular retreat at one corner. The spiders run on the upper side of the sheet and drag prey back into the retreat. The webs tend to assume a more distinctly funnelled shape in rather confined spaces, and in very enclosed spaces, such as under stones, may be tubular. The leg tarsi have a series of fine trichobothria which increase in length towards the distal end of the tarsus.

TAXONOMIC NOTE

Several genera formerly included in the Agelenidae have been transferred to other families. The genus *Argyroneta* is, for the present, assigned to the Argyronetidae (p. 154). The genera *Antistea* and *Hahnia* are included together in the Hahniidae (p. 168).

Lehtinen (1967) transfers our species of *Tetrilus* to the genus *Tuberta* and places both *Tuberta* and *Cryphoeca* in the subfamily Cryphoecinae of the Hahniidae. He also transfers *Cicurina* to the subfamily Cicurininae of the Dictynidae (see Taxonomic Note on p. 48). Although these changes may eventually be accepted, in whole or in part, they are still under discussion. For the present, these genera are left in their traditional form and within the Agelenidae.

Key to Genera of the AGELENIDAE

1 Terminal segment of posterior spinners clearly visible, longer than basal segment, or not much shorter. Spiders with body length of 6–16mm 2
– Terminal segment of posterior spinners much shorter than basal segment. Spiders with body length of 2–7mm 5

2(1) Posterior eyes in a strongly recurved row. Spider with a highly characteristic appearance (Plate 90) which, in life, resembles a *Pardosa* (Lycosidae) with long spinners ..... *Textrix* (p. 156)
– Posterior row of eyes either straight or procurved..... 3

3(2) Posterior eyes in a strongly procurved row, and anterior row of eyes slightly procurved (Plate 89)..... ..... *Agelena* (p. 156)
– Posterior row of eyes straight or only slightly procurved 4

4(3) Anterior (cephalic) part of carapace somewhat narrowed. Legs fairly long relative to body size .... *Tegenaria* (p. 158)
– Anterior part of carapace rather broad. Legs fairly short and stout relative to body size...*Coelotes* (p. 164)

5(1) Spiders of body length 5–7mm; abdomen pale grey without a pattern or markings ..... *Cicurina* (p. 164)
– Smaller spiders (2–3.5mm); abdomen with a pattern or at least some markings 6

6(5) Carapace with dark markings and radiating streaks; abdomen with a clearly defined pattern 7
– Carapace uniform yellow-brown with no dark markings; abdomen with a less well-defined pattern .... *Tetrilus* (p. 166)

7(6) Anterior row of eyes strongly procurved when viewed from in front. Size of spider 2.5–3mm. A common species ..... *Cryphoeca* (p. 166)
– Anterior row of eyes almost straight when viewed from in front. Size of spider 2–2.5mm. An exceedingly rare species ..... *Tuberta* (p. 166)

Genus *Agelena* Walckenaer, 1805

There is only one British species in this genus. The strongly procurved posterior row of eyes and long spinners are characteristic.

Agelena labyrinthica (Clerck, 1757)

Plate 89; Text Fig. 68b

Length: ♀: 8–12mm; ♂: 8–9mm.

Males similar in general appearance to the female illustrated. Epigyne and male palp quite distinctive.

DISTRIBUTION

This spider is common in southern England but occurs far less frequently towards the north and has not been recorded at all in Scotland or northern Ireland. It spins a very large sheet web amongst grass and heather which is very eye-catching when covered with dew.

Genus *Textrix* Sundevall, 1833

There is but one British species in this genus, and it has a highly characteristic appearance.

Textrix denticulata (Olivier, 1789)

Plate 90; Text Fig. 68c

Length: ♀ ♂: 6–7mm.

This spider could hardly be mistaken for any other, despite some variation in depth and colour of markings. The light areas on carapace and abdomen are furnished with white hairs and are therefore even more conspicuous in life than illustrated. Epigyne and male palp distinctive.

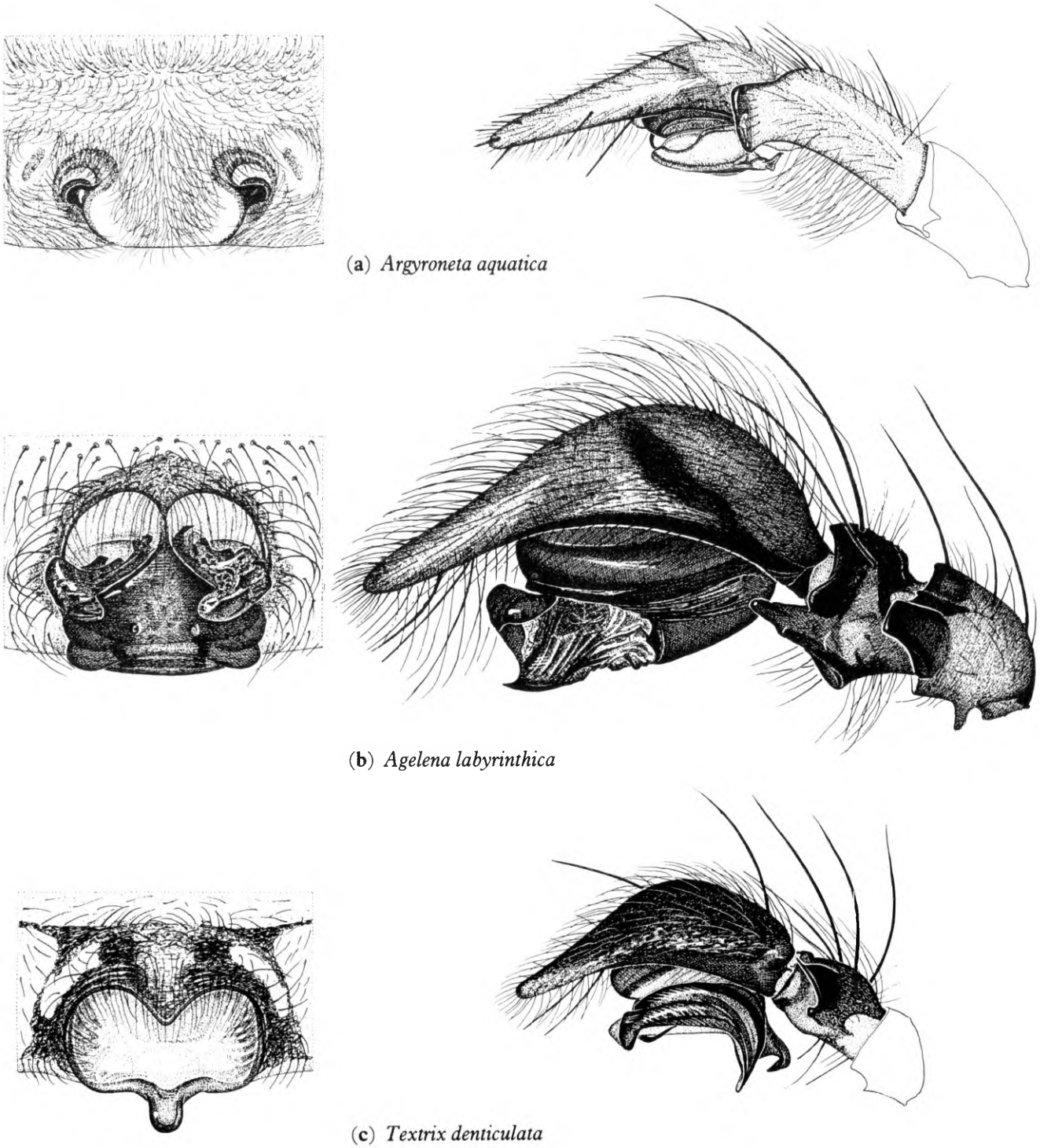
DISTRIBUTION

This spider is distributed all over the British Isles and may be found amongst stones, stone walls and also on bushes. It spins a web which sometimes takes the form of a sheet but, in dense holly and ivy or in crevices of trees, may sometimes be tubular. As well as occurring in open countryside, it is also common around houses and in some northern counties is a common house spider. It has the overall appearance of a *Pardosa* (Lycosidae) (p. 133) and as it also runs extremely quickly could be mistaken, at first, for a member of that genus. The long spinners, however, allow easy identification even with the naked eye.

Text Figure 68

♀ epigynes

♂ palps



(a) *Argyroneta aquatica*

(b) *Agelena labyrinthica*

(c) *Textrix denticulata*

0.5mm

Genus *Tegenaria* Latreille, 1804

There are seven British species of *Tegenaria*. The long-legged, hairy house spiders included in this genus must at some time have been noted by everyone, either trapped in the bath or, more amusingly (or horrifyingly), when a male *T. duellica* (Plate 91) suddenly runs across the living-room carpet. Some species occur away from human habitations. The web is a sheet, with a tubular retreat in one corner, and may attain a considerable size in an undisturbed cellar or outhouse. These cobwebs have been used as a dressing for wounds; they are quite strong, especially if several webs are placed on top of one another. In fact there is one record of a house mouse falling down through a series of cobwebs and becoming hopelessly and fatally entangled.

In the earlier literature there has been some confusion over the identity of the first three species described here. This now seems to be resolved, but the synonymy of *T. gigantea* with *T. duellica* cannot be confirmed absolutely until type specimens of the latter are found.

Tegenaria duellica Simon, 1875

(= *T. gigantea* Chamberlin & Ivie, 1935)

Plates 91, 96c; Text Figs 69a, 70a

Length: ♀: 11–16mm; ♂: 10–14mm.

General appearance as illustrated. There is some variation in the depth of colour and considerable variation in size, occasional specimens being as small as *T. domestica* (*q.v.*). Epigyne and male palp slightly variable and similar to those of *T. saeva*. The following four species are very similar to it in overall appearance and size.

Tegenaria saeva Blackwall, 1844

Text Figs 69b, 70b

Length: ♀: 11–16mm; ♂: 10–14mm

General appearance and size as for *T. duellica*. Epigyne and male palp variable and similar to those of *T. duellica*.

Tegenaria atrica C. L. Koch, 1843

Text Figs 69c, 71a

Length: ♀: 11–16mm; ♂: 10–14mm

General appearance and size as for *T. duellica*. Epigyne and male palp as illustrated and, although similar to the two foregoing species, are fairly easily distinguished.

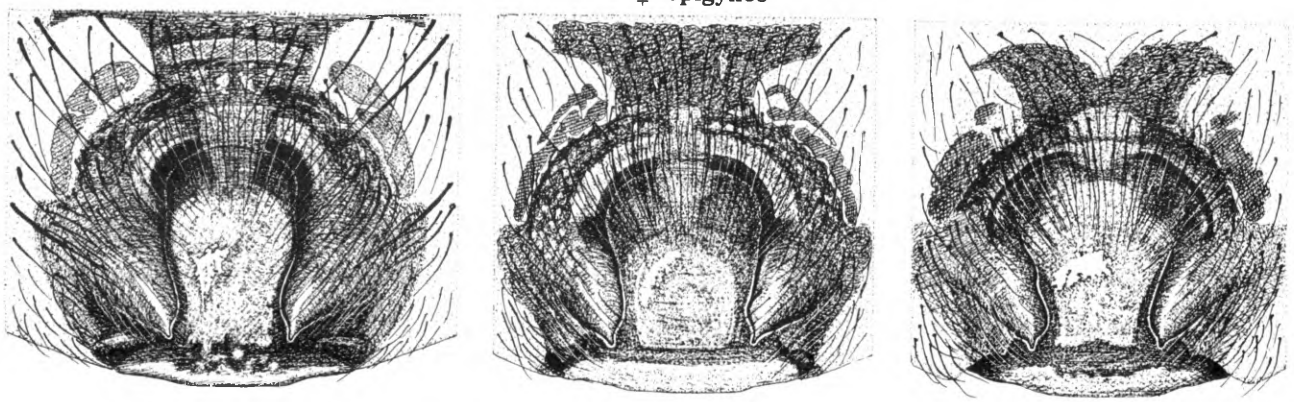
Tegenaria parietina (Fourcroy, 1785)

Text Figs 69d, 71b

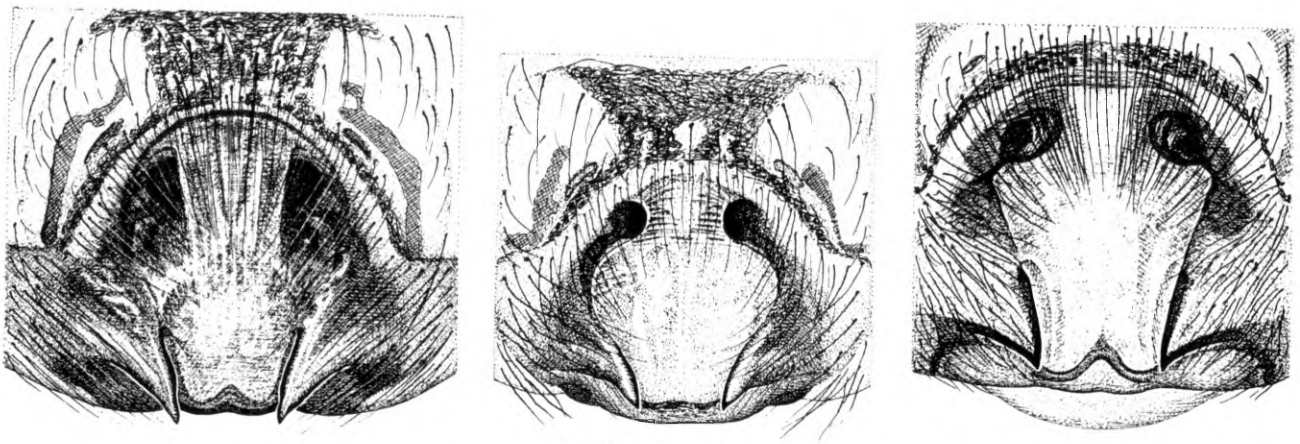
Length: ♀: 11–16mm; ♂: 10–17mm.

This species is similar in general appearance to *T. duellica* but has relatively longer legs (especially in males), and a distinctive epigyne and male palp. A life-size illustration of male appears next to that of its palp.

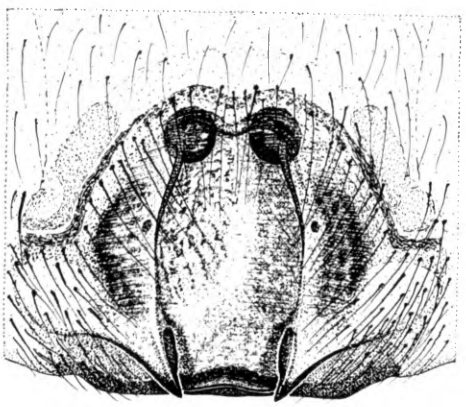
Text Figure 69
♀ epigynes



(**a**) *Tegenaria duellica*

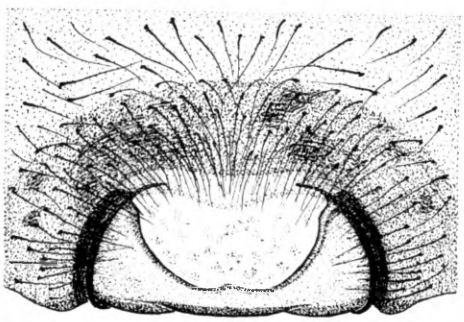


(**b**) *T. saeva*



0.5mm

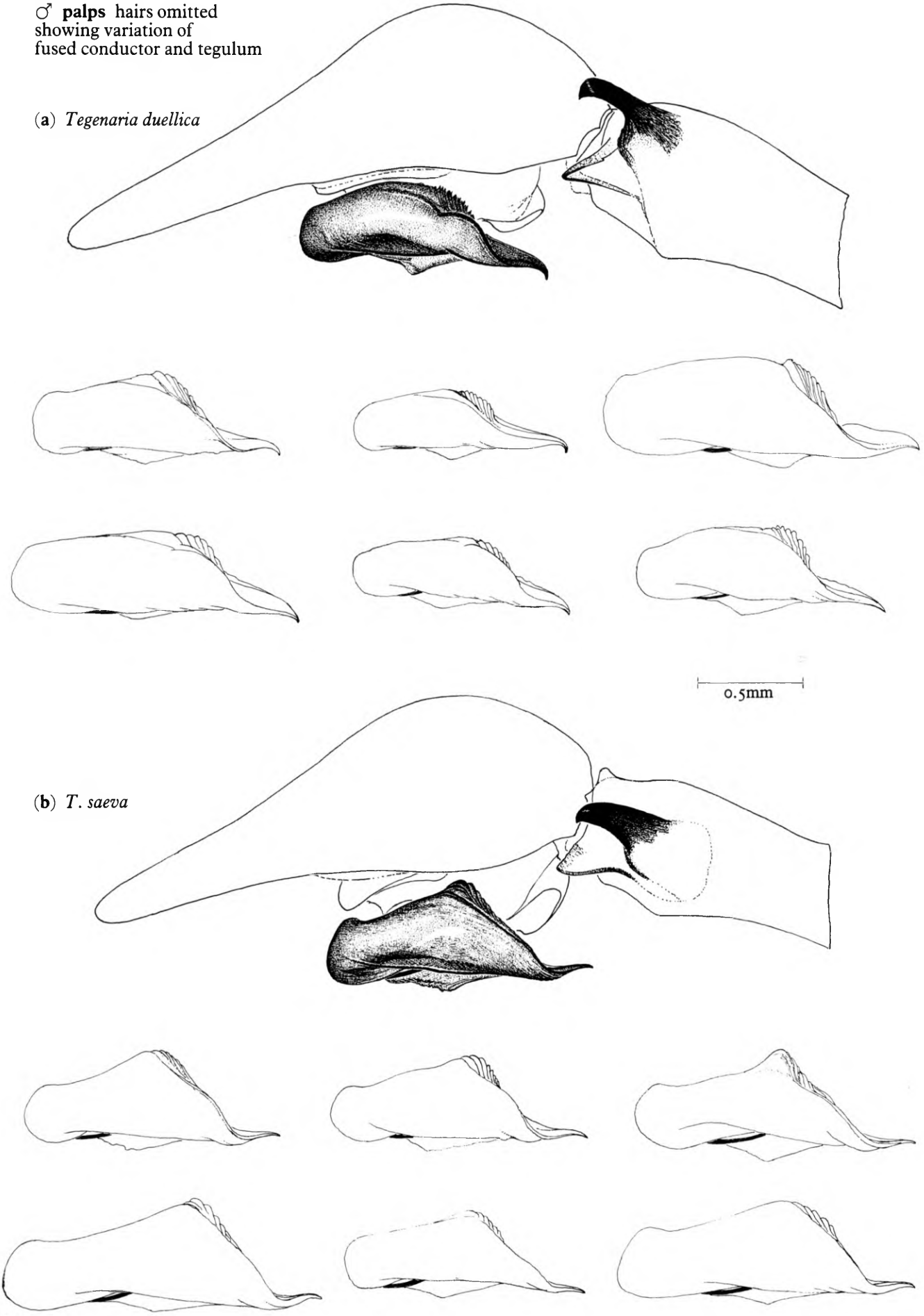
(**c**) *T. atrica*



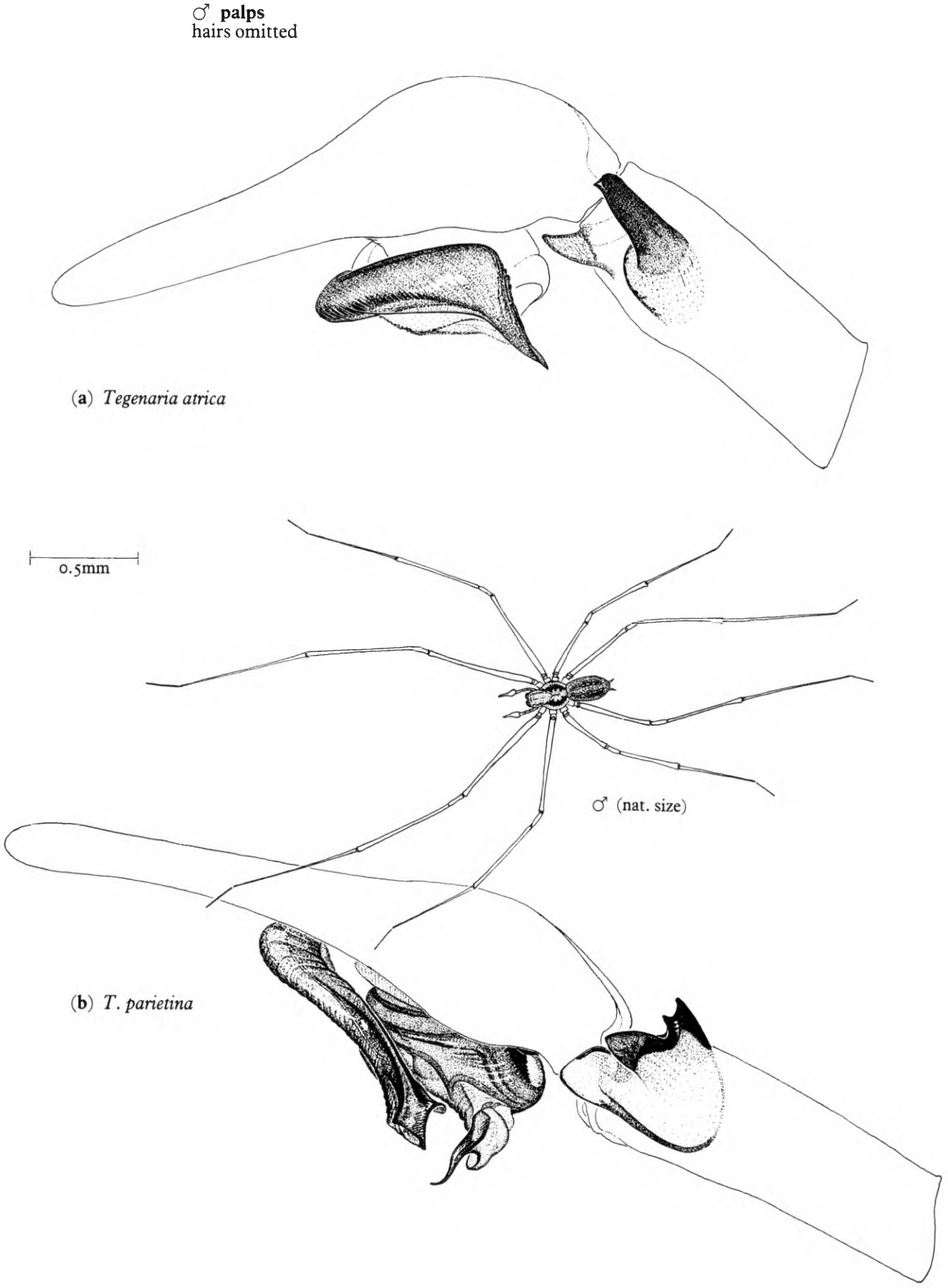
(**d**) *T. parietina*

Text Figure 70

♂ **palps** hairs omitted showing variation of fused conductor and tegulum



Text Figure 71



Tegenaria agrestis (Walckenaer, 1802)
Text Fig. 72a
Length: ♀: 11–14mm; ♂: 7–8mm.
Similar in general appearance to *T. duellica*. Epigyne and male palp characteristic.

Tegenaria domestica (Clerck, 1757)
Plate 92; Text Fig. 72b
Length: ♀: 9–10mm; ♂: 6–9mm.
The markings on carapace and abdomen are extremely variable. Sometimes they are more clearly defined than in the illustration; sometimes the whole spider is a uniform yellow-brown or grey. Epigyne and male palp are distinctive.

Tegenaria silvestris L. Koch, 1872
Text Fig. 72c
Length: ♀: 5–7mm; ♂: 5–6mm.
General markings and coloration similar to *T. duellica*. Genitalia characteristic in both male and female.

DISTINGUISHING THE SPECIES

The species *T. parietina*, *T. agrestis*, *T. domestica* and *T. silvestris* are all easily distinguished by their genitalia. The other three species – *T. duellica*, *T. saeva* and *T. atrica* – require a little more care, as follows:

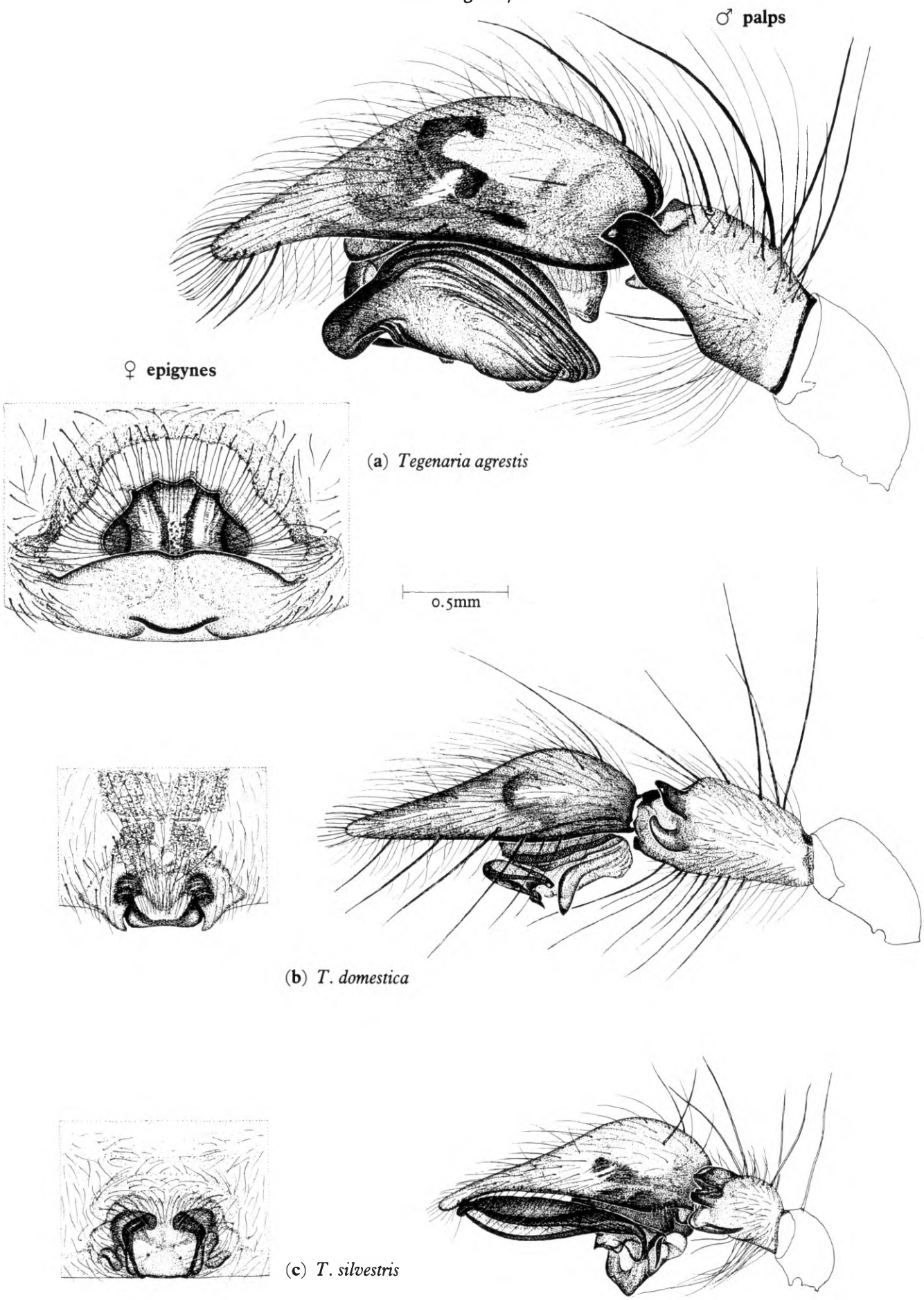
(a) *Epigynes*. These show considerable individual variation, as shown for *T. duellica* and *T. saeva* (Text Figs 69a;69b). The pointed lateral apophyses in *T. duellica* usually have a distinctly different form from those of the other two species. The anterior arch of epigyne is sclerotized laterally and well-defined in *T. duellica* but not in *T. saeva* or *T. atrica*. The paired dark bodies in anterior part of epigyne are deeply recessed in *T. saeva* whereas in *T. atrica* they are more superficial *and* closer together. The lateral reniform dark areas present in epigyne of *T. atrica* are absent from the other two species and seem to be a constant and reliable feature.

(b) *Male palps*. The tibial apophyses are unreliable and the only useful method of separating males is by the form of the fused conductor and tegulum, the variability of which is shown for *T. duellica* and *T. saeva*. In *T. duellica* the tapering end of this structure is relatively longer and broader than in *T. saeva*. Also, in *T. saeva* the dorsal midpoint of the conductor/tegulum is more angular than in *T. duellica*. Occasional specimens are difficult to place with certainty and it is quite possible that hybridization occurs between these two species. In *T. atrica* the dorsal surface of the conductor/tegulum is smoothly curved and it tapers to a point which is directed distinctly ventrally.

DISTRIBUTION

T. duellica and *T. saeva* are probably widespread in England, Scotland and Wales (not Ireland), though *T. saeva* occurs mainly in the west and *T. duellica* more in the east, but precise knowledge of their relative distributions will require further collection and examination of material. *T. atrica* seems to be confined to northern England, Scotland and Ireland. *T. parietina* occurs in the more southern parts of England and also in Ireland. *T. domestica* is common and widespread throughout the British Isles. These five species occur within or near to buildings although sometimes they may occur farther afield, especially in the south; *T. parietina* is found mainly in old buildings. *T. agrestis* and *T. silvestris* occur away from buildings in grassy areas and under stones and bark. Both have been recorded mainly from central and southern England and Wales, but *T. agrestis* has also been found in Scotland and is probably increasing its range.

Text Figure 72



Genus *Coelotes* Blackwall, 1841

The two British representatives of this genus are similar in general appearance. The broad anterior part of carapace and relatively short, stout legs are notable features which distinguish this genus from *Tegenaria*. Also, the male palps of *Coelotes* have an additional apophysis on the patella. Both species occur under stones and logs beneath which they construct a tubular burrow. There is no sheet web on the outside, the entrance to the burrow being simply a collar of silk.

Coelotes atropos (Walckenaer, 1825)

Plate 93; Text Fig. 73a

Length: ♀: 9–13mm; ♂: 7–9mm.

General appearance as illustrated; males similar but with smaller abdomen.

Coelotes terrestris (Wider, 1834)

Text Fig. 73b

Length: ♀: 9–13mm; ♂: 7–10mm.

Similar to *C. atropos* in general appearance but abdomen often darker and with a lighter longitudinal stripe in the anterior midline.

DISTINGUISHING THE SPECIES

Males are readily distinguished by consideration of the palpal organs and the shape of the apophysis on the palpal patella. Epigynes show some variation but can be distinguished by several features. In *C. atropos*, dark lateral borders are curved and broaden anteriorly whereas in *C. terrestris* they form almost the sides of a square and do not broaden anteriorly. Furthermore, epigyne of *C. atropos* lacks distinct anterior margin present in *C. terrestris*. There are also differences in position of spermathecae, and in size and position of the blunt apophyses on each side of the epigyne.

DISTRIBUTION

C. atropos is widely distributed over most of England and Wales and is often very common in northern England and Wales in woodland and moorland and mountainous areas. In South-east England it seems to be replaced by *C. terrestris*. The latter has, however, also been recorded from the north, but only very infrequently.

Genus *Cicurina* Menge, 1869

There is only one British species in this genus. (See Taxonomic Notes on pp. 48, 156.)

Cicurina cicur (Fabricius, 1793)

Plate 96d; Text Fig. 73c

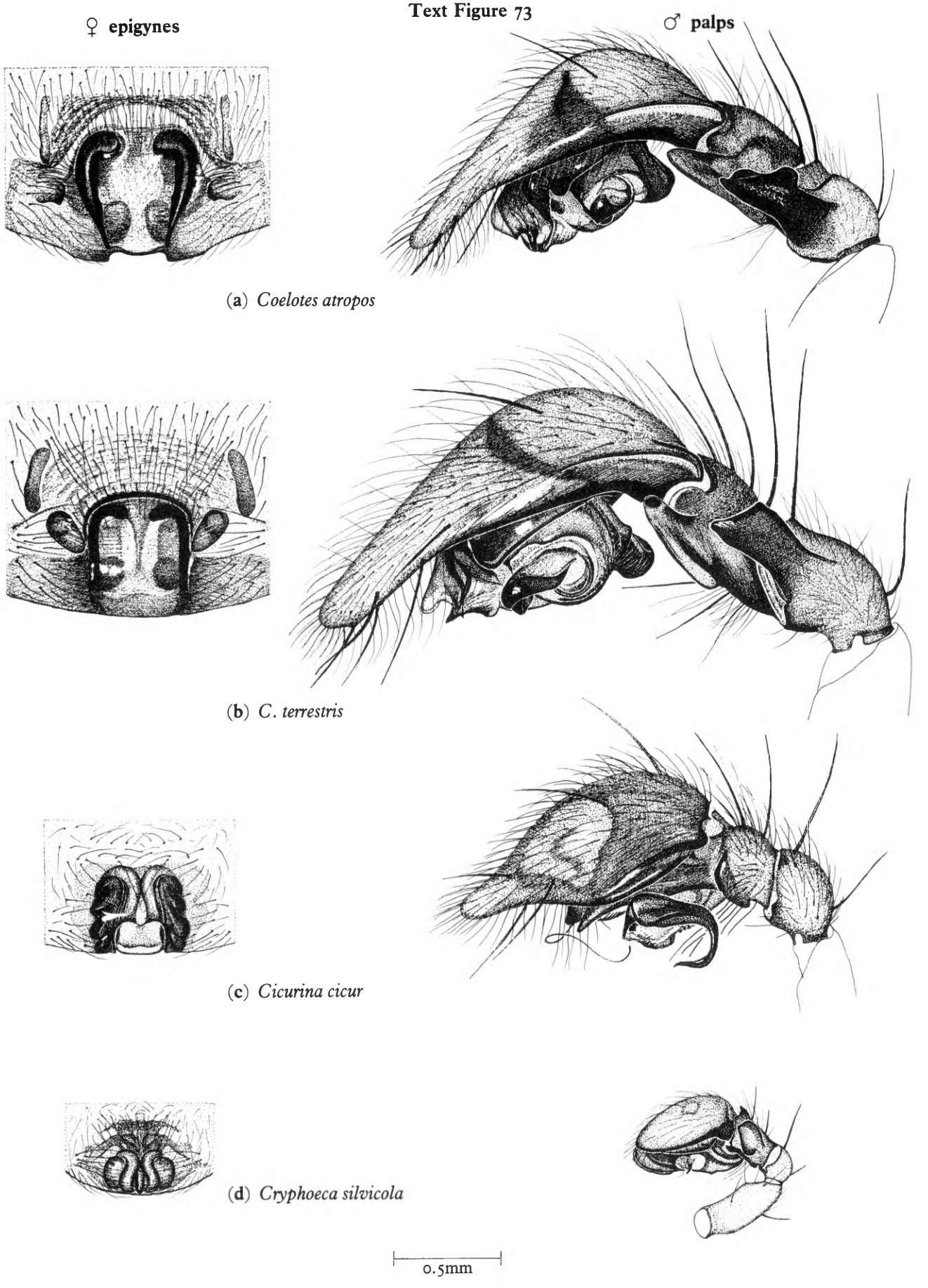
Length: ♀ ♂: 5–7mm.

General appearance as female illustrated; abdomen lacks any markings or pattern and legs of same colour as carapace, with no markings. Male similar, but abdomen smaller. Genitalia highly characteristic in both male and female.

DISTRIBUTION

This spider, which usually occurs in rather damp and dark habitats, is rather rare but has been recorded from South and South-east England and northern England.

Text Figure 73



Genus *Tetrilus* Simon, 1886

The two British species in this genus are identical in general appearance and genitalia and differ only in the size and arrangement of the eyes. It is likely that they are not distinct species. (See also Taxonomic Note on p. 156.)

Tetrilus macrophthalmus (Kulczynski, 1896)

Plates 95, 96a; Plate A

Length: ♀ ♂: 3–3.5mm.

Both sexes and the genitalia of this species are illustrated in colour. Note structure of male palp which is remarkable. Note also size and arrangement of eyes, the posterior row of which is more or less straight, with the distance between eyes being about equal to diameter of each eye.

Tetrilus arietinus (Thorell, 1871)

Length: ♀ ♂: 3–3.5mm.

This species differs from *T. macrophthalmus* only in respect of the eyes. The posterior row of eyes is procurved and the eyes themselves are much smaller, so that the distance between posterior eyes is at least twice diameter of each eye.

DISTINGUISHING THE SPECIES

The arrangement of the eyes affords the only means of separating these two species. It is my view that these two are not distinct species at all but that one is but a variety of the other. Their genitalia are identical. Although *T. arietinus* was *described* first, from a biological viewpoint the name *T. macrophthalmus* would perhaps be more appropriate, the reduced size of the eyes in *T. arietinus* probably being the result of a change of environment to a wholly subterranean existence. Reduction, or even absence of eyes is well known in spiders that have evolved underground or in the complete darkness of caves. In Sherwood Forest, typical specimens of *T. macrophthalmus* can be collected from under the bark of relict oak trees. Similar specimens can also be found nearby, deep inside grass tussocks and as guests of ants. It would seem that both environments are suitable for the species. In Sherwood Forest it is likely that at least some of the spiders hatched in grass tussocks or ants' nests would find their way back to oak trees so that any morphological change due to environment would be minimized in that population. However, if the oak trees were to disappear completely the population of that species would be committed to a subterranean existence. This may well have happened in some areas and initiated the gradual change to the small-eyed form, *T. arietinus*.

DISTRIBUTION

T. macrophthalmus is a rare species but is not uncommon in Sherwood Forest and has also been recorded from Leicestershire, Surrey, Berkshire, South Wales and the West of England. *T. arietinus* is rarer, having been recorded from the same areas in Surrey and Berkshire and also Cumberland.

Genus *Cryphoeca* T. Thorell, 1869

The single British species in this genus has a highly characteristic appearance. (See Taxonomic Note on p. 156.)

Cryphoeca silvicola (C. L. Koch, 1834)

Plates 94, 96b; Text Fig. 73d

Length: ♀ ♂: 2.5–3mm.

General appearance as illustrated; depth of colour somewhat variable. Genitalia characteristic in both male and female.

DISTRIBUTION

This species is widely distributed throughout most of the British Isles, but is more common in the north. It often occurs in woodland and may be present in large numbers in leaf-litter and under the bark of trees. It also occurs on walls and open moorland in the north.

Genus *Tuberta* Simon, 1884

There is but one British species in this genus. (See Taxonomic Note on p. 156.)

Tuberta maerens (O. P.-Cambridge, 1863)

Text Fig. 74a

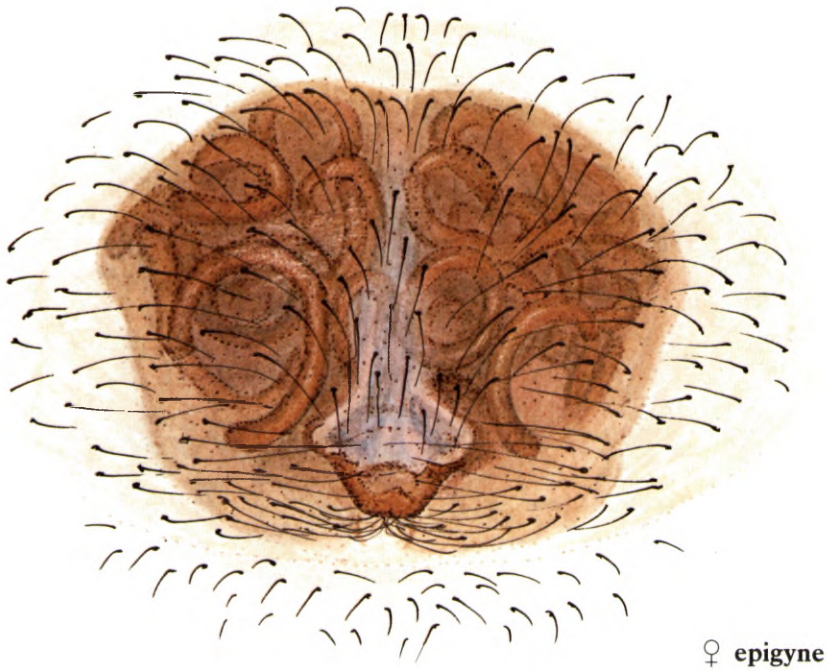
Length: ♀ ♂: *c.*2mm.

General appearance similar to *Cryphoeca silvicola*, but smaller. Epigyne of female and male palp distinctive.

DISTRIBUTION

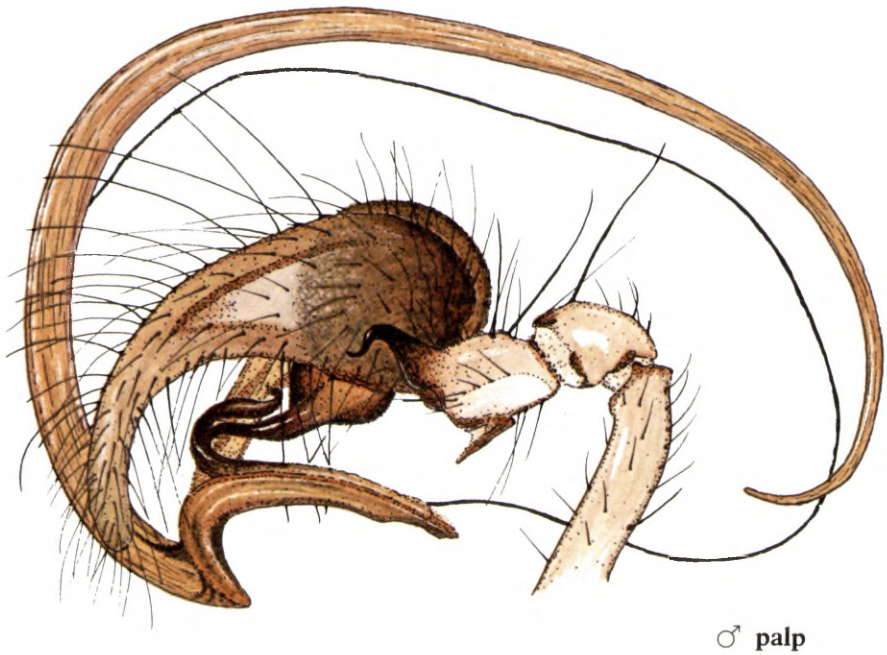
This is a very rare species, only two adult females and nine males having so far been collected in Britain, all in the south. It is most likely to be found in woodland, on trees.

Plate A



♀ epigyne

0.25mm



♂ palp

0.5mm

Tetrilus macrophthalmus (Kulczynski)

Family HAHNIIDAE

There are seven British species in this family, in two genera. The most easily recognized characters of the family are the spinners, which are arranged in a transverse row (Text Figs 6a–c, p. 39), and the tracheal spiracles which are visible about half-way between the spinners and the epigastric fold. These small spiders spin a web across impressions in the ground, or between stones or moss. The web is a sheet and not funnel-like; the spiders run on its upper surface.

These spiders were formerly included in the Agelenidae (see Taxonomic Note on p. 156).

Key to Genera of the HAHNIIDAE

1 Tracheal spiracles located half-way between spinners and epigastric fold ..... *Antistea* (p. 168)

2(1) Tracheal spiracles closer to the spinners than to the epigastric fold ..... *Hahnia* (p. 168)

Genus *Antistea* Simon, 1897

There is one British species in this genus.

Antistea elegans (Blackwall, 1841)
Plate 97; Text Fig. 74b
Length: ♀ ♂: 2.5–3mm.
This species has a highly characteristic appearance as the female illustrated. Genitalia are distinctive in both male and female.

DISTRIBUTION
Widely distributed over the British Isles but usually found in wet habitats. It spins a small sheet web across depressions in the ground or in moss.

Genus *Hahnia* C. L. Koch, 1841

There are six British species in this genus.

Hahnia montana (Blackwall, 1841)
Plate 98; Text Fig. 74c
Length: ♀: 1.8–2mm; ♂: 1.5–1.8mm.
General appearance as female illustrated; male similar but with smaller abdomen. Note the spines on metatarsi III and IV.

Hahnia candida Simon, 1875
Text Fig. 74d
Length: ♀ ♂: 1.3–1.4mm.
This species has a very pale yellowish carapace and abdomen with no markings. There are no spines on metatarsi III and IV.

Hahnia nava (Blackwall, 1841)
Plates 99, 100; Text Fig. 74e
Length: ♀ ♂: 1.5–2mm.
The dark colour in both sexes is characteristic. Note spines on metatarsi III and IV.

Hahnia helveola Simon, 1875
Text Fig. 74f
Length: ♀: 2.5–3mm; ♂: 2.25–2.5mm.
This species has a yellow-brown carapace with markings similar to those of *H. montana*. Abdomen usually yellowish with a series of broad, dark chevrons. Several spines present on metatarsi III and IV (*cf. H. pusilla*).

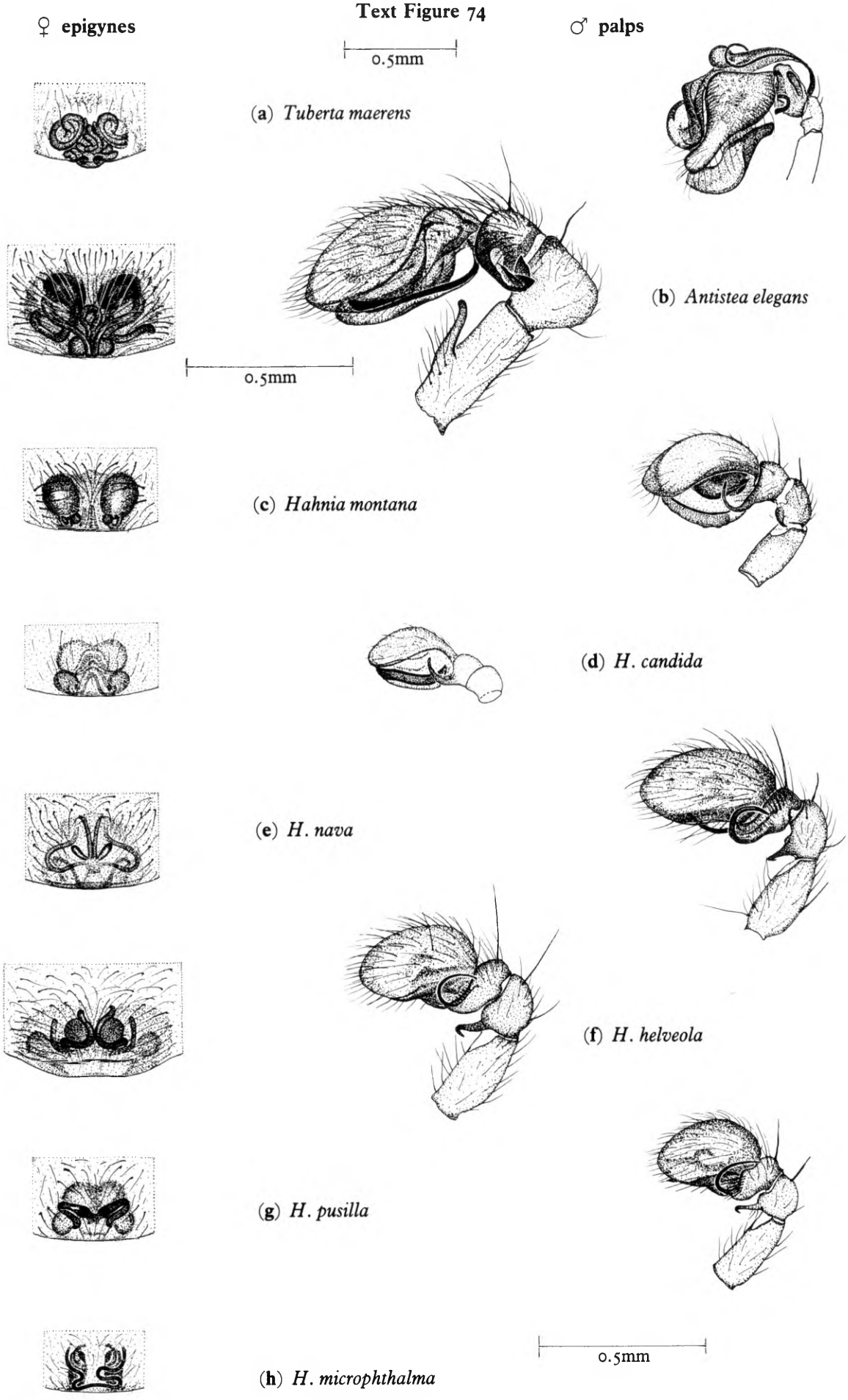
Hahnia pusilla C. L. Koch, 1841
Plate 101; Text Fig. 74g
Length: ♀ ♂: 1.3–1.5mm.
General appearance as illustrated; males similar, but abdomen smaller and a little darker, like that illustrated for *H. montana* female. Note the absence of spines on metatarsi III and IV. Occasionally, spines *are* present in males.

Hahnia microphthalma Snazell & Duffey, 1980
Text Fig. 74h
Length: ♀: 1.4mm.
This recently discovered species is known from only two female specimens; the male is still unknown. It has an overall pale yellowish appearance, and the most obvious characteristic feature of the species is the posterior median eyes which are very much reduced in size and lack any pigment around them. There are two weak spines on metatarsi III and IV.

DISTINGUISHING THE SPECIES
Consideration of the general appearance, colour, size and genitalia afford relatively easy separation of the species. The metatarsal spines are usually as described but are not completely reliable in *H. pusilla*. Another useful character is that in *H. montana* and *H. candida* the clypeus is much wider than the diameter of an anterior lateral eye, whereas in the other species it is narrower, or only scarcely wider. Male palps of *H. helveola* and *H. pusilla* are rather variable, but in case of difficulty these two species are readily distinguished by their size. Male palp of *H. nava* is similar to these two but this species is always much darker.

DISTRIBUTION
H. montana is the commonest species and widely distributed, being found in leaf-litter in woods and in more open habitats such as grassland. *H. helveola* is also widely but locally distributed, and is also often found in woods. *H. nava*, common and widely distributed, tends to occur in grassland or heathland, or amongst stones or in crevices in open ground rather than in woodland. *H. pusilla* is less common but has been recorded from North and South England, Wales, Scotland and Ireland. It occurs in low vegetation and under stones, often in damp situations. *H. candida* is rare and known only from three localities near the south coast. The newly discovered *H. microphthalma* is known only from two females captured in pitfall traps, on chalk grassland in southern England.

Text Figure 74



Family MIMETIDAE

There are four British representatives of this family, all belonging to the genus *Ero*. Commonly called pirate spiders, they invade the webs of other spiders, attack the owners and, after paralysing them, suck them dry, usually through the legs.

Genus *Ero* C. L. Koch, 1837

The four British species in this genus are very similar in general appearance. The carapace is elevated centrally and the abdomen bears one or two pairs of small tubercles dorsally. The diagnostic features of legs I and II have already been given in the Key to the Families (p. 36).

Ero cambridgei Kulczynski, 1911

Plate 105a; Text Fig. 75a

Length: ♀: 2.5–3.25mm; ♂: 2.5–2.75mm.

General appearance as female illustrated; male similar to that of *E. furcata* (Plate 102). One pair of tubercles present on abdomen.

Ero furcata (Villers, 1789)

Plate 102; Text Fig. 75b

Length: ♀: 2.5–3.25mm; ♂: 2.5–2.75mm.

Male and female very similar to *E. cambridgei*.

Ero tuberculata (Degeer, 1778)

Text Fig. 75c

Length: ♀: 3.5–4mm; ♂: 3mm.

Similar to *E. cambridgei* and *E. furcata* but has *two* pairs of tubercles on dorsal side of abdomen.

Ero aphana (Walckenaer, 1802)

Text Fig. 75d

Length: ♀: 2.5–3mm; ♂: 2.4–2.6mm.

Similar to the other species of the genus and also with *two* pairs of tubercles on dorsal side of abdomen.

DISTINGUISHING THE SPECIES

The species are readily distinguished, in both sexes, by their genitalia.

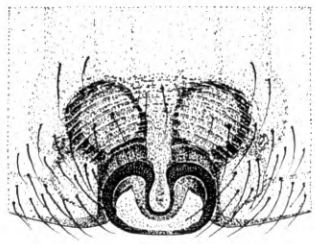
DISTRIBUTION

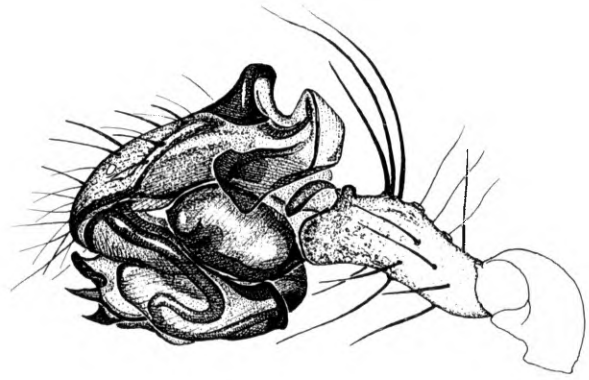
E. cambridgei and *E. furcata* are common and widely distributed, being found in or near the webs of other spiders, in grass, bushes and other plants. *E. tuberculata* is an uncommon species recorded only from the South of England, mainly on heathland, and *E. aphana* is very rare and so far has been found only in Dorset, also on heathland.

Text Figure 75

♀ epigynes

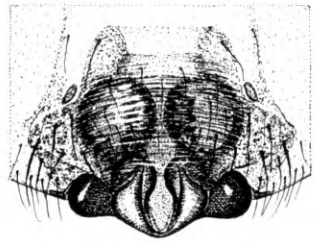
♂ palps

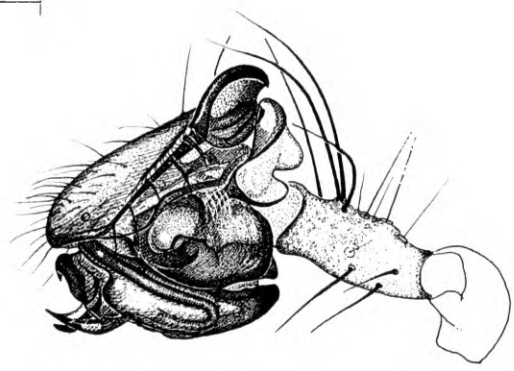




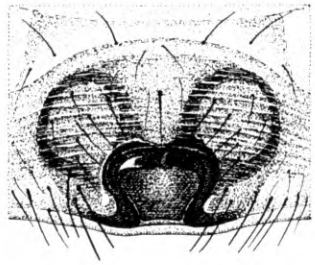
(a) *Ero cambridgei*

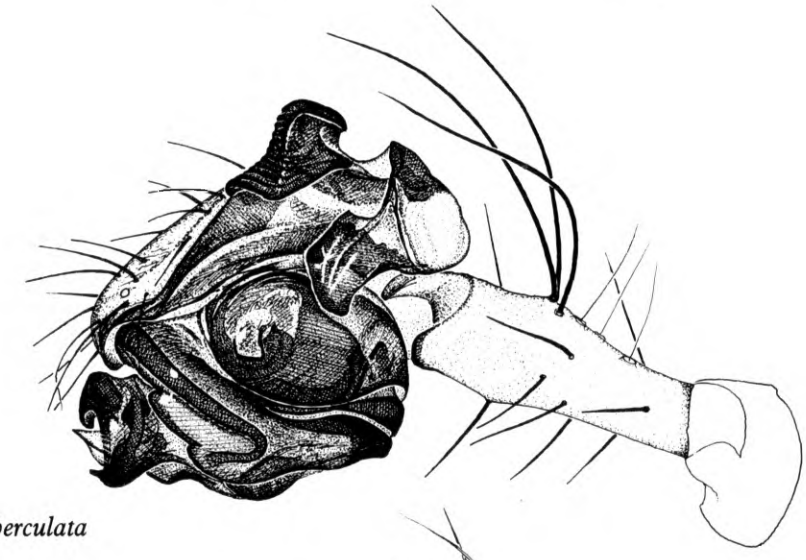
0.5mm



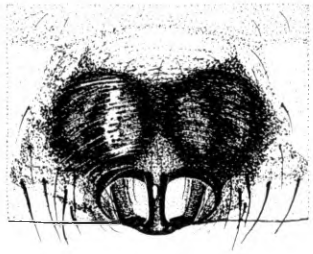


(b) *E. furcata*





(c) *E. tuberculata*



(d) *E. aphana*

Family THERIDIIDAE

There are fifty-two British species in this family, contained within twelve genera. The common name of comb-footed spiders refers to the row of serrated bristles on the fourth tarsus. Whilst this is a useful character in the larger species, the comb may be much reduced, or virtually absent, in smaller members of the family. Males, and some females, have stridulatory apparatus – a row of denticles on the abdomen (near the pedicel) opposing ridges on the posterior end of the carapace. Many theridiids are closely related, or similar in general appearance, to other spider families – Nesticidae, Theridiosomatidae, Tetragnathidae, Araneidae and Linyphiidae – and can present problems for the newcomer to arachnology. The Key to the Families (p. 37) utilizes those structures which can be interpreted fairly easily and which are present in males and females.

Theridiids usually spin an irregular tangle of criss-cross threads, the latter being sticky on the periphery of the web. Flying insects hit and partly break the sticky threads which then contract, dragging the insect in towards the centre of the web. In some species the web can, in time, become sheet-like. In others, the web is very simple (*Episinus* spp.). Web building seems to have been abandoned by the genera *Euryopis* and *Dipoena*, the species of which feed largely on ants.

The comb on tarsi IV is used to throw further sticky silk threads over the prey, which is then bitten. Although the chelicerae are usually weak, the poison is extremely powerful. Whilst the British species are harmless to man, some of the larger theridiids from other parts of the world such as *Latrodectus mactans* (Fabricius), the black widow, can give a dangerous bite. Theridiids usually have few cheliceral teeth and the prey is sucked dry rather than chewed.

TAXONOMIC NOTE

Many early attempts at classification of this family have been based on artificial characters and a limited fauna. The most recent and thorough taxonomic research on theridiids has been carried out by H. W. & L. R. Levi (1962). This classification uses more natural characters and is applicable worldwide. The generic key given here makes partial use of the above work, initially splitting the family into three groups of genera based on the presence or absence of the colulus. Characters applicable to British species and easily seen by the novice are then used to separate the genera. It is difficult to find reliable, unambiguous characters, applicable to both sexes, for separating *Steatoda* and *Enoplognatha*. Study of the world fauna shows that these genera grade into one another. However, the individual British species are quite distinct in abdominal patterns and general appearance. *Enoplognatha thoracica* is more conveniently keyed out separately.

Key to Genera of the THERIDIIDAE

The anterior spinners should be viewed ventrally, and from a little in front, and the area between the base of the spinners examined for the presence or absence of a colulus or paired setae (Text Figs 76a–l).

1 Colulus and paired setae absent 2
– Colulus relatively small (less than one-third the length of its setae), or absent and represented by a pair of setae 3
– Colulus larger (at least one-half the length of its setae) 6

2(1) Abdomen rather pointed posteriorly when viewed from above; dark brown with distinct yellowish markings. Both sexes of the single British species have a highly characteristic appearance (Plate 104). A rather uncommon spider ..... *Euryopis* (p. 174)
– Abdomen higher than long (Plates 113, 114c). The British species are rather uncommon or rare ..... *Achaearanea* (p. 181)
– Abdomen globular or ovoid (Plates 114d–122a). The fifteen British species include the commonest theridiids which lack a colulus ..... *Theridion* (p. 184)

3(1) Abdomen broadened and truncated posteriorly (Plate 103). Legs III considerably shorter than the rest. Only one of the three British species is common ..... *Episinus* (p. 174)
– Abdomen globular or ovoid. Legs III less obviously shorter than the rest 4

4(3) Abdomen with a pattern composed of a median dark band flanked by light bands (Plates 112, 114a,b). Only one of the three British species is common ..... *Anelosimus* (p. 181)
– Abdomen brownish grey to black without a pattern (except in *Dipoena melanogaster*, Plate 105d) 5

5(4) Eyes as in Plate 126; arranged rather like those of *Pholcus phalangioides* (Pholcidae) (Plate 18). Legs with a few weak spines. Males with abdominal scutum (Text Fig. 87a, p. 197). Size range 1.25–1.5mm. The single British species is fairly common and widely distributed ..... *Pholcomma* (p. 196)
– Eyes more evenly sized and spaced. Legs without spines (Plates 105b–d, 106, 107a). Carapace raised anteriorly, especially in males. Size range 1.5–4mm. The seven British species are either rare (*Dipoena inornata* and *D. prona*) or very rare... *Dipoena* (p. 176)

6(1) Carapace, sternum and chelicerae covered with warty granulations (Plates 108, 109). The two British species have a highly characteristic general appearance ..... *Crustulina* (p. 178)
– Carapace, sternum and chelicerae, although sometimes rugose or pitted, without distinct warty granulations 7

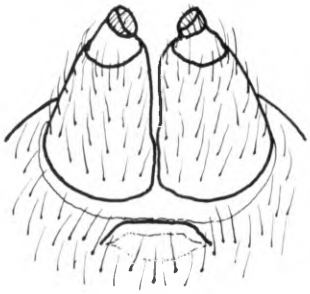
7(6) Abdomen greyish or black without a pattern or light pigment spots, but usually with two or three pairs of reddish impressed spots (sigilla) dorsally (Plates 124, 125, 127) 8
– Abdomen with a pattern and/or markings of light pigment spots. The latter may occasionally be reduced to a thin line on the anterior margin of the abdomen 10

Text Figure 76

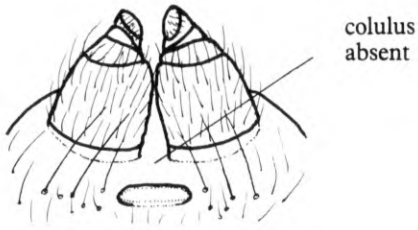
THERIDIIDAE **Key to Genera**

anterior spinners viewed ventrally and from slightly in front

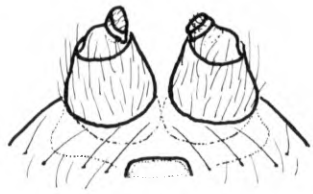
I Colulus and paired setae absent



(**a**) *Euryopis*

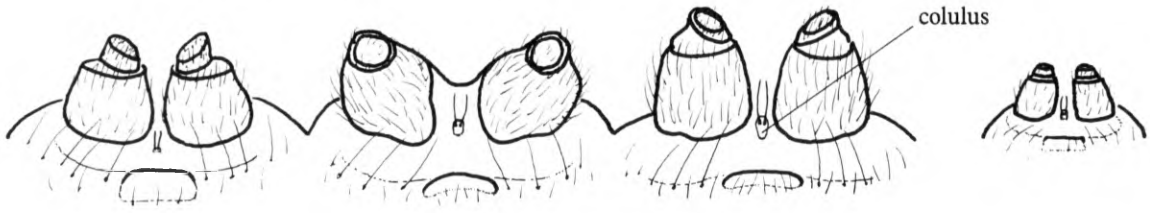


(**b**) *Achaearanea*



(**c**) *Theridion*

II Colulus relatively small (less than one-third the length of its setae) or absent (and represented only by paired setae)



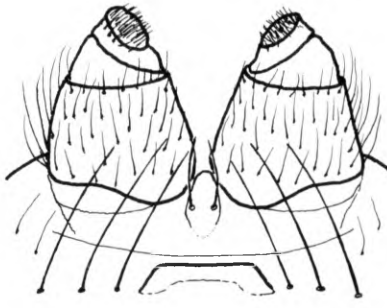
(**d**) *Anelosimus*

(**e**) *Episinus*

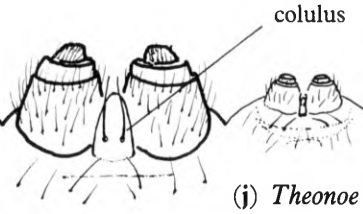
(**f**) *Dipoena*

(**g**) *Pholcomma*

III Colulus larger (at least one-half the length of its setae)

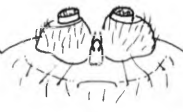


(**h**) *Enoplognatha*

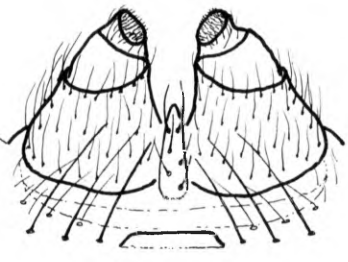


(**i**) *Robertus*

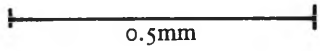
(**j**) *Theonoe*



(**k**) *Crustulina*



(**l**) *Steatoda*



8(7) All tibiae spineless. Tarsi longer than metatarsi. The single British species (Plate 127) is a very small spider (1–1.25mm) and rather uncommon .... *Theonoe* (p. 196)

– Tibiae with one or two fine dorsal spines. Metatarsi longer than tarsi. Larger spiders (1.7–4.5mm)..... 9

9(8) All tibiae with one fine dorsal spine proximally (Plate 125). Chelicerae robust and similar in both sexes. The five British species have a similar appearance, *Robertus lividus* being by far the commonest..... .....*Robertus* (p. 194)

– All tibiae with two fine dorsal spines, proximally and distally (Plate 124). Chelicerae of males larger, more divergent and with large teeth: *Enoplognatha thoracica* (Plate 124) ..... *Enoplognatha* (part) (p. 192)

10(7) Dorsal abdominal pattern overall fairly light with widespread scattering of whitish pigment spots (Plates 122b–d, 123). Sometimes with a brown or grey folium or broad red bands. Of the five British species, *Enoplognatha ovata* is by far the commonest and may be uniformly very pale or marked strikingly with red ..... *Enoplognatha* (part) (p. 192)

– Dorsal abdominal pattern overall darker. Colours vary from reddish or purplish brown to black. Whitish pigment spots present but usually forming distinct lines or bars (Plates 107b–d, 110, 111). A white line is often present around the anterior margin of the abdomen. Of the four British species, *Steatoda bipunctata*, is by far the commonest..... .....*Steatoda* (p. 178)

Genus *Episinus* Latreille, 1809

The three British species in this genus are similar in general appearance.

Episinus angulatus (Blackwall, 1836)

Plate 103; Text Fig. 77a

Length: ♀: 3.75–4.5mm; ♂: 3.5–4mm.

In some females the angles at the posterior end of abdomen may form small tubercles. Male has a similar appearance to the female illustrated but abdomen is less obviously truncated. The sternum is a uniform dark brown colour (*cf. E. maculipes*).

Episinus truncatus Latreille, 1809

Text Fig. 77b

Length: ♀: 3.5–4mm; ♂: 3.25–4mm.

This species very similar to *E. angulatus* and also has sternum uniformly brown. It differs in having a more uniform lighter reddish brown coloration all over and in having the femur, patella and tibia of leg I and patella and tibia of legs II and IV uniformly darkened.

Episinus maculipes Cavanna, 1876

Text Fig. 77c

Length: ♀: 4.7–5.7mm; ♂: 4.25mm.

Similar to *E. angulatus* but has a paler carapace with narrower central and lateral dark markings. Sternum brown with a wide light median band (*cf.* the other two British species). Legs are pale with the darker markings more broken up and speckled than in *E. angulatus*.

DISTINGUISHING THE SPECIES

The genitalia afford the best means of separating the species. Epigynes somewhat variable in shape and depth of colour but distinctive, as are also the male palps. The sternal marking is of additional use in distinguishing *E. maculipes*; and the leg markings for separating all three species.

DISTRIBUTION

E. angulatus occurs all over the British Isles and is not uncommon. It spins a very simple web close to ground level amongst grass and heather, etc. *E. truncatus* has been recorded only from southern England and Ireland and is much scarcer, being found mainly on heathland. In the British Isles, *E. maculipes* has been collected only in Essex (one female many years ago) and in the Isle of Wight, on trees and bushes.

Genus *Euryopis* Menge, 1868

There is one British species in this genus and it has an unmistakable appearance.

Euryopis flavomaculata (C. L. Koch, 1836)

Plate 104; Text Fig. 77d

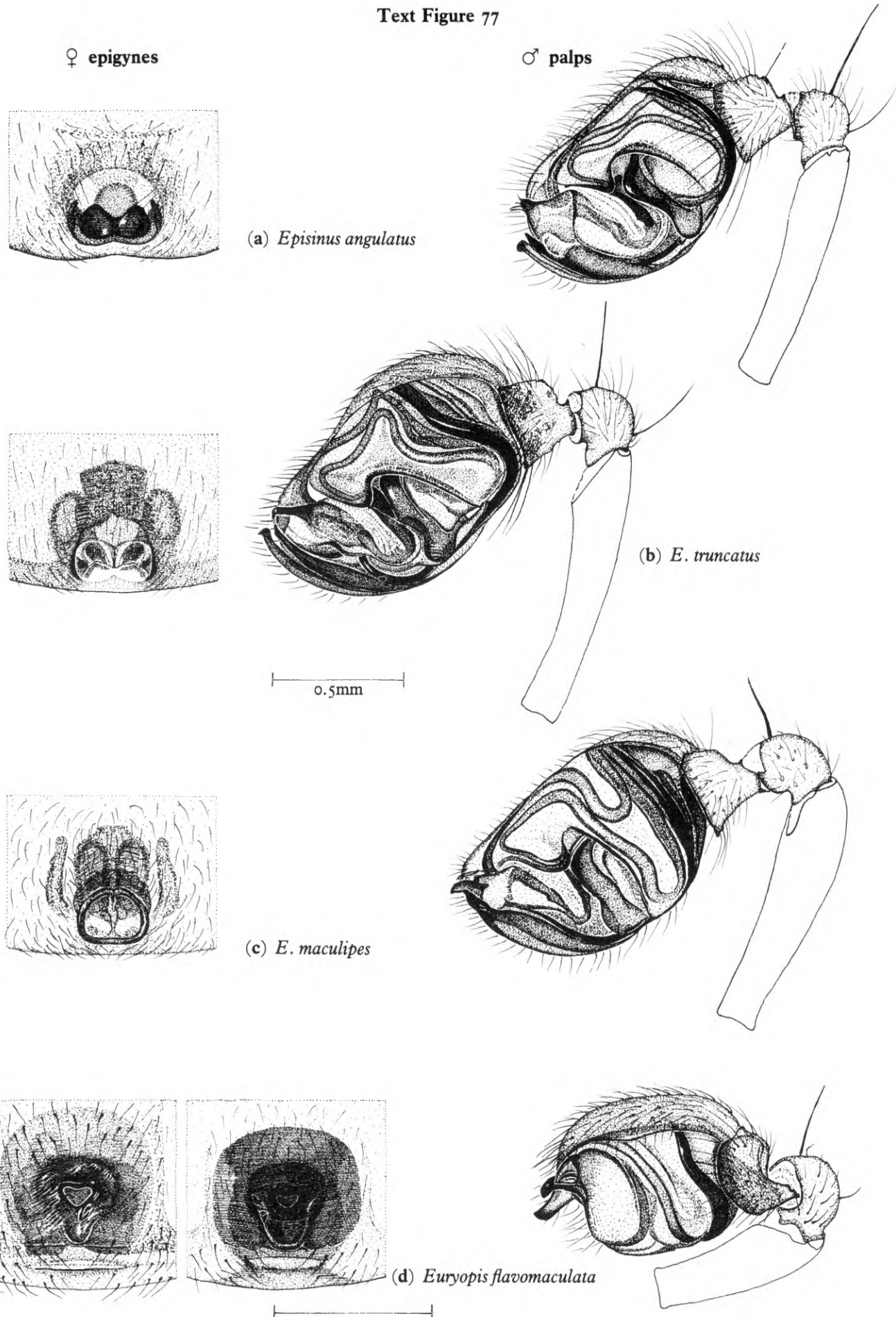
Length: ♀: 3.5–4mm; ♂: 3mm.

Male has the same highly characteristic general appearance as the female illustrated. Genitalia distinctive, although epigyne varies somewhat, especially in the depth of sclerotization, as figured.

DISTRIBUTION

This species has been recorded from England, Scotland and Ireland and occurs usually in moss in damp, boggy areas where it seems to feed mainly on ants. Although it is a rather rare spider, since about 1979 it has occurred with markedly increased frequency in Yorkshire, Leicestershire and Nottinghamshire.

Text Figure 77



Genus *Dipoena* Thorell, 1869

The seven British species in this genus have the clypeus wide and concave and the carapace rather high anteriorly, especially in males. The chelicerae are rather feeble. Apart from *D. melanogaster* they have the abdomen uniformly grey or black.

Dipoena erythropus (Simon, 1881)

Text Fig. 78a

Length: ♀: 2.5mm; ♂: 2–2.5mm.

Carapace of this species similar to that of *D. prona* (Plate 105b). Abdomen greyish brown with fairly short, fine hairs. Legs uniform yellow-brown. Metatarsus I about one and a half times as long as tarsus I.

Dipoena prona (Menge, 1868)

Plate 105b; Text Fig. 78b

Length: ♀: 2.5mm; ♂: 2mm.

Note, in the illustration (Plate 105b), the extent to which carapace protrudes anteriorly, and the rather short hairs on abdomen. Legs yellow-brown, suffused with black. Metatarsus I one and a half times as long as tarsus I. Male similar to female but carapace more raised anteriorly. Epigyne very variable.

Dipoena inornata (O. P.-Cambridge, 1861)

Plate 106; Text Fig. 78c

Length: ♀: 1.8–2.25mm; ♂: 1.5–1.7mm.

Note (Plate 106) the spines on midline of carapace, the covering of fairly long thick hairs on abdomen and tibiae suffused with black. Metatarsus I about one and a half times as long as tarsus I. Epigyne characteristic.

Dipoena tristis (Hahn, 1831)

Plate 105c; Text Fig. 78d

Length: ♀: 3mm; ♂: 2.5mm.

Note (Plate 105c) the darkly marked carapace and the glossy abdomen with fairly long hairs. Legs dark brown with tarsi yellow and proximal ends of femora III and IV orange. Metatarsus I about twice as long as tarsus I. Epigyne rather dark and small, but characteristic.

Dipoena coracina (C. L. Koch, 1841)

Text Fig. 78e

Length: ♀: 2–2.5mm; ♂: 1.75–2mm.

I could find only four adults of this species in British and European collections all of which were similar in general appearance to *D. prona* (Plate 105b). Legs yellow-brown suffused with black. Metatarsus I about one and a half times as long as tarsus I. Genitalia of similar appearance to those of *D. prona*.

Dipoena melanogaster (C. L. Koch, 1845)

Plate 105d; Text Fig. 78f

Length: ♀: 2.5–3mm; ♂: 2.5mm.

General appearance of female highly characteristic. Males have a much darker abdomen with only two light patches anterolaterally. Metatarsus I about twice as long as tarsus I.

Dipoena torva (Thorell, 1875)

Plate 107a; Text Fig. 78g

Length: ♀: 2.8–4mm; ♂: 2.5–3mm.

Note the extent to which the female carapace protrudes anteriorly and the shiny, rather iridescent abdomen. Metatarsus I twice as long as tarsus I. Male has carapace extremely elevated with a horseshoe-shaped depression (illustrated next to the male palp, Text Fig. 78g).

NOTE. The male palp of this species is illustrated to a slightly smaller scale than all the other illustrations in Text Fig. 78.

DISTINGUISHING THE SPECIES

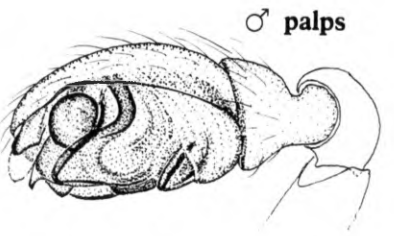
Male palps distinctly different in the seven species and present little problem in identification. Epigynes of some species can be indistinct and variable and in these cases relative lengths of metatarsi I and tarsi I and the general appearance of the spiders, as discussed above and illustrated, gives additional help.

DISTRIBUTION

All seven species are rare or extremely rare. *D. inornata* has perhaps the widest, but mainly southern, distribution. *D. prona* is almost as frequent but recorded only from southern England. All the others are recorded from only a very few localities in southern England, Ireland and (*D. torva*) Scotland. Some species, for example *D. tristis*, may occur not infrequently in two or three localities. *D. coracina* has not been taken in the British Isles for about 70 years. Most species are found mainly on heather, gorse and other low bushes, except *D. torva* which is found on pine trunks and *D. prona* which is often found at ground level, under stones. They probably feed mainly on ants.

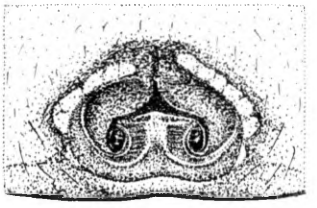
Text Figure 78

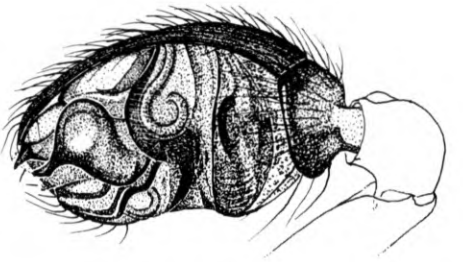
♀ **epigynes**



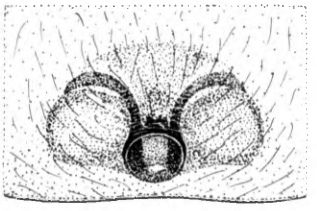
♂ **palps**

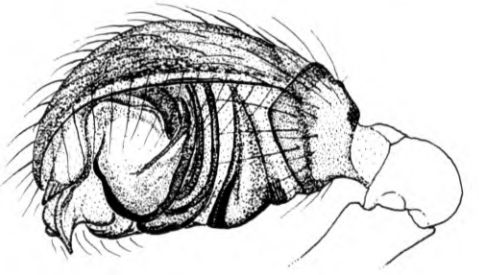
(**a**) *Dipoena erythropus*





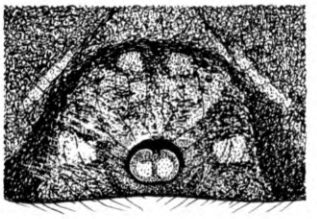
(**b**) *D. prona*

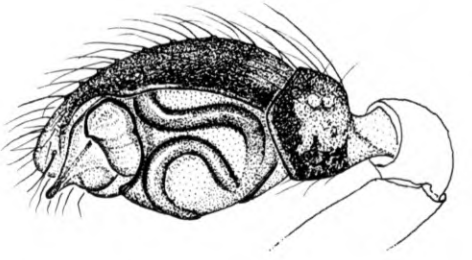




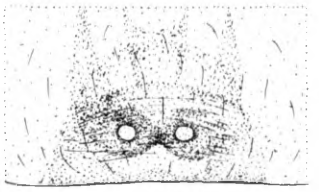
(**c**) *D. inornata*

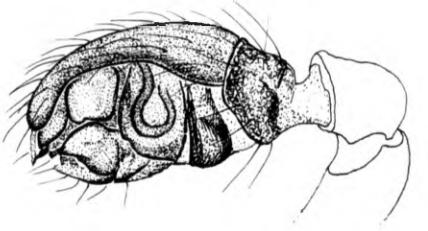
0.5mm



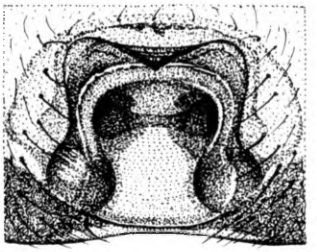


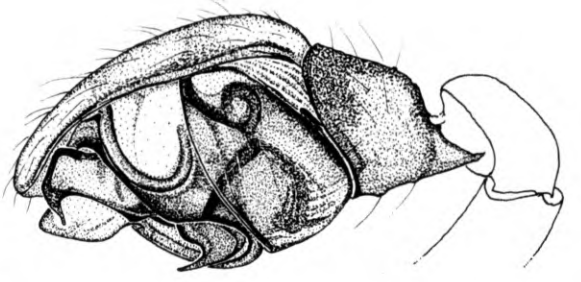
(**d**) *D. tristis*



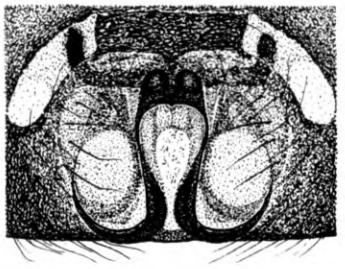


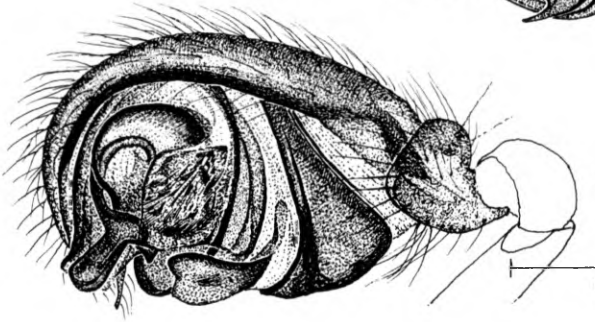
(**e**) *D. coracina*





(**f**) *D. melanogaster*





(**g**) *D. torva*

♂ **carapace**

0.5mm

Genus *Crustulina* Menge, 1868

The two British species have warty granulations on the carapace and sternum and a highly characteristic general appearance.

Crustulina guttata (Wider, 1834)
Plate 108; Text Fig. 79a
Length: ♀♂: 1.5–2mm.
Male similar to female. Epigyne rather variable.

Crustulina sticta (O. P.-Cambridge, 1861)
Plate 109; Text Fig. 79b
Length: ♀ ♂: 2.5mm.
Male similar to female but has clearer markings and the reddish sigilla are larger.

DISTINGUISHING THE SPECIES

General appearance, size and genitalia make confusion of these two species unlikely.

DISTRIBUTION

C. guttata is fairly widely distributed over England (with few records from Wales or Scotland), occurs usually in grassland and in woodland litter and is fairly common. *C. sticta* occurs in wetter habitats and has been recorded only from the Midlands, eastern and southern England.

Genus *Steatoda* Sundevall, 1833

The four British species in this genus each have a characteristic appearance; only one, *S. bipunctata*, is common and widespread.

Steatoda phalerata (Panzer, 1801)
Plate 107b; Text Fig. 79c
Length: ♀: 3.5–5mm; ♂: 4–4.5mm.
The yellow-white marks on the abdomen may be larger or smaller than in female illustrated. Rarely, they are absent. Male similar.

Steatoda albomaculata (Degeer, 1778)
Plate 110; Text Fig. 79d
Length: ♀: 3.5–6mm; ♂: 4–5mm.
The abdominal pattern is variable, as female illustrated. Male similar, but usually more clearly marked.

Steatoda bipunctata (Linnaeus, 1758)
Plates 107c, 111; Plate B, p. 180
Length: ♀: 4.5–7mm; ♂: 4–5mm.
Abdomen characteristically shiny and the general markings and abdominal pattern, although variable, are unmistakable. Male palp relatively large. The genitalia are illustrated in colour (Plate B).

Steatoda grossa (C. L. Koch, 1838)
Plate 107d; Text Fig. 79e
Length: ♀: 6.5–10mm; ♂: 4–6mm.
The female illustrated has a small abdomen; the range of variation in female abdominal size is shown by the two life-size line-drawings. The abdominal pattern is variable and sometimes absent, and colour varies from reddish brown, to purplish brown, to black. Male similar, but often with more clearly marked pattern.

DISTINGUISHING THE SPECIES

The general appearance and genitalia of the four British species makes them easily distinguishable. However, strikingly marked specimens of what appear to be *S. albomaculata* (Plate 110) should be viewed with suspicion if they have come from the market or grocer's shop. They may well be of the species *S. paykulliana* (Walckenaer) specimens of which have been imported with fruit from the Mediterranean.

DISTRIBUTION

S. bipunctata is common and widely distributed, usually occurring in or near houses. *S. phalerata* is also widespread over England, Scotland and Wales but is uncommon and found usually in dry grassy or heathery areas. *S. grossa* occurs rarely, in and around houses, in the southern half of the British Isles but is common in some coastal areas in the South-west of England. *S. albomaculata* is rare and occurs in a few localities in South and South-east England in dry, usually heathery areas, most frequently on recently burnt heathland.

Text Figure 79

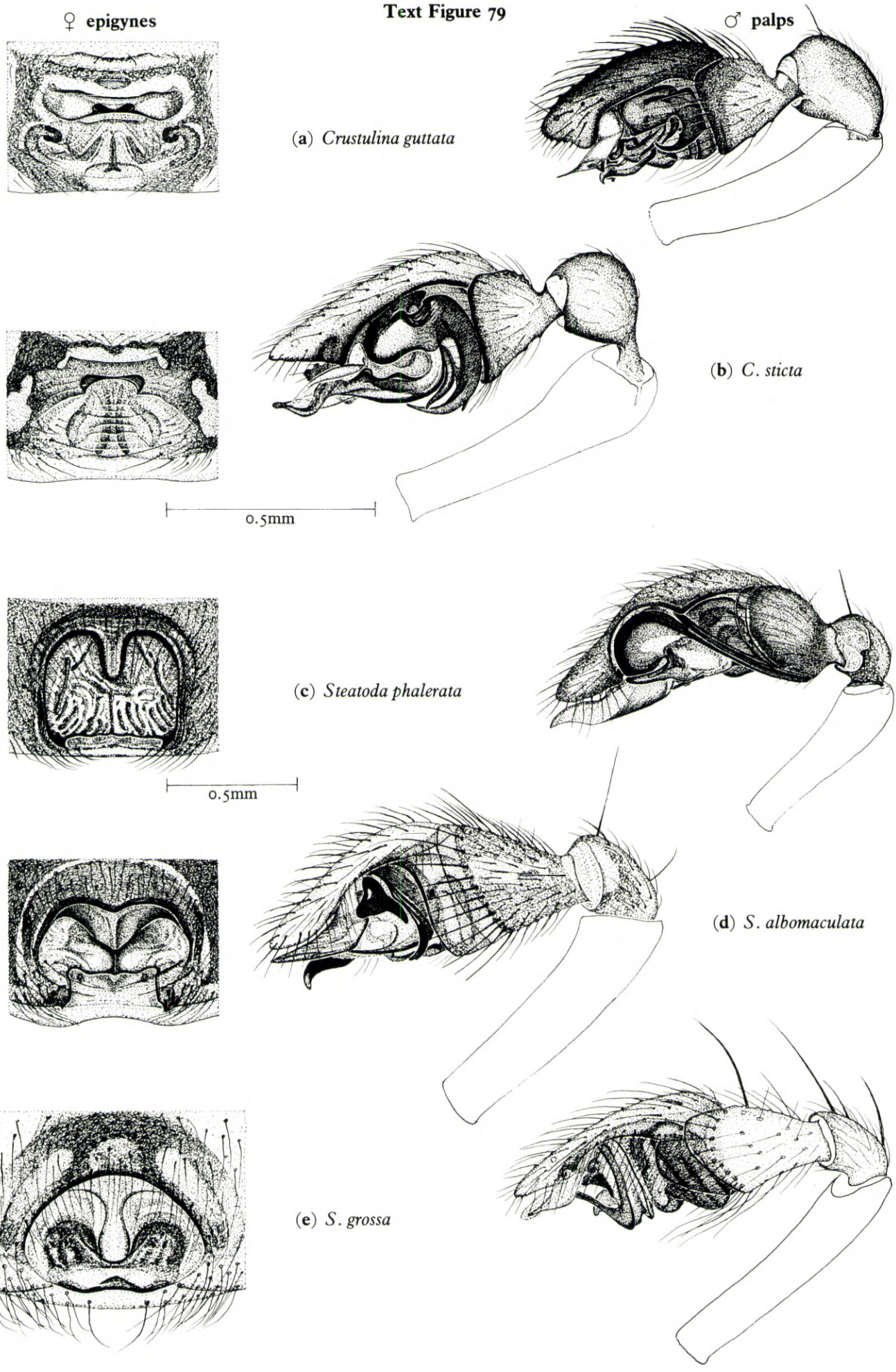
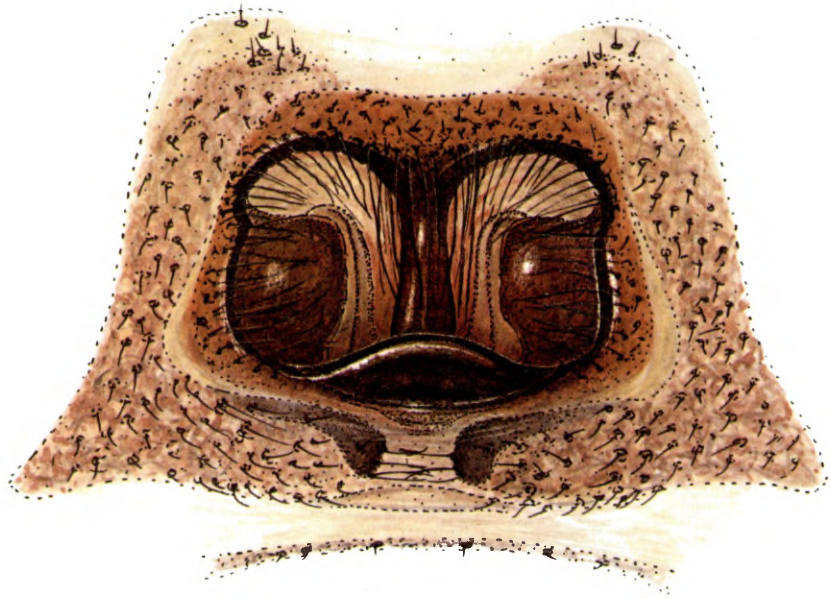
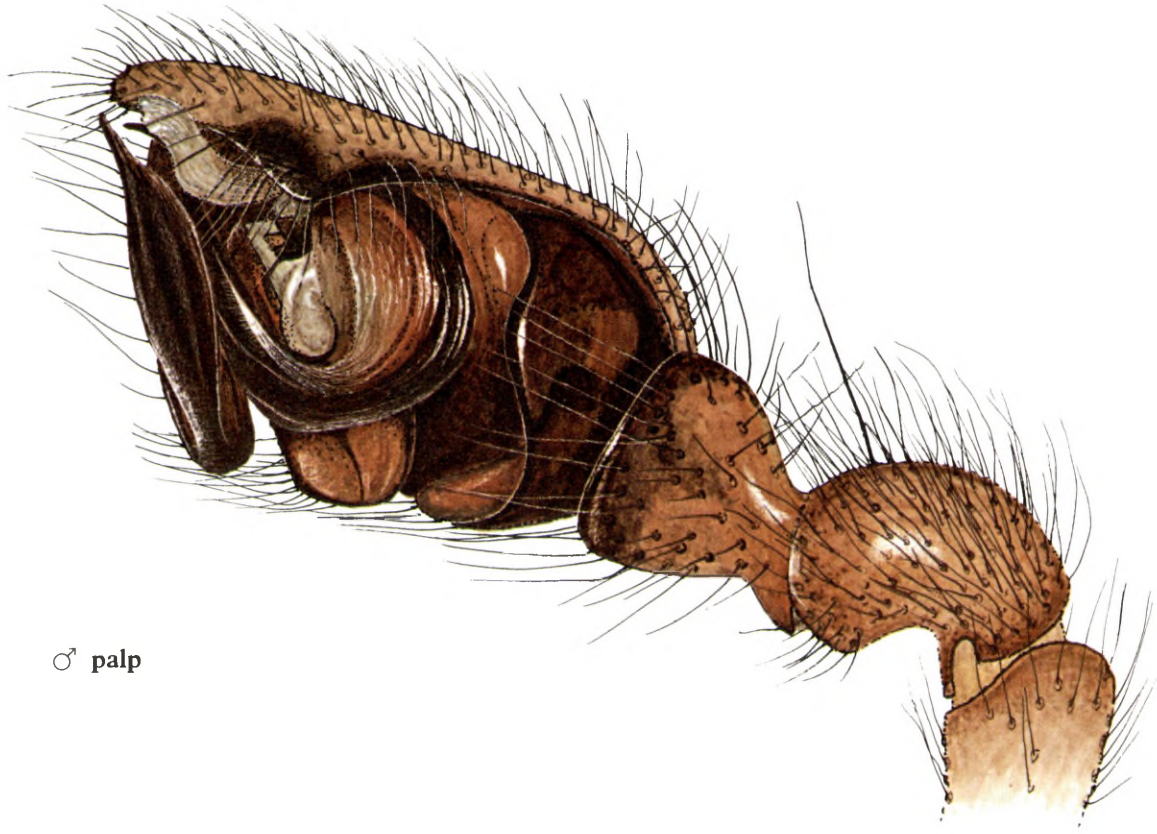


Plate B



♀ **epigyne**

0.5mm



♂ **palp**

Steatoda bipunctata (Linnaeus)

Genus *Anelosimus* Simon, 1891

The three British species in this genus have a broadly similar appearance.

Anelosimus vittatus (C. L. Koch, 1836)

Plate 114a; Text Fig. 80a

Length: ♀: 3–3.5mm; ♂: 2.5–3.5mm.

Abdominal pattern rather variable; sometimes the marking on the midline of abdomen is a uniformly dark band. Some specimens are quite reddish in colour. Male similar to female but abdomen smaller, as illustrated for male *A. aulicus* (Plate 114b). Male has metatarsi I and II armed ventrally with a series of bristles, each arising from a broad base.

Anelosimus pulchellus (Walckenaer, 1802)

Text Fig. 80b

Length: ♀: 3–3.5mm; ♂: 2.5–3.5mm.

This species closely resembles *A. vittatus* in general appearance and both male and female show similar variation in colour and markings.

Anelosimus aulicus (C. L. Koch, 1838)

Plates 112, 114b; Text Fig. 80c

Length: ♀: 3–3.5mm; ♂: 2.5–3mm.

The female illustrated is gravid; specimens with smaller abdomens often have a clearer pattern with a uniform dark band in the midline. Colour rather variable. Male palp has a most unusual appearance.

DISTINGUISHING THE SPECIES

A. vittatus is by far the commonest species and is likely to be encountered first. The genitalia allow for easy identification of all three species.

DISTRIBUTION

A. vittatus is widely distributed over England and Ireland, and has been found in Scotland and Wales. It is fairly common and occurs on trees, bushes and also amongst flower heads of plants. *A. aulicus* seems restricted to South and South-east England, but is often common on gorse bushes. *A. pulchellus* has been recorded only once from Berkshire.

Genus *Achaearanea* Strand, 1929

The British species in this genus all have the abdomen higher than long but abdominal markings and depth of colour vary greatly, even within a single species. The illustrations of *A. lunata* and *A. tepidariorum simulans* were chosen to indicate the extreme range of markings which may occur in all the British species, except for *A. veruculata*.

TAXONOMIC NOTE

For many years there has been considerable discussion regarding the status of *Achaearanea simulans* (Thorell) and its relationship to *A. tepidariorum* (C. L. Koch). Locket & Millidge (1953) considered *A. simulans* of doubtful status even as a subspecies of *A. tepidariorum*. Subsequently, Locket, Millidge *et al.* (1974) considered *A. simulans* to be a distinct species. This latter view was taken on the basis of detailed and very interesting investigations published by Locket & Luczak (1974) and Locket (1975).

The genitalia of *A. tepidariorum* and *A. simulans* are indistinguishable in form and differ only in size, although there can be some overlap. The colour and markings of the spiders are equally variable and the only significant morphological difference between the two forms seems to be that of size.

A. tepidariorum is a common cosmopolitan spider which originates from warmer countries. It has been repeatedly introduced into the British Isles and other parts of northern Europe, and used to occur fairly frequently, all over the country, in heated greenhouses and very occasionally out of doors, having survived the English winter. The species has since become rare in greenhouses due to the use of pesticides, but it seems likely that it could survive outside in certain areas of southern England, or in houses as it does in the United States.

Those spiders which form part of our natural fauna are influenced by local variations in climate and environment; this is partly reflected in the observed 'normal' size range for each species. Species which have been introduced, and those occurring out of doors only in the South of England (*Pholcus* spp. (Pholcidae); *Eresus* spp. (Eresidae); *Araniella displicata*, *Argiope* spp. (Araneidae)), may show some differences in size, morphology and behaviour in southern Europe.

A population of spiders such as *A. tepidariorum* living outside in England would be at some disadvantage, and the average size of individuals might fall – perhaps by coming to maturity with fewer ecdyses – leading to a smaller form: *A. simulans*. The latter might also exhibit slight behavioural differences which in time could become genetically incorporated and controlled.

A. tepidariorum is undoubtedly a very adaptable and successful species; it is difficult to say whether the members of a 'species pair' such as *A. tepidariorum/simulans* have attained individual species status when each still has possible access to the other's habitat and is presumably still adaptable. The high adaptability of the species is noted by Locket & Luczak (1974). For example, the webs may be positioned in different places, depending on the type and location of prey; and web positions are changed by individuals until prey is found. The spiders may change their habitat during growth and at different seasons. In this same paper, differences in behaviour are cited as indicating that *tepidariorum/simulans* may be distinct species – e.g. Polish specimens of *A. simulans*, reared in England, spun a cocoon for overwintering whereas *A. tepidariorum* did not, etc.

In a later paper (Locket, 1975, p.228) it is noted that:

(a) Polish specimens of *A. simulans* interbreed freely with British *A. simulans* producing fertile eggs and young;

(b) Polish specimens of *A. simulans*, reared in England, spin a cocoon for overwintering;

(c) English *A. simulans*, reared in England, do not make protective overwintering cocoons; and

(d) the habit difference in (b) and (c) above must be genetically controlled.

If the logic in the preceding paragraph is adhered to, then Polish and English *A. simulans* could each be regarded as separate species.

We have assumed that *A. simulans* is a small form of *A. tepidariorum*, adapted to a colder climate. The reverse could be true, and this is also pointed out by Locket & Luczak (1974, p. 282). Spiders can travel phenomenal distances by human transportation and as aeronauts (see p. 22) and there is good reason to assume a continued interchange of genetic material.

The known distribution of *A. simulans* is across Europe; southern England, Denmark, northern France, Germany, Poland and southern Russia. *A. tepidariorum* is pantropical and subtropical but also occurs in heated buildings in the north. It is entirely possible that intermediates exist elsewhere and await discovery. Levi (1959) has shown very considerable geographic variation occurring in species of the genus *Latrodectus* (Theridiidae) not represented in the British Isles, and many other spiders are known to be polytypic. My own study of a group of American *Dipoena* (Roberts, 1979) revealed three distinct species, one of which itself showed a degree of intraspecific variability so great as to suggest speciation. My view is to regard such cases nominally as one polytypic species, at least until material over a wide range of ecoclines and geoclines has been studied. Views may later change, as have those of Levi (1983b) on *Latrodectus*.

For these reasons, and for the purely taxonomic reasons given below, *A. simulans* is considered here as a subspecies of *A. tepidariorum*, despite some current opinion to the contrary.

Achaearanea lunata (Clerck, 1757)

Plate 113; Text Fig. 80d

Length: ♀: 2.5–3mm; ♂: 2.5mm.

Colour and markings very variable in both male and female. Some specimens are almost entirely black; others similar to the illustration of *A. tepidariorum simulans* (Plate 114c).

Achaearanea riparia (Blackwall, 1834)

Text Fig. 80e

Length: ♀: 3–3.5mm; ♂: 3–3.25mm.

Similar to *A. lunata* and *A. tepidariorum simulans*, and equally variable in colour and markings. Carapace may be light or dark brown. Abdomen often brownish with blotches of white and dark brown-black.

Achaearanea tepidariorum (C. L. Koch, 1841)

Text Fig. 81a

Length: ♀: 5–7mm; ♂: 3–4mm.

Colour and markings variable; sometimes like *A. lunata* (Plate 113), sometimes like *A. tepidariorum simulans* (Plate 114c). The species is cosmopolitan.

Subspecies *A. tepidariorum simulans* (Thorell, 1875)

Plate 114c; Text Fig. 81b

Length: ♀: 3–5mm; ♂: 2–3mm.

Indistinguishable from *A. tepidariorum* except in overall size. Considered by some authors to be a distinct species (see Taxonomic Note, p. 181).

Achaearanea veruculata (Urquhart, 1885)

Text Fig. 81c

Length: ♀: 3.7–5.2mm; ♂: 2.5–3.5mm.

Carapace yellow-brown with darker margins and central markings. Abdomen pale yellow-brown with central dark lanceolate mark which may be outlined with white. Outside this is a reddish or purplish brown area and further dark marks laterally. Legs pale yellow, annulated distally with dark brown. Epigyne and male palp are much simpler in structure than those of the other British species.

DISTINGUISHING THE SPECIES

The genitalia of *A. tepidariorum* and *A. tepidariorum simulans* are identical except for size. The illustrations are of typical examples, and intermediate sizes of epigyne and male palps occur. Epigynes, and to a lesser degree male palps, exhibit the normal slight variation between individual specimens such as occurs with any single species. Other reported differences could easily be a result of allometric growth. Taxonomic problems are discussed above.

The other species in this genus are readily distinguishable by their epigynes and male palps.

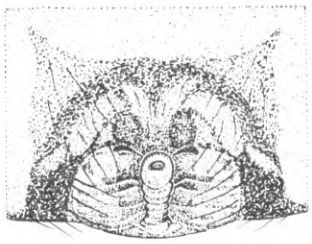
DISTRIBUTION

A. lunata is uncommon but, although having a mainly southern distribution, extends into the Midlands, North Wales and Ireland, usually occurring on bushes and trees in woodland. *A. riparia* extends slightly farther northwards but is rare and occurs nearer ground level, usually under overhanging banks. The known distribution of *A. tepidariorum* and *A. tepidariorum simulans* has already been discussed (see above); in southern England *A. tepidariorum simulans* has been found in about ten localities. *A. veruculata* has occurred in the Isles of Scilly, on trees and bushes; it is a common spider in Australia and New Zealand and is almost certainly an introduced species.

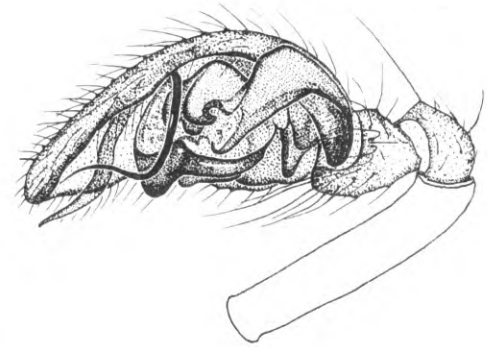
Text Figure 80

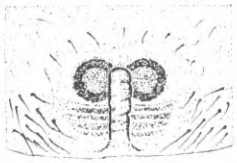
♀ epigynes

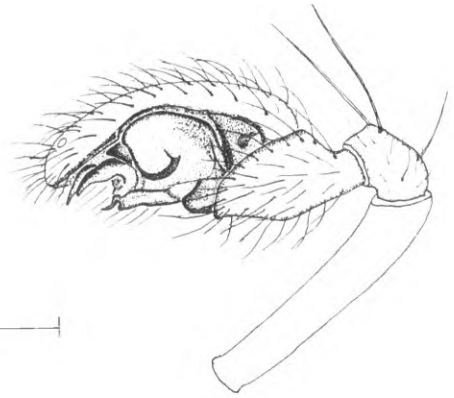
♂ palps



(a) *Anelosimus vittatus*

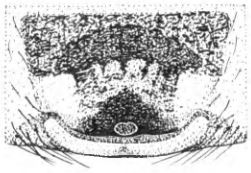




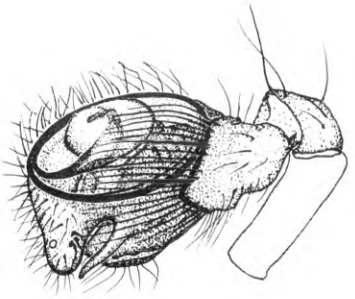


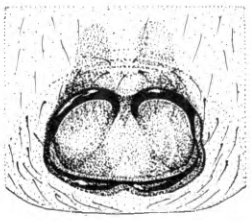
(b) *A. pulchellus*

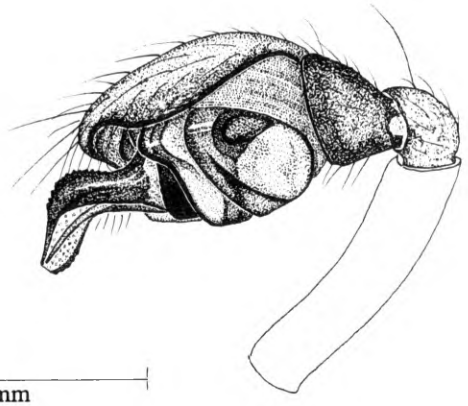
0.5mm



(c) *A. aulicus*

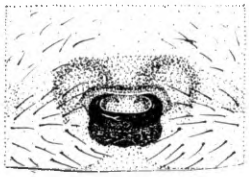




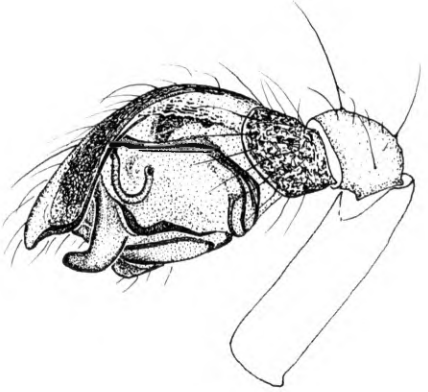


(d) *Achaearanea lunata*

0.5mm



(e) *A. riparia*



Genus *Theridion* Walckenaer, 1805

The fifteen British species in this genus have the abdomen rather globular in females but generally less so in males, and usually with a distinct abdominal pattern. They include the commonest British theridiids which lack a colulus. A few of the species are very similar in general appearance and examination of the genitalia is essential, as usual, for identification.

Theridion sisyphium (Clerck, 1757)

Plate 115; Text Fig. 81d

Length: ♀: 3–4mm; ♂: 2.5–3mm.

General appearance highly characteristic but closely similar to *T. impressum*. Male similar to female. Abdominal coloration varies somewhat; some specimens are darker, and the light areas may be either yellowish or even more reddish than female illustrated.

Theridion impressum L. Koch, 1881

Text Fig. 81e

Length: ♀: 4–4.5mm; ♂: 2.5–3.5mm.

This species is very similar to *T. sisyphium* in general appearance and can only be reliably distinguished by the genitalia.

Theridion pictum (Walckenaer, 1802)

Plate 114d; Text Fig. 82a

Length: ♀: 3.5–4.8mm; ♂: 2.25–3.5mm.

The appearance of females is usually as illustrated; occasional specimens lack the red central colour (which in any case eventually fades in spirit). Males usually appear like the illustration of *T. simile* (Plate 122a) except that the whole central abdominal band is light. The epigastric region is greatly swollen in adult males. (See Note about this and epigynes under *T. varians*, below).

Theridion varians Hahn, 1831

Plate 118b; Text Fig. 82b

Length: ♀: 2.5–3.5mm; ♂: 2.25–2.75mm.

Appearance generally as illustrated but occasionally entirely blackish. Males have a similar abdominal pattern and the epigastric region greatly swollen.

NOTE. The three British species *T. pictum*, *T. varians* and *T. pinastri* all have the epigastric region swollen in males, and similar male palps. They also all exhibit a similar adaptation of reproductive biology. After mating, the male produces a secretion from the mouthparts and seals the opening of the epigyne with a smooth plug which dries hard and is impossible to dislodge. In most collections, adult females with plugged epigynes predominate. The epigyne opening, and plug, is small in *T. pictum* in relation to the whole structure so that the overall appearance is little affected even though the epigyne is rather variable (Text Fig. 82a). In *T. varians*, however, the plug is much larger and appears as a smooth red-brown structure completely filling the depression and considerably changing the appearance of the epigyne (Text Fig. 82b). In the case of *T. pinastri* the few females available for study all had plugged epigynes (Text Fig. 82c) but specimens without plugging should still be recognizable from the single illustration.

The biological advantage of this procedure is not fully understood; it certainly means that each female can mate only once and that the successful male's genes are protected from competition from other males. Other closely related species, with similar behaviour, occur in other parts of the world, ranging from Siberia to the tropics. Many insects also seal the genital opening after mating. Males of *T. melanurum* and *T. mystaceum* also have the epigastric region swollen but have different palpal structure and do not plug the females' epigynes. Females of many spider species are known to store sperm for long periods.

Theridion pinastri L. Koch, 1872

Text Fig. 82c

Length: ♀: 2.5–3.5mm; ♂: 2.25–2.75mm.

Similar to *T. varians* in general appearance. Epigastric region greatly swollen in males. (See Note about this and epigynes under *T. varians*, above.)

Theridion simile C. L. Koch, 1836

Plate 122a; Text Fig. 82d

Length: ♀ ♂: 2–2.5mm.

Females have similar abdominal markings to the male illustrated but are a little paler and have the abdomen larger. Epigyne rather variable in width, as illustrated.

Theridion familiare O. P.-Cambridge, 1871

Text Fig. 82e

Length: ♀: 1.5–2mm; ♂: 1.5mm.

Similar to *T. mystaceum* (Plate 118a) in general appearance but having a paler carapace and relatively larger eyes. Abdomen has the first two dentations of midline markings opened out to form a rectangular area anteriorly.

Theridion melanurum Hahn, 1831

Plate C, p. 191; Text Figs 83a,c

Length: ♀: 2.5–3.75mm; ♂: 2.25–3.75mm.

This species is very similar to *T. mystaceum* (Plate 118a) in general appearance and genitalia and is subject to variation in depth of colour and markings in both male and female. Some specimens may be pale; others virtually black all over. It is usually larger than *T. mystaceum* but there is overlap. Males have the epigastric region swollen.

Theridion mystaceum L. Koch, 1870

Plate 118a; Plate C, p. 191; Text Figs 83b,d

Length: ♀ ♂: 1.5–2.5mm.

Very similar to *T. melanurum* (see above) and equally variable in markings. Males have the epigastric region swollen.

Theridion blackwalli O. P.-Cambridge, 1871

Plate 116; Text Fig. 83e

Length: ♀: 2.5–3mm; ♂: 2–2.5mm.

Abdominal pattern rather variable, sometimes having more lighter areas and occasionally entirely black. Carapace markings are characteristic and similar, but lighter in male than female.

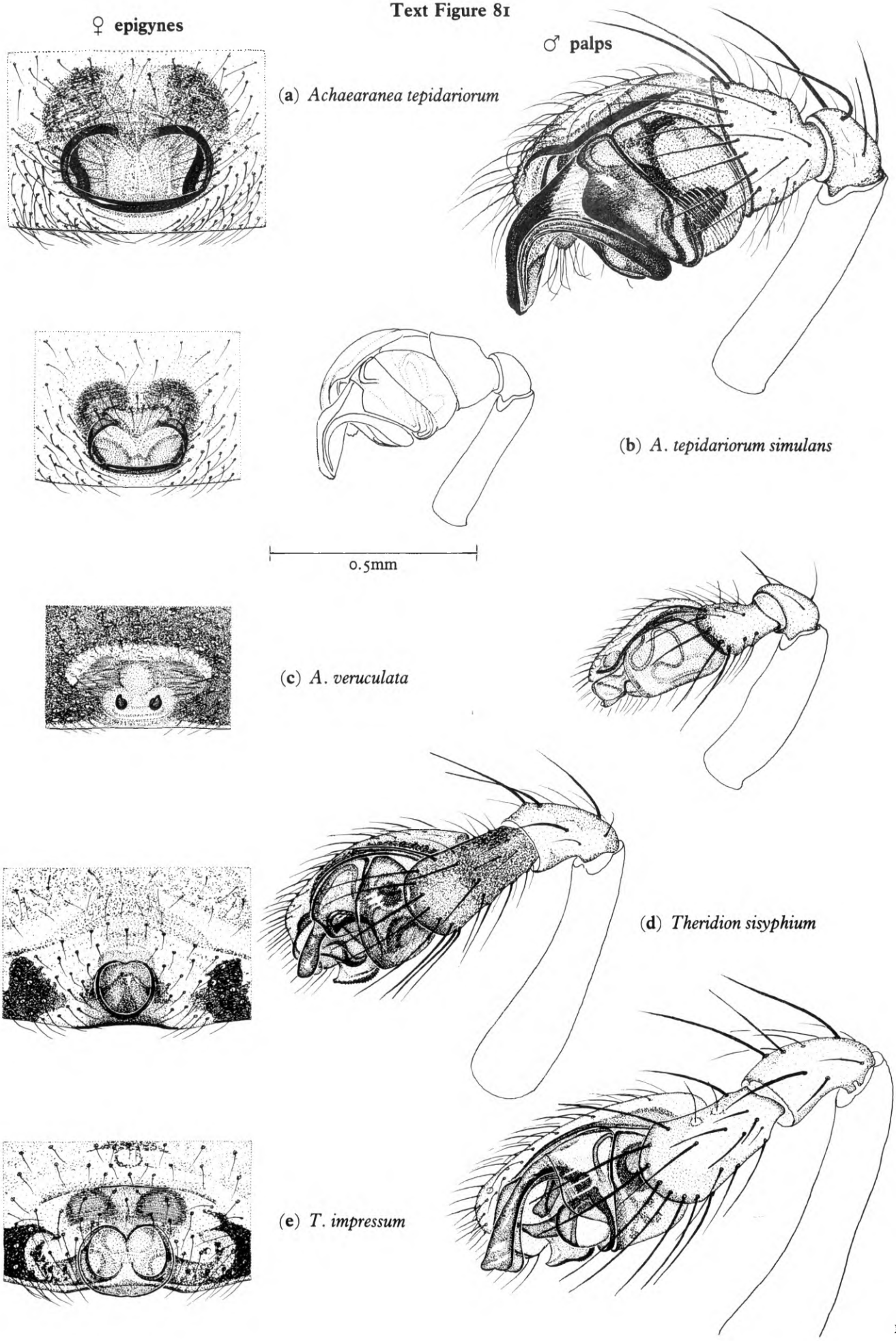
Theridion tinctum (Walckenaer, 1802)

Plate 117; Text Fig. 83f

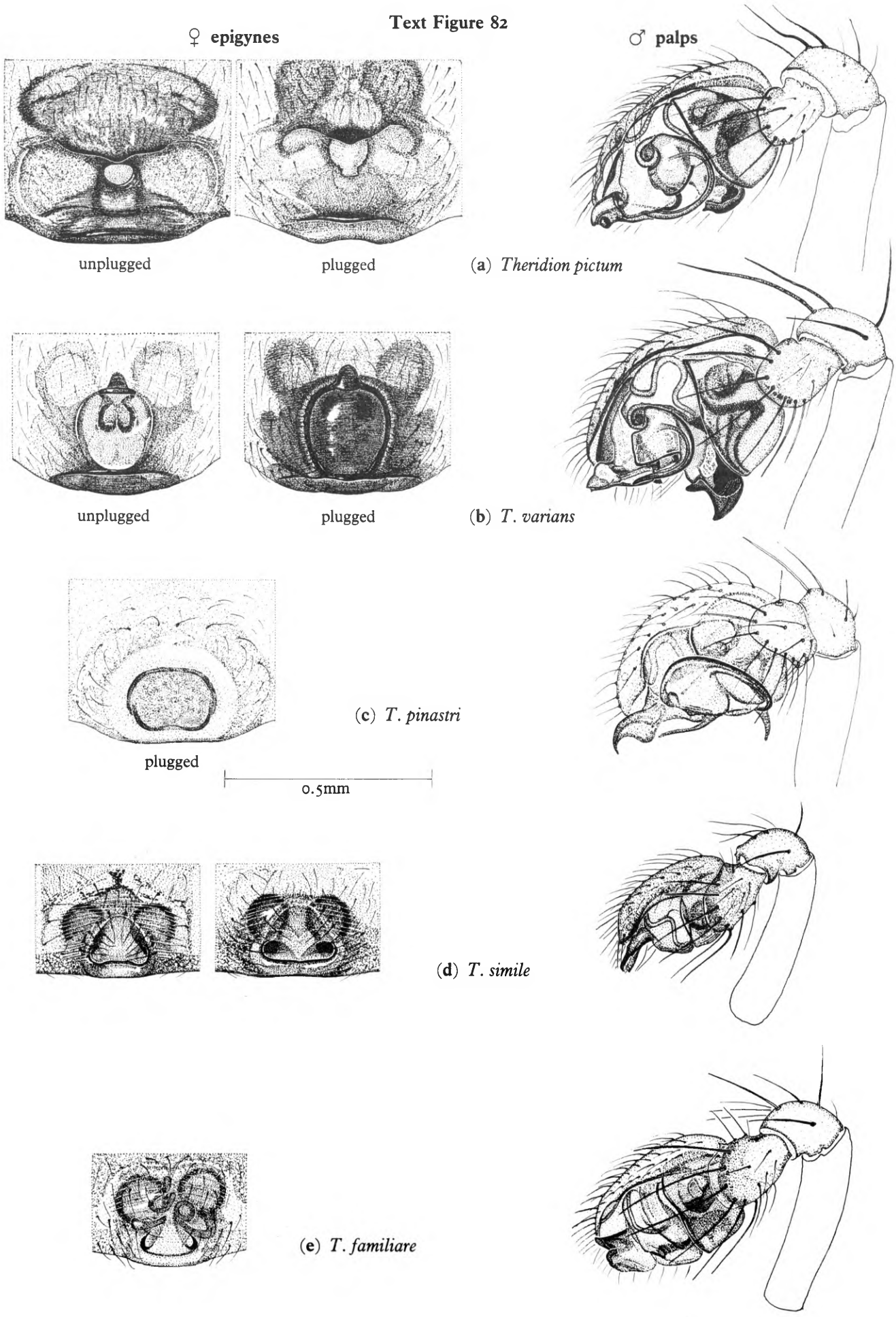
Length: ♀: 2.5–3.5mm; ♂: 2.5mm.

The coloration and markings of this species are extremely variable. The dark carapace markings are usually characteristic and the dark area on the anterior end of abdomen is usually present to some degree. Occasional specimens are almost entirely black, especially male.

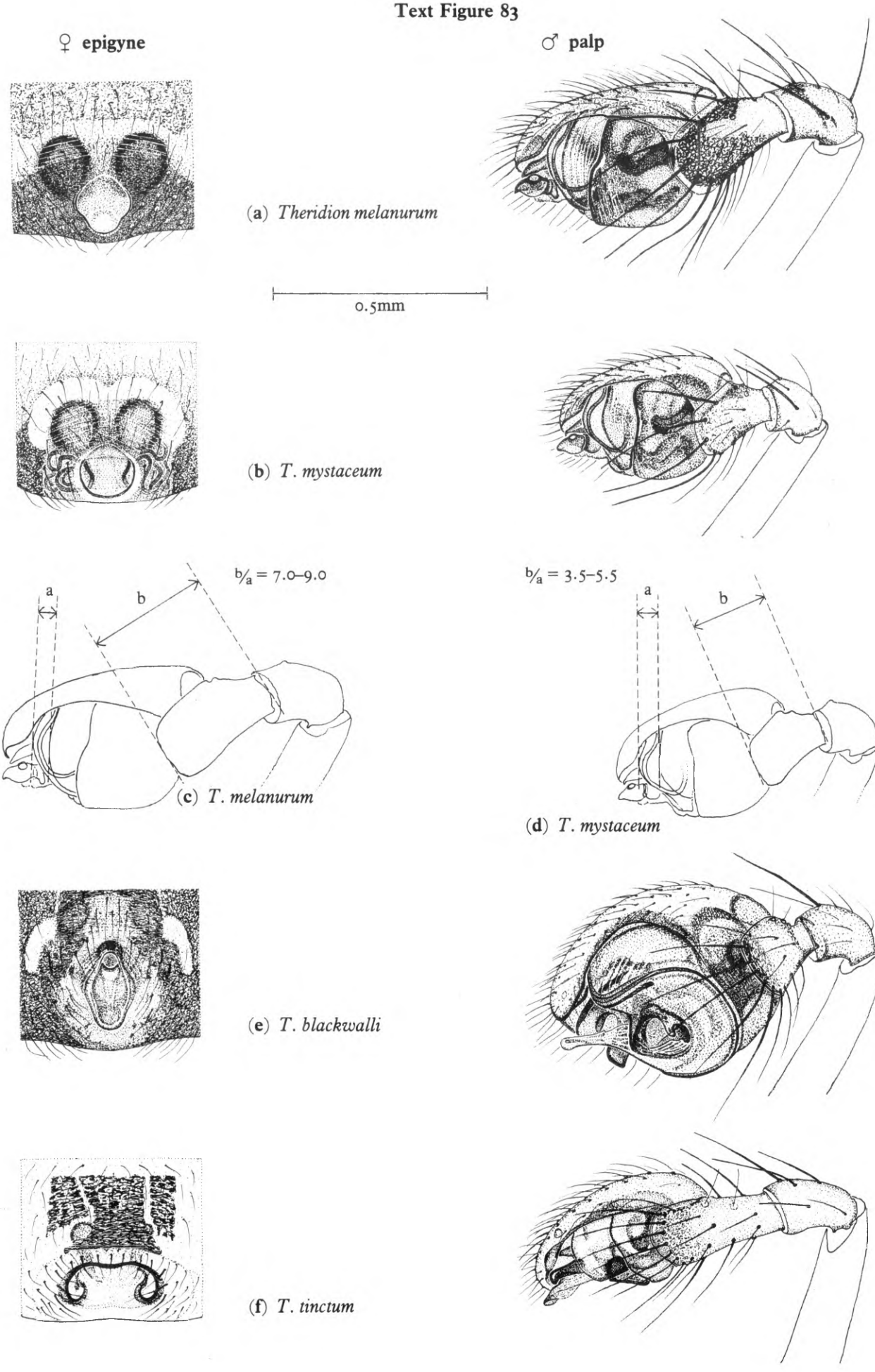
Text Figure 81



Text Figure 82



Text Figure 83



Theridion instabile O. P.-Cambridge, 1870
Plate 118c; Text Fig. 84a
Length: ♀: 2–2.5mm; ♂: 1.75–2.25mm.
This species has fairly characteristic markings on carapace and abdomen. Abdomen may be more globular than in the specimen illustrated and more like the shape of *T. bellicosum* (Plate 118d). The abdominal pattern may sometimes have the dark areas joined up to form a pair of parallel longitudinal bars. Male often has abdomen entirely black dorsally. Male chelicerae enlarged, each bearing two teeth – one large and one small.

Theridion bellicosum Simon, 1873
Plate 118d; Text Fig. 84b
Length: ♀: 1.5–2mm; ♂: 1.75mm.
Colour and markings rather variable but usually distinct from *T. instabile*. Male has the chelicerae enlarged, each bearing two or three teeth.

Theridion bimaculatum (Linnaeus, 1767)
Plate 119; Text Fig. 84c
Length: ♀: 2.5–3.25mm; ♂: 2.5–3mm.
Appearance of this species highly characteristic. Abdomen shiny and cream median band variable in width and sometimes absent in the male. Male has the ocular region slightly raised, with a pair of long hairs originating from between the anterior median eyes. A tubercle is present in the middle of male sternum and also a spur at the base of femur IV. Male palps relatively large and characteristic.

Theridion pallens Blackwall, 1834
Plates 120, 121; Text Fig. 84d
Length: ♀: 1.7–1.75mm; ♂: 1.25–1.5mm.
General appearance characteristic and somewhat different in male and female, as illustrated.

DISTINGUISHING THE SPECIES

When comparing specimens with the colour illustrations, the variability of abdominal pattern and colour should be borne in mind; often the carapace markings are more reliable. Size is only occasionally useful in separating similar species. The genitalia afford the only reliable means of identification for the vast majority of species and, when considered together with the size and overall appearance of the spider, present no problems in the species *T. blackwalli*, *T. tinctum*, *T. bimaculatum* and *T. pallens*. The variability of the epigynes of *T. pictum*, *T. varians* and *T. pinastri* has been mentioned earlier (see Note under *T. varians* description); and male palps of these three species are distinct enough. The remaining eight species fall into four pairs, each of which require slightly more care.

T. sisyphium and *T. impressum* are very similar in general appearance and occur in similar habitats, although *T. sisyphium* is commoner. Epigyne of *T. sisyphium* varies considerably in the diameter of the opening but this is always almost circular whereas *T. impressum* has the opening wider than long and usually the funnel-like openings to the ducts can be seen on each side. The male palps, although variable, present little difficulty.

T. simile and *T. familiare* have distinctly different male palps, in addition to usually differing in size and overall appearance. Epigynes are rather similar, that of *T. simile* being variable in width, as illustrated, whilst the epigyne of *T. familiare* differs constantly in the position of the paired spermathecae relative to the opening and in the irregular ducts which are usually easily visible through the cuticle.

T. melanurum and *T. mystaceum* have always posed problems which now seem to be resolved. Although *T. melanurum* is generally larger, this is not a reliable feature and nor is the difference in habitat. The epigyne of *T. melanurum* is usually U-shaped, or slightly V-shaped, and the ducts are not usually visible without clearing while that of *T. mystaceum* is more circular and the complex ducts are usually visible on each side. If the epigynes are cleared in clove oil the differences are even more obvious (Plate C, p. 191). Males are easily separated by consideration of the palps and of the diagrams in Text Figs 83c,d. In most specimens it is not even necessary to measure the structures, but there is some variability and the figures give the extreme ranges found on studying a large number of individuals from different areas.

T. instabile and *T. bellicosum* differ somewhat in size and overall appearance and have distinctive male palps. Epigynes present little problem if one considers the size of the (easily visible) spermathecae relative to the epigyne opening, and the size and shape of the ducts.

DISTRIBUTION

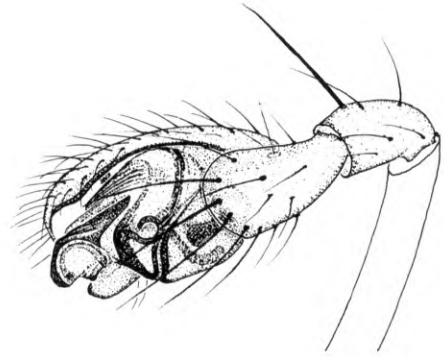
T. sisyphium is extremely common and widely distributed and occurs on bushes (especially gorse) and other low plants. *T. impressum* is equally widely distributed and occurs in similar situations, but far less commonly. *T. varians* and *T. pallens* are also common and widespread in a variety of habitats. *T. pictum*, although widespread throughout England and Scotland, has a rather local distribution and favours rather damp habitats.

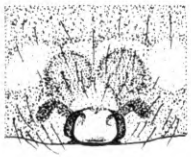
T. melanurum and *T. mystaceum* are generally thought to favour different habitats; the former species around houses and the latter on bushes away from houses. Examination of

Text Figure 84

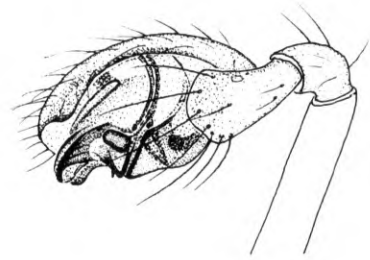
♀ **epigynes** ♂ **palps**

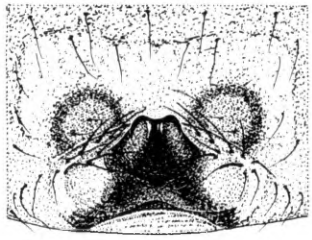
(**a**) *Theridion instabile*



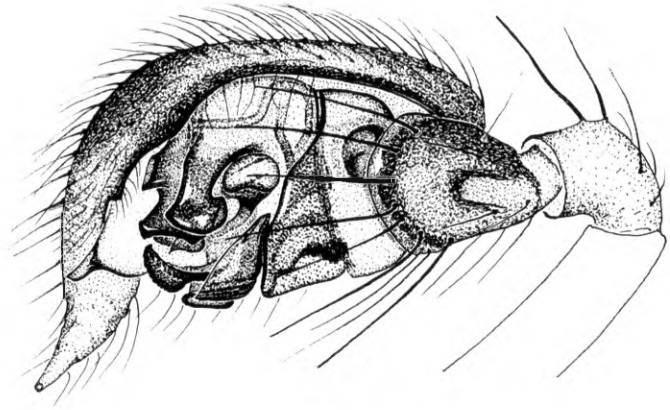


(**b**) *T. bellicosum*

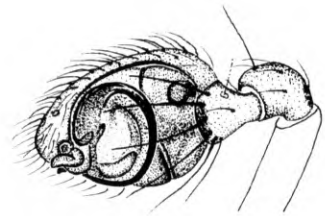


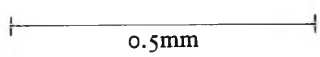


(**c**) *T. bimaculatum*



(**d**) *T. pallens*





various collections revealed that the two species, especially males, have been frequently confused, and both are probably widespread and may sometimes occur either around or away from houses, despite their normal habitat preferences. The biotope seems, therefore, of little value in identification. *T. melanurum* appears to be much less common in the north.

T. simile is rather less common, although probably widespread, and is found most frequently on gorse bushes; most records are from southern England and the Midlands. *T. bimaculatum* is common and widely distributed, being found in grass and other low plants and bushes. *T. tinctum* occurs in England as far north as Yorkshire, and in Wales and Ireland, and is abundant in some localities.

T. familiare is a rare species and usually occurs in or near houses. Most records are from southern England but it has occurred in Staffordshire and Lincolnshire. *T. blackwalli* is rare but has occurred throughout a large part of England and in Ireland, sometimes amongst grass and low plants and sometimes in or near houses. *T. instabile* occurs usually in marshy areas, has a rather southern distribution, but extends into northern England and Ireland. *T. bellicosum* favours mountainous areas in Scotland, northern England and North Wales and has not been recorded from the south.

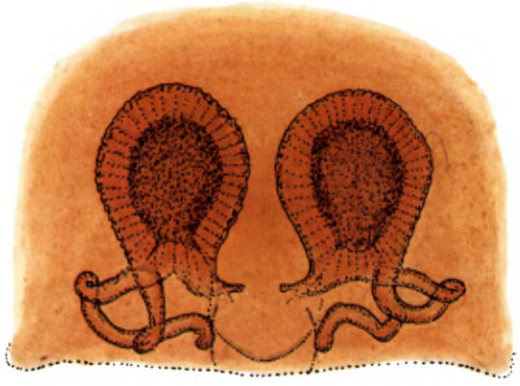
T. pinastri was newly found in Britain in 1977 by J. and F. Murphy who collected a single male in Surrey. The spider has a very wide European distribution and certainly could be expected to occur in Britain. It is possible that other specimens exist in British collections but have been overlooked.

Plate C

♀ **epigyne**

uncleared

(**a**) *Theridion melanurum* Hahn



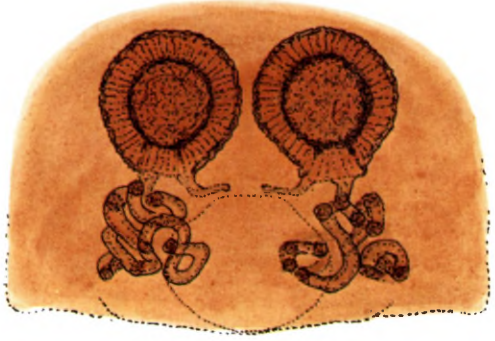
cleared

0.25mm

♀ **epigyne**

uncleared

(**b**) *Theridion mystaceum* L. Koch



cleared

Epigynes, cleared in clove oil to reveal the adnexae which show diagnostic differences between similar species

Genus *Enoplognatha* Pavesi, 1880

The five British species in this genus differ from each other considerably in general appearance. Adult males have the chelicerae elongated and carrying one to three large teeth.

Enoplognatha ovata (Clerck, 1757)

Plates 122b, 123; Text Fig. 85a

Length: ♀: 5–6mm; ♂: 3–5mm.

This very common spider has a characteristic appearance and *both* sexes occur in the three distinct colour forms illustrated. The dorsal side of abdomen may thus be either entirely pale, or with a broad reddish area, or with a pair of narrower reddish bands. Sternum pale yellow with a black border and a black longitudinal median line.

Enoplognatha thoracica (Hahn, 1831)

Plate 124; Text Fig. 85b

Length: ♀: 3.5–4mm; ♂: 2.5–3mm.

The female illustrated is gravid, and abdomen often smaller (indicated by dotted line on small line-drawing) and much darker, which emphasizes the glossy appearance. Some specimens, especially males, are almost completely black and glossy. Male has a very lightly sclerotized abdominal scutum which is not easily visible.

Enoplognatha crucifera (Thorell, 1875)

(= *Enoplognatha schaufussi* (L. Koch))

Plate 122c; Text Fig. 85c

Length: ♀: 3.5–4.5mm; ♂: 3–3.5mm.

General appearance characteristic and similar in male and female. Abdomen blackish ventrally with a pair of parallel white lines running longitudinally.

Enoplognatha tecta (Keyserling, 1884)

Text Fig. 85d

Length: ♀: 4.5–6mm; ♂: 4–4.5mm.

This species is similar to *E. crucifera* and *E. oelandica* in dorsal abdominal pattern. This pattern is somewhat obscure, with a pair of dark patches anteriorly, parallel white lines centrally (as in *E. crucifera*) and a single dark patch in the posterior midline; overall colour greyish brown. Abdomen grey-brown ventrally with scattered white spots but no parallel lines (*cf. E. crucifera*) or square white patch (*cf. E. oelandica*). The abdominal pattern is more obscure in male than female.

Enoplognatha oelandica (Thorell, 1875)

(= *Enoplognatha mandibularis* (Lucas))

Plate 122d; Text Fig. 85e

Length: ♀: 3–3.5mm; ♂: 2.5–3mm.

General appearance as illustrated. The ventral side of abdomen has a large square white area formed by white spots. Male similar to female, but the smaller abdomen has the central area of the pattern more clearly white and the dark edges more contrasting.

DISTINGUISHING THE SPECIES

E. ovata is easily identified by its general appearance and genitalia. The epigyne is heavily sclerotized and rather variable. *E. thoracica* is also easily distinguished by genitalia and general appearance, but the latter can often lead newcomers to arachnology into spending hours trying to find the species within the Linyphiidae. The three species *E. crucifera*, *E. tecta* and *E. oelandica* are readily distinguished by their general appearance, the markings on the *ventral* side of the abdomen and by their genitalia. The epigynes can vary somewhat but are usually distinctive and the palps, although similar, exhibit several marked differences.

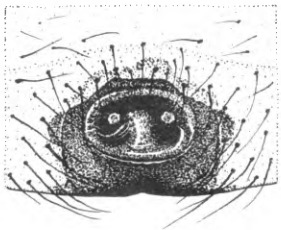
DISTRIBUTION

E. ovata is an extremely common spider, widely distributed over the British Isles, and occurs on low plants and bushes. *E. thoracica* is also widely distributed, being fairly common and occurring at ground level, often under stones and debris. *E. crucifera* usually occurs at ground level in sandy areas and salt-marshes on the coast but is rare. It has been recorded from southern England, East Anglia, South Wales and southern Scotland. *E. oelandica* likewise occurs at ground level in sandy areas, is also rare and has been recorded only from a few localities near the coastline of South-east England and East Anglia. *E. tecta* has been recorded from only one marshy area in the South of England and is exceedingly rare.

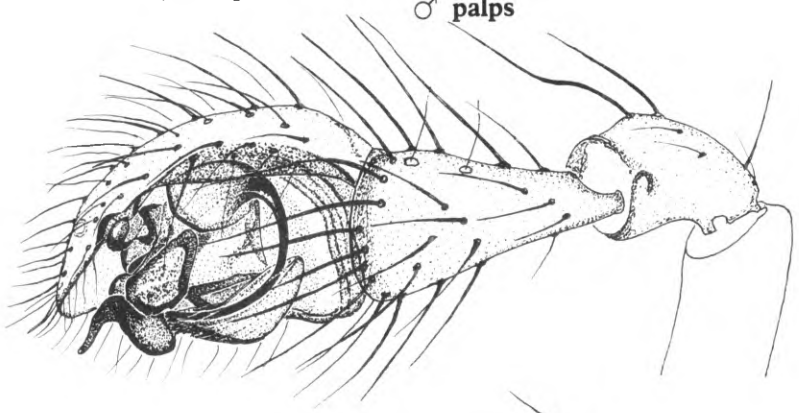
Text Figure 85

♀ epigynes

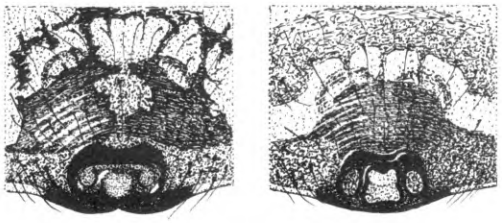
♂ palps



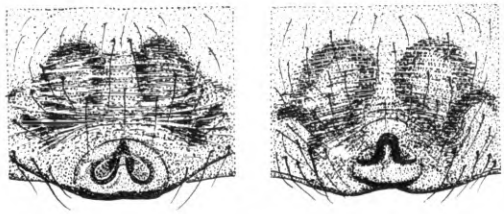
(a) *Enoplognatha ovata*



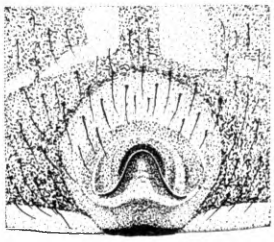
0.5mm



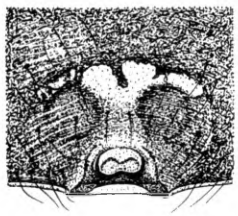
(b) *E. thoracica*



(c) *E. crucifera*



(d) *E. tecta*



(e) *E. oelandica*

Genus *Robertus* O. P.-Cambridge, 1879

The five British species in this genus all have an appearance in both males and females very similar to that illustrated on Plate 125. The chelicerae are relatively robust, as also are the legs. The comb on tarsus IV is usually easily visible.

Robertus lividus (Blackwall, 1836)
Plate 125; Text Fig. 86a
Length: ♀ ♂: 2.5–4mm.
This is the commonest member of the genus in Britain.

Robertus arundineti (O. P.-Cambridge, 1871)
Text Fig. 86b
Length: ♀: 2.25–2.5mm; ♂: 2–2.25mm.

Robertus neglectus (O. P.-Cambridge, 1871)
Text Fig. 86c
Length: ♀: 2–2.25mm; ♂: 1.75–2mm.

Robertus scoticus Jackson, 1914
Text Fig. 86d
Length: ♀: 2mm; ♂: 1.8–2mm.

Robertus insignis O. P.-Cambridge, 1907
Text Fig. 86e
Length: ♀: 3.2mm; ♂: 2.5mm (based on single specimens).

DISTINGUISHING THE SPECIES

The genitalia allow easy identification of the species. The only problem likely to be encountered is the overlooking of the theridiid characters in the Key to the Families (p. 37), and searching in vain for the species in the Linyphiidae.

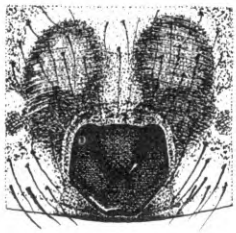
DISTRIBUTION

R. lividus is by far the commonest of the genus and is widely distributed. It occurs in grass, moss, leaf-litter and under stones, as do all the other, rarer species. *R. arundineti* and *R. neglectus* are fairly widespread, but uncommon. *R. scoticus* is recorded only from two woodland localities in Scotland. *R. insignis* was for many years only known from a single male found in Norwich. Since then specimens of both sexes have been found in East Germany, Estonia and Sweden. It has, however, not yet been found again in this country.

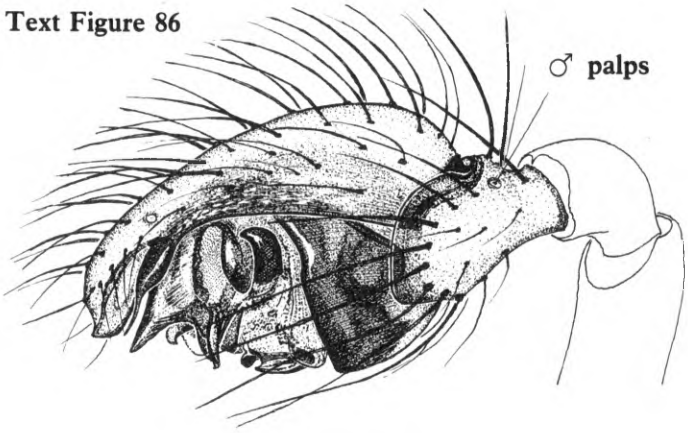
Text Figure 86

♀ epigynes

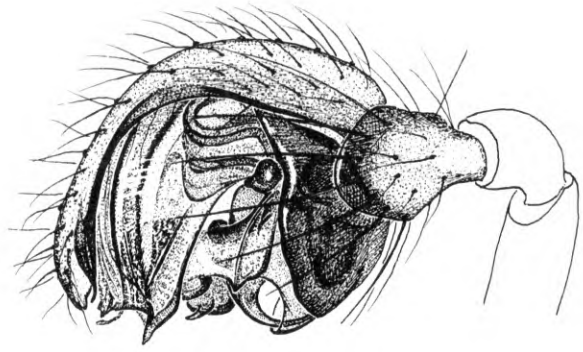
♂ palps

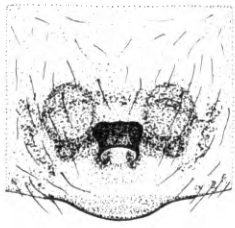


(a) *Robertus lividus*

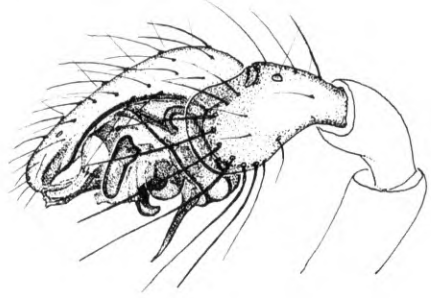


(b) *R. arundineti*

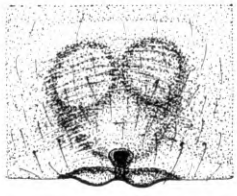




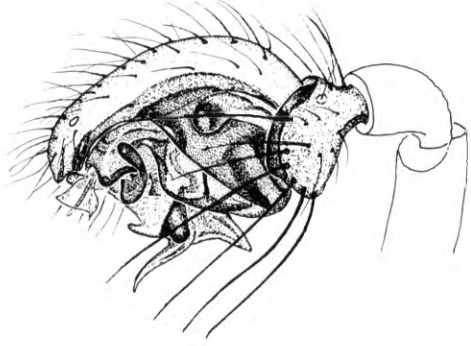
(c) *R. neglectus*



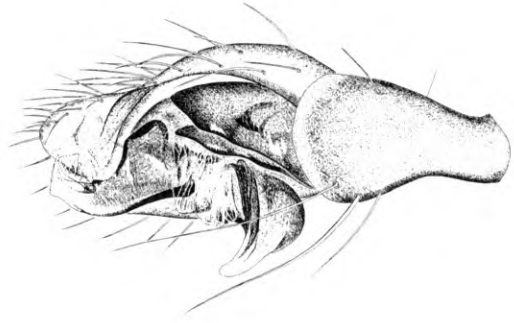
0.5mm



(d) *R. scoticus*



(e) *R. insignis*



Genus *Pholcomma* Thorell, 1869

This genus contains only one British species.

Pholcomma gibbum (Westring, 1851)

Plate 126; Text Fig. 87a

Length: ♀ ♂: 1.25–1.5mm.

Note the characteristic arrangement and size of eyes. The female has a globular, shiny, rather coriaceous abdomen; the male a brownish abdominal scutum both dorsally and ventrally (illustrated alongside the male palp). Epigyne is rather variable but unmistakable; male palp characteristic.

As the species superficially resembles a money spider the commonest mistake in identification is to search for it in the Linyphiidae.

DISTRIBUTION

Widely distributed and common. It occurs at ground level in detritus in a variety of situations.

Genus *Theonoe* Simon, 1881

The single British species is very small and, like *Pholcomma*, could easily be mistaken for a linyphiid.

Theonoe minutissima (O. P.-Cambridge, 1879)

Plate 127; Text Fig. 87b

Length: ♀ ♂: 1–1.25mm.

Female similar to male but abdomen usually larger and with less distinct reddish spots. Genitalia characteristic.

DISTRIBUTION

This species is widely distributed over the British Isles but is rather uncommon. It occurs at ground level in detritus and under stones in a wide variety of situations. In the south, usually in sphagnum bogs.

Family NESTICIDAE

The single British species in this family, belonging to the genus *Nesticus*, differs from the Theridiidae in having the labium swollen distally and in the male palp having a paracymbium.

Genus *Nesticus* Thorell, 1869

There is one British representative of this genus.

Nesticus cellulanus (Clerck, 1757)

Plate 128; Text Fig. 87c

Length: ♀: 3.5–6mm; ♂: 3–5mm.

The abdominal pattern of this species is variable, as illustrated, but is similar in both male and female. Male palp highly characteristic, as also the epigyne, despite some variation in shape and pigmentation.

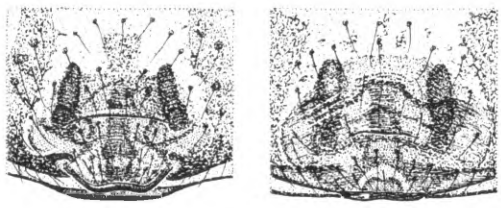
DISTRIBUTION

N. cellulanus is widely distributed throughout the British Isles but occurs only in rather damp, dark situations both indoors and outside, such as cellars, dark recesses in rocks, damp areas in dark woodland.

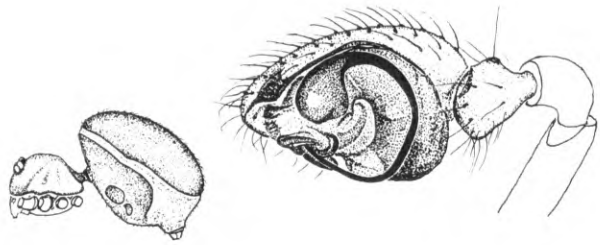
Text Figure 87

♀ **epigynes**

♂ **palps**

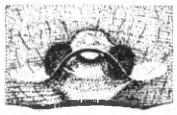


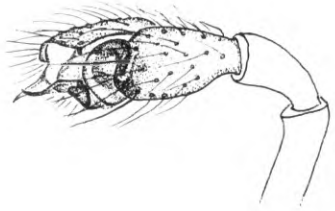
(**a**) *Pholcomma gibbum*



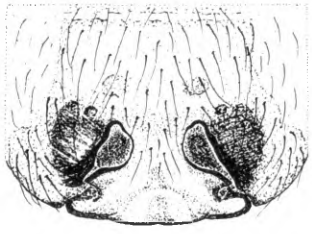
♂ lateral view
showing **abdominal scutum**

0.5mm

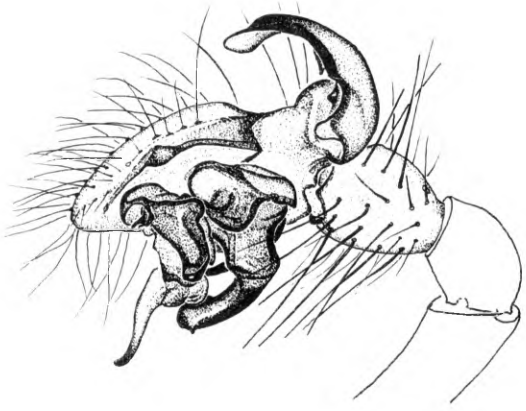




(**b**) *Theonoe minutissima*



0.5mm



(**c**) *Nesticus cellulanus*

Family TETRAGNATHIDAE

There are fourteen British species in this family, in three genera. All are spinners of orb webs with the exception of adults of the genus *Pachygnatha*. Although members of the genus *Tetragnatha* differ markedly in general appearance from other British spiders, and are thus easily recognized, superficially *Pachygnatha* and *Meta* are less obviously related and could be mistaken for members of the Araneidae or even Theridiidae. The male palps of all three genera are rather simple and have a hairy paracymbium upon which there is also a non-hairy protuberance. The latter is very small and situated mesally in *Tetragnatha* and *Pachygnatha*, and not visible in the lateral views of the male palps (Text Fig. 89). In *Meta* this non-hairy protuberance is much larger and is directed dorsally (Text Fig. 91). Epigynes in all genera fairly simple, but less so in *Meta*.

TAXONOMIC NOTE

Three British genera are at present included in the Tetragnathidae – *Tetragnatha*, *Pachygnatha* and *Meta*. Members of the genus *Meta* appear intermediate between the Tetragnathidae and the Araneidae and have been included in the latter family by some authors and in a separate family, Metidae, by others.

Spiders of the genus *Tetragnatha* are generally said to have no epigyne, but this, in my view, is not correct. There *is* an epigyne, but it takes the form of a considerably modified posterior prolongation of the epigastric fold and is not chitinized, except occasionally along the posterior margin (Text Figs 88a–f). This type of simple epigyne is not far removed from those of *Meta menardi* and *M. bourneti* Text Figs 90d,e) which are also barely chitinized. The epigynes of *Pachygnatha* take the form of a chitinized slit in *P. clercki* and *P. degeeri* and have a chitinized subtriangular tongue in *P. listeri* (Text Figs 88g–i). The epigynes of *Meta segmentata*, *M. mengei* and *M. merianae* (Text Figs 90a–c) approach those of spiders in the Araneidae (*cf. Zygiella*). The genus *Leucauge*, not represented in the British Isles, has a distinctly chitinized epigyne and other features which indicate an affinity with the Araneidae, but the study of internal characters shows that it is closely related to the Tetragnathidae (Palmgren, 1979). The male palps of these genera also show features which in some cases are intermediate.

My present view is that the family Tetragnathidae should be combined with the family Araneidae, the group of spiders here described in the Tetragnathidae then being considered as subfamilies – Tetragnathinae (containing *Tetragnatha* and *Pachygnatha*) and Metinae (containing *Meta* and possibly also *Zygiella* (Araneidae)). This would go some way towards overcoming the problems with intermediate genera. The same view is also expressed by Levi (1980). However, further study may change these views.

At a generic level, the five British representatives of the genus *Meta* fall into two distinct groups, the members of which show significant differences in size, general morphology, genitalia and biology. Some authors have considered these as distinct genera – *Metellina* Chamberlin & Ivie (which includes our *Meta segmentata*, *M. mengei* and *M. merianae*) and *Meta* C. L. Koch (which includes our *M. menardi* and *M. bourneti*). For the present, these groups are considered together in the genus *Meta* until more species, and possible intermediates, are examined worldwide.

Key to Genera of the TETRAGNATHIDAE

1 Abdomen considerably elongated (Plates 129, 130) .... *Tetragnatha* (p. 198)

– Abdomen not obviously elongated 2

2(1) Labium not obviously swollen distally (Text Fig. 11b, p. 44); sternum rather pitted; a group of two or three trichobothria present, dorsally, on proximal end of femora I and II; legs with very few, weak spines..... ..... *Pachygnatha* (p. 199)

– Labium clearly swollen, and paler, distally (Text Fig. 11c, p. 44); sternum not pitted; no trichobothria on femora; legs with many strong spines ... *Meta* (p. 202)

Genus *Tetragnatha* Latreille, 1804

The six British species of this genus all have a narrow, elongated abdomen, often marked with silvery areas, long legs bearing many spines, a series of trichobothria dorsally on proximal end of femora and elongated, divergent chelicerae. The latter are usually even longer in males and are provided, in addition to the two rows of teeth, with an apophysis anterodistally which engages in the female's fang during mating (see *T. nigrita*, Plate 135b). The chelicerae exhibit allometric growth and as a result may vary considerably in size in different individuals of the same species. This variability to a lesser extent applies to the size and number of cheliceral teeth, and apophyses, between adults of the same species, but is more marked in subadults. Whilst earlier works have paid considerable attention to the chelicerae in identifying species, my personal experience has been that, whilst the chelicerae can sometimes be useful, on other occasions they can cause confusion.

The epigynes of *Tetragnatha* appear as a simple posterior extension of the epigastric fold and are not sclerotized. Subadult females often have a slight posterior extension of this nature but to nowhere near the same degree as the adults illustrated. Although variable, the outline of the epigyne is usually reliable and, if cleared, the adnexae can be seen to differ in the six species. The male palps are all rather similar in general structure.

Spiders of the genus *Tetragnatha* all spin orb webs, often near water (*T. extensa*, *T. montana*) or sometimes on trees (*T. obtusa*, *T. pinicola*). When alarmed they may extend the legs along plant stems. (Compare the two line-drawings at the foot of Plate 129.)

The species can conveniently and reliably be split into two groups as follows:

1 Sternum with a distinct light mark in the midline .... *T. extensa* and *T. pinicola*

2 Sternum with no distinct light median mark ....*T. montana*, *T. obtusa*, *T. nigrita* and *T. striata*

Tetragnatha extensa (Linnaeus, 1785)

Plate 129; Text Figs 88a, 89a

Length: ♀: 6.5–11mm; ♂: 6–9mm.

Colour of abdomen rather variable; usually silvery, whitish, yellow or greenish with sometimes (as illustrated) a reddish tinge. The light areas are made up of white or silvery pigment spots. Male similar to female, but chelicerae larger and abdomen relatively slimmer.

Tetragnatha pinicola L. Koch, 1870

Text Figs 88b, 89b

Length: ♀: 5–6mm; ♂: 4.5–5mm.

Similar to *T. extensa* but smaller, with thinner legs, and with the whole of the dorsal side of abdomen covered more

uniformly with a shiny, silvery sheet of pigment. Care is needed (see below) in distinguishing female of this species from subadult, or small, specimens of *T. extensa*, the only other species to have a median light mark on the sternum.

Tetragnatha montana Simon, 1874
Plate 130; Text Figs 88c, 89c

Length: ♀: 6.5–11mm; ♂: 6–9mm.

This species is usually slightly darker and more brownish than *T. extensa*. Females similar in colour to males.

Tetragnatha obtusa C. L. Koch, 1837
Text Figs 88d, 89d

Length: ♀: 5–7mm; ♂: 3.5–5.5mm.

This species usually has cephalic region of carapace distinctly darker than thoracic region, but this feature is not always present and the dark areas sometimes fade in spirit. Abdomen is greenish or brownish with the dorsal pattern usually having a brown border which is constricted at the midpoint.

Tetragnatha nigrita Lendl, 1886
Plate 135b; Text Figs 88f, 89f

Length: ♀: 7–10mm; ♂: 5–8mm.

This species characteristically much darker than the others of the genus and some specimens are almost black. It is nearly always a larger spider than *T. obtusa*.

Tetragnatha striata L. Koch, 1862
Text Figs 88e, 89e

Length: ♀: 8.5–12mm; ♂: 8–10mm.

This species has a yellow-brown carapace. Abdomen usually with a brownish central folium, sometimes containing a light median stripe, flanked by light stripes and yellow or green sides, but is variable.

DISTINGUISHING THE SPECIES

The sternal patterns separate *T. extensa* and *T. pinicola* from the other species, but it may sometimes be difficult to distinguish between small or immature females of *T. extensa* and adult females of *T. pinicola*. This problem is reliably overcome by measuring the ratio of femur I width/femur III length. This is greater than 0.205 in females of *T. extensa* (adult and subadult) and less than 0.176 in *T. pinicola*. The female adnexae of the two species also differ.

Epigynes of the other species are rather variable but, if taken together with overall size and coloration of the spider, usually allow for easy identification. In case of difficulty the structure can be cleared to reveal the adnexae, which are quite distinct.

Male palps are all rather similar and care should be taken to examine specimens from precisely the same angle as the illustrations, if necessary detaching the palp from the spider. Although the structures at the palpal tip (conductor and embolus) are usually given as being *the* diagnostic feature, they can vary slightly and there are other important differences in palpal structure, as a careful study of Text Fig. 89 will show. When examining specimens, therefore, the whole palpal structure should be considered.

DISTRIBUTION

T. extensa and *T. montana* are widely distributed and common, often being found, in orb webs, close to water. *T. obtusa* is less common and appears to be rare in Scotland and has not been found in northern Ireland. *T. nigrita* is fairly rare and has a rather southern distribution in England, although it does extend as far north as Cheshire and has occurred in Ireland. *T. pinicola* is rare but may be widely distributed, occurring on trees, and many old records are uncertain. *T. striata* is also rare but is probably widespread and is recorded from about twenty localities scattered throughout England, Wales and Ireland. It occurs on plants close to water.

Genus *Pachygnatha* Sundevall, 1823

Although the three British species in this genus have a quite different general appearance from *Tetragnatha* the male palps are clearly of similar structure. The labium is not clearly rebordered and often appears as a broad-based triangle, apex pointing forwards. The femora have a group of two or three trichobothria on the dorsal aspect, proximally, and the legs are fairly short with very few spines. The sternum and carapace are rather pitted, and the chelicerae are large, rather convex anteriorly and are elongated in males. The epigynes of the two commonest species appear as simple slit-like openings posterior to the epigastric fold; in *P. listeri* there is a sub-triangular lip which is sclerotized.

All three species live at ground level amongst grass, moss and leaf-litter and do not spin orb webs when adult. The young spin small orb webs at ground level.

Pachygnatha clercki Sundevall, 1823
Plate 131; Text Figs 88g, 89g

Length: ♀: 6–7mm; ♂: 5–6mm.

Appearance usually highly characteristic. Male has a smaller abdomen with a more contrasting pattern of a median white stripe, dark brown folium and pale yellow sides. Sternum light yellow-brown.

Pachygnatha degeeri Sundevall, 1830
Plate 132; Text Figs 88h, 89h

Length: ♀: 3–3.75mm; ♂: 2.5–3mm.

Dark brown carapace with rather prominent cephalic region characteristic. Abdominal pattern is rather variable in definition and depth of colour. Some specimens are greyish green, others yellowish and occasional fresh specimens are strikingly marked with red. Sternum dark brown. Male very similar to female, but carapace often even darker.

Pachygnatha listeri Sundevall, 1830
Text Figs 88i, 89i

Length: ♀: 3.5–5mm; ♂: 3–4.5mm.

This species very similar in general appearance to *P. degeeri* but larger, and carapace is a paler brown.

DISTINGUISHING THE SPECIES

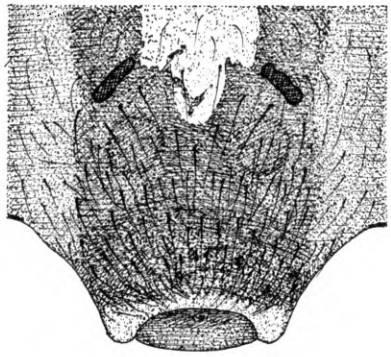
The general appearance and size of the three species, together with the genitalia, makes identification easy.

DISTRIBUTION

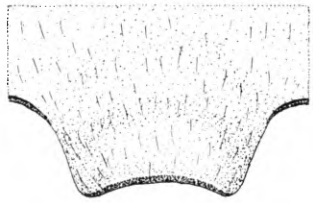
All the species are widespread. The commonest is *P. degeeri*, followed by *P. clercki*. *P. listeri* is rather rare. *P. clercki* occurs mainly in wet places and *P. listeri* in woods, but *P. degeeri* is much more generally distributed.

Text Figure 88

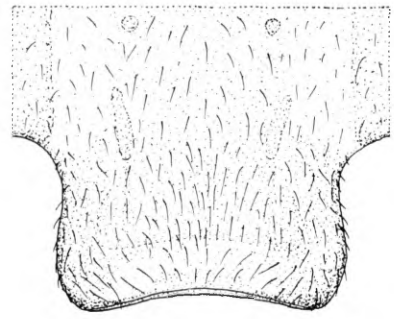
♀ **epigynes and adnexae**



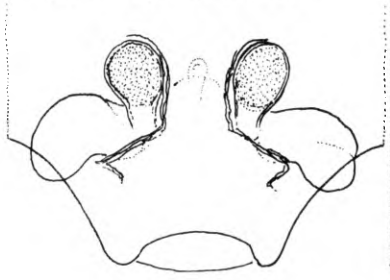
(**a**) *Tetragnatha extensa*

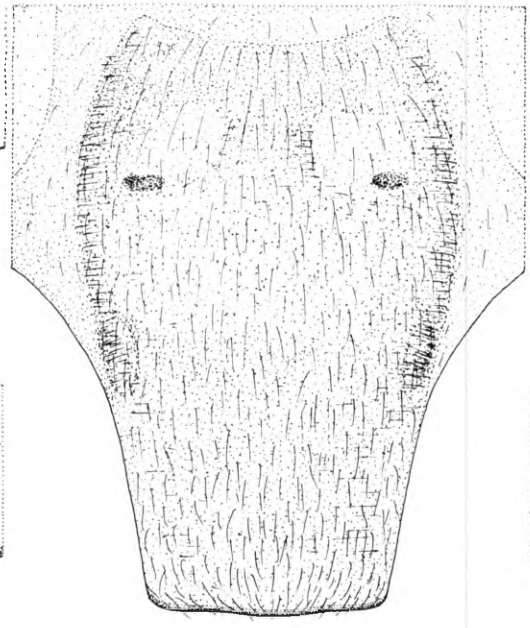


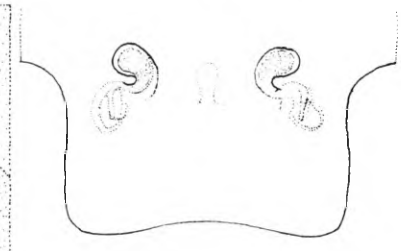
(**b**) *T. pinicola*

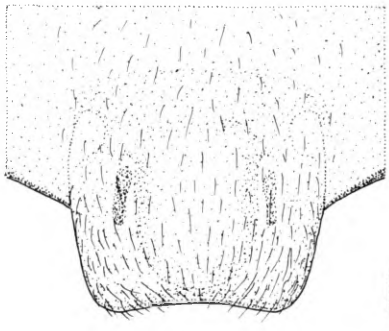


(**c**) *T. montana*



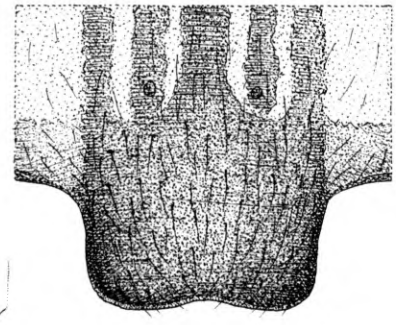




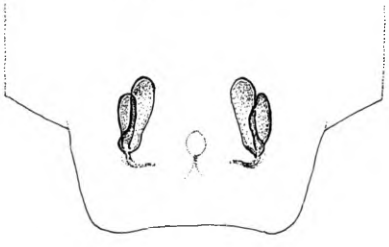


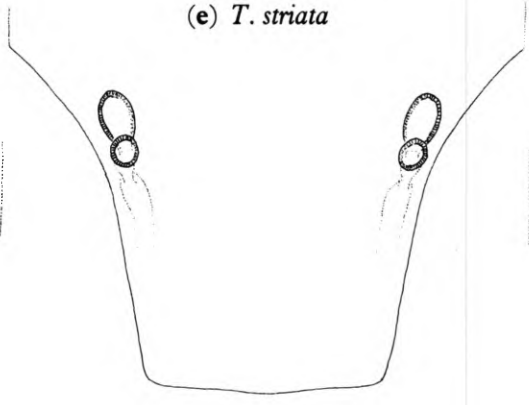
(**d**) *T. obtusa*

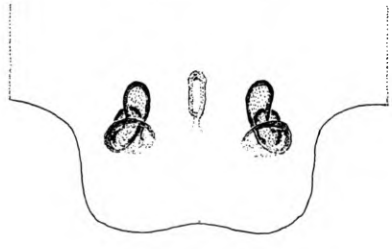
(**e**) *T. striata*

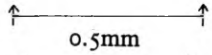


(**f**) *T. nigrita*

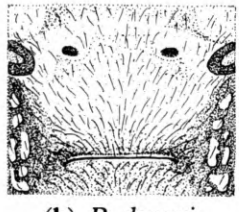




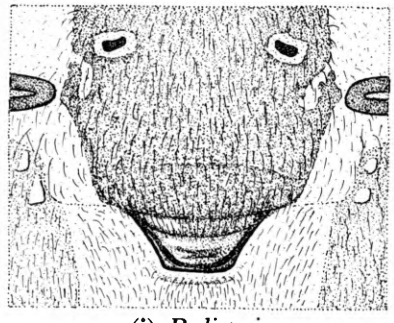




(**g**) *Pachygnatha clercki*



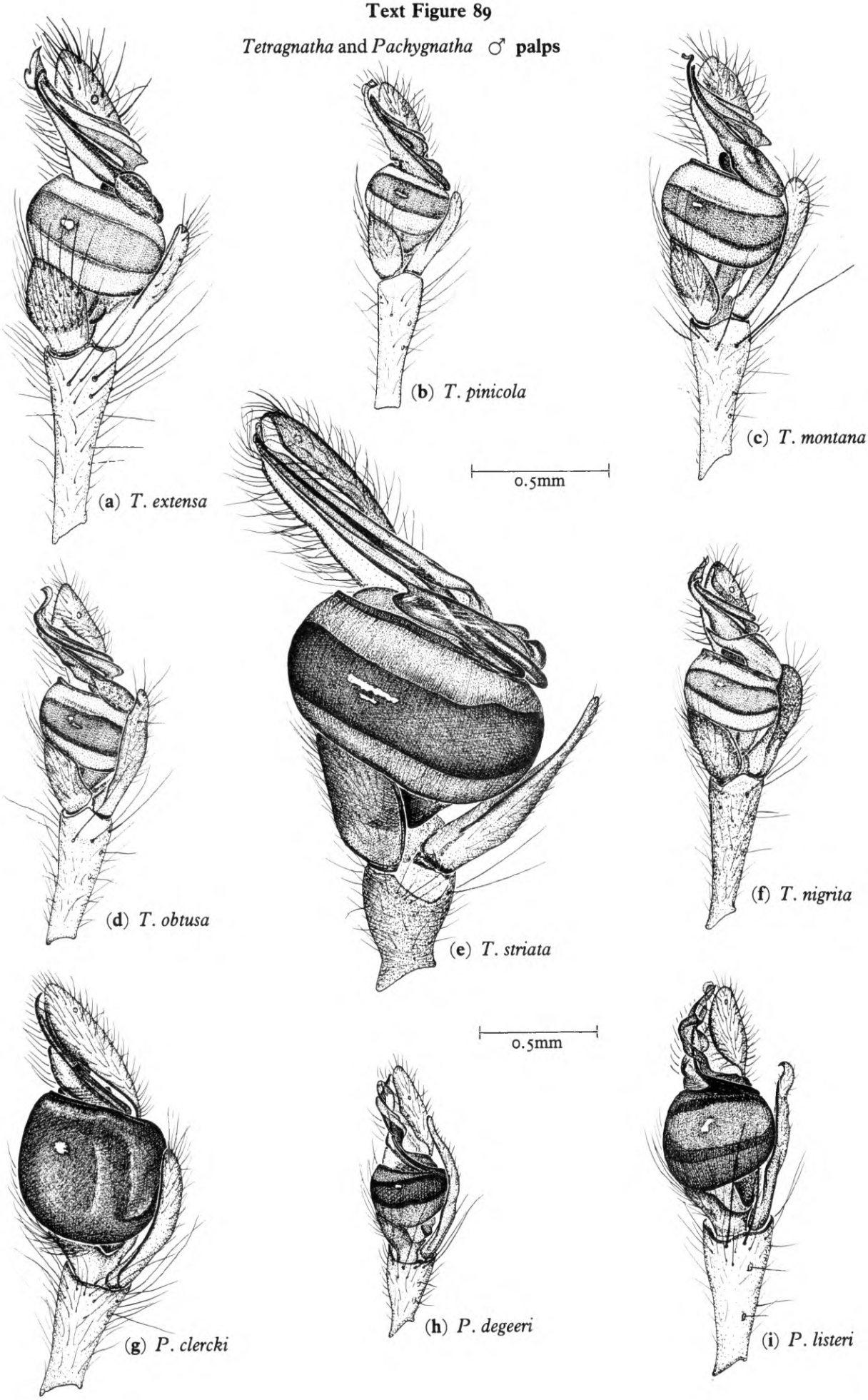
(**h**) *P. degeeri*



(**i**) *P. listeri*

Text Figure 89

Tetragnatha and *Pachygnatha* ♂ **palps**



Genus *Meta* C. L. Koch, 1836

The five British species in this genus were formerly included in the Araneidae. This, and other taxonomic problems are discussed on p. 198. *M. segmentata* and *M. mengei* are probably the commonest orb-weavers to be found and occur in a very wide range of colours and patterns. Males of these two species are relatively long-legged and adopt a similar attitude to *Tetragnatha* when alarmed, with their legs fully extended along plant stems. All species of *Meta* spin orb webs.

Meta segmentata (Clerck, 1757)

Text Figs 90a,f, 91a

Length: ♀: 4–8mm; ♂: 4–6mm.

Indistinguishable from *M. mengei* (Plates 133, 134) in general appearance, and equally variable in colour and markings. Most people, beginning the study of spiders, collect considerable numbers of differently coloured specimens of one or other of these species in the belief that they are of different species.

Meta mengei (Blackwall, 1869)

Plates 133, 134; Text Figs 90b,g, 91b

Length: ♀: 3.5–6mm; ♂: 3.5–5mm.

Although abdominal pattern is usually recognizably as illustrated, it varies greatly in the emphasis of its parts and in colour. Some specimens may be black and white, others predominantly green, yellow or brown and many are marked strikingly with red or orange.

Meta merianae (Scopoli, 1763)

Plate 135c; Text Figs 90c, 91c

Length: ♀: 5.5–9mm; ♂: 4.5–7.5mm.

General appearance characteristic and similar in male and female. Abdomen varies in colour and may be paler than illustrated or almost black; occasionally abdomen marked dorsally with a broad, cream longitudinal band. Legs yellowish, sometimes annulated with brown.

Meta menardi (Latreille, 1804)

Text Figs 90d, 91d

Length: ♀: 12–15mm; ♂: 10–11mm.

Similar in general appearance to *M. bourneti* (Plate 135a). Legs yellow-brown, sometimes with vague annulations.

Meta bourneti Simon, 1922

Plate 135a; Text Figs 90e, 91e

Length: ♀: 13–16mm; ♂: 10–13mm.

Legs usually a dark, rich reddish-brown with no annulations. This large spider, like *M. menardi*, has a distinctly glossy appearance in life.

DISTINGUISHING THE SPECIES

The only difficulty likely to arise is with *M. segmentata* and *M. mengei*. Epigynes are rather similar and variable but can be distinguished by examining the relationship of the spermathecae to the epigastric fold (area marked x on the epigyne of *M. segmentata*, Text Fig. 90a). In *M. segmentata* a sclerotized line extends from the lower end of the spermatheca and curves laterally to join the epigastric fold. In *M. mengei* only a short sclerotized mark is present, pointing *inwards*, and it does not extend to fuse with the epigastric fold. A further useful guide to identification is the pigmented rectangular area immediately anterior to the epigyne which is usually present in *M. mengei* but usually absent or faint in *M. segmentata*.

Males of *M. segmentata* and *M. mengei* can be easily separated by the palpal structure, especially the tip of the palpal organs and the paracymbium, and, in case of difficulty, the number and form of the ventral hairs on metatarsi I (Text Figs 90f,g) provide clear separation. Note that this character does *not* apply to females.

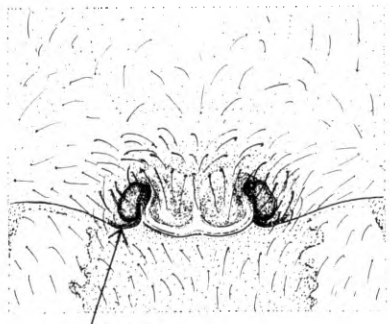
The remaining species are easily separated by consideration of size, appearance and genitalia.

DISTRIBUTION

M. segmentata and *M. mengei* are widely distributed and extremely abundant in a wide variety of habitats such as trees, bushes and other plants, and around houses. *M. segmentata* is usually found in late summer and autumn and *M. mengei* mostly in the spring and early summer, but this is not a reliable means of separation. Males of both these species may frequently be found waiting at the side of the females' webs. *M. merianae* is fairly common and widespread but usually occurs in more shaded, damp areas. *M. menardi* is widespread but uncommon and occurs in caves, cellars and other dark environments. *M. bourneti* occurs in similar situations to *M. menardi* but is rare and known from only nine localities in England and Wales.

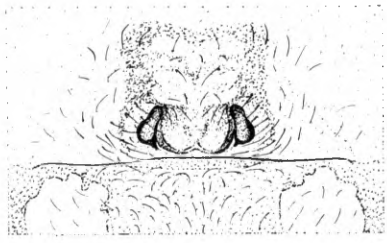
Text Figure 90

♀ **epigynes**

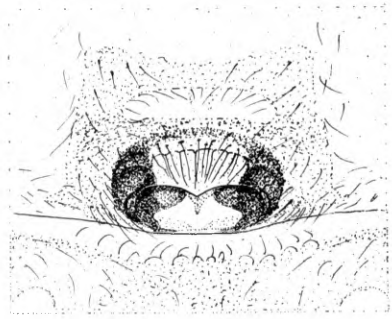


(**a**) *Meta segmentata*

x (see text)

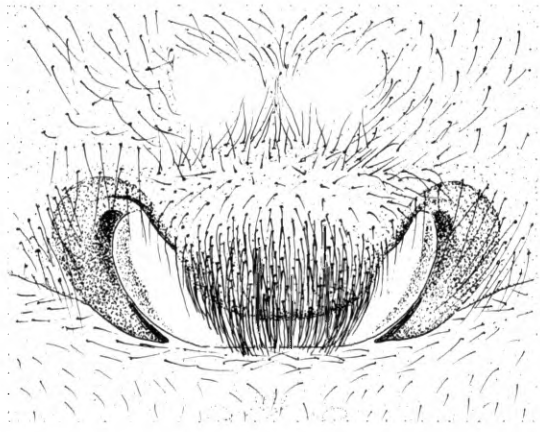


(**b**) *M. mengei*

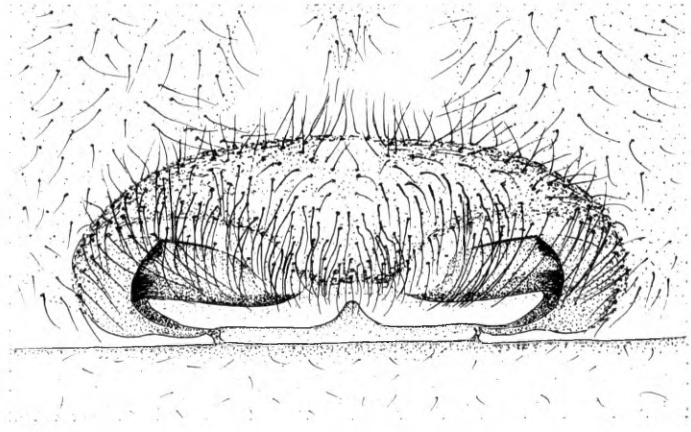


(**c**) *M. merianae*

0.5mm

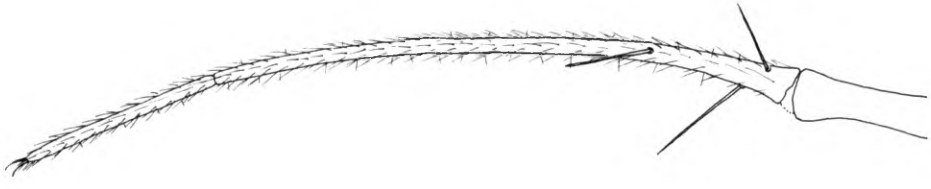


(**d**) *M. menardi*



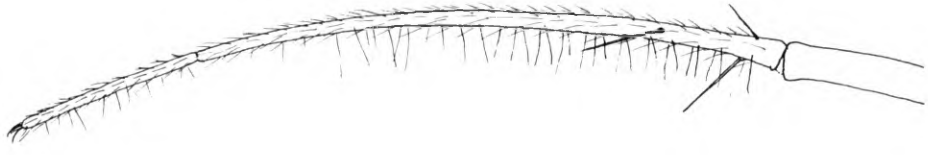
(**e**) *M. bourneti*

♂ **leg I** metatarsus and tarsus



(**f**) *M. segmentata*

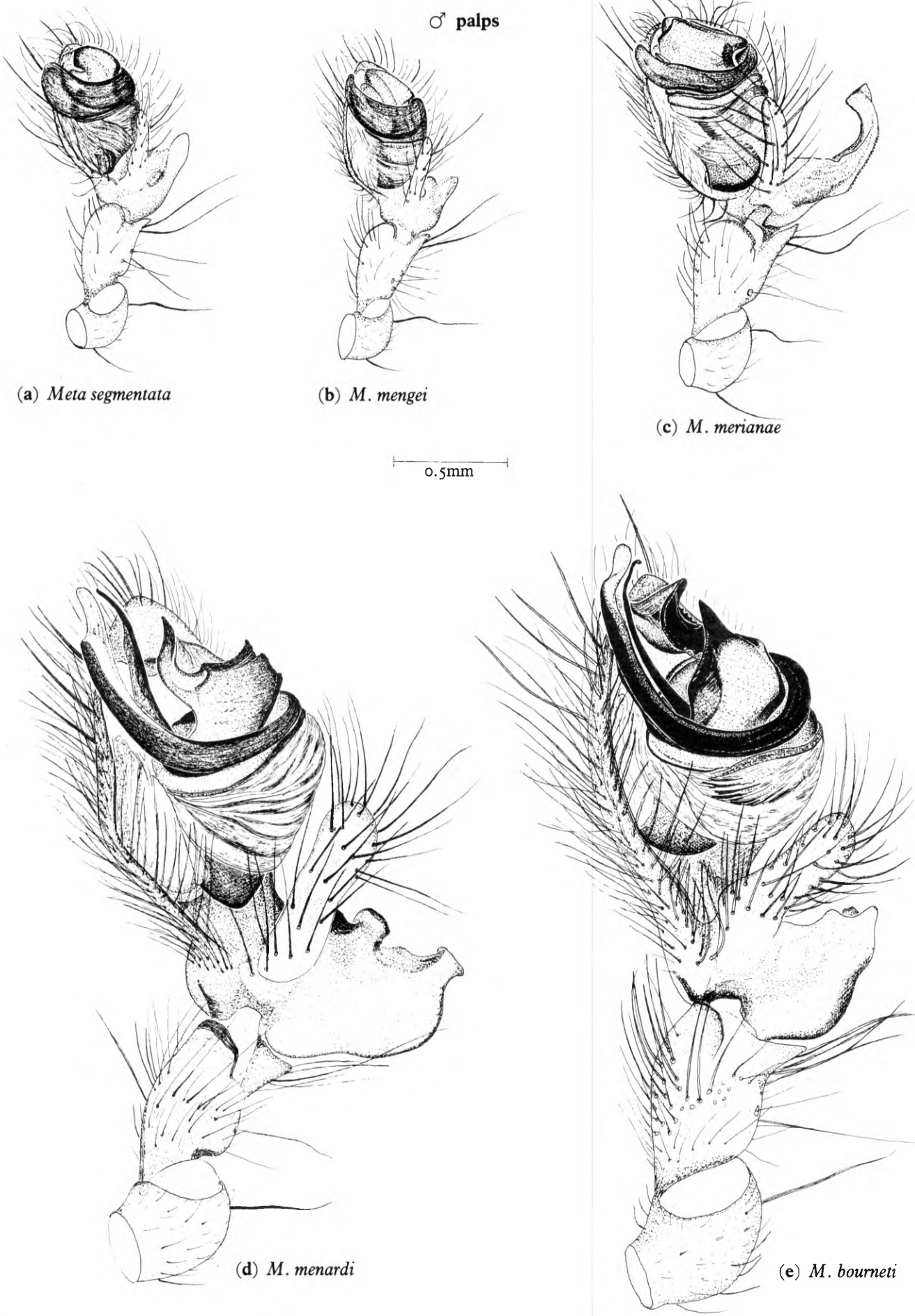
1.0mm



(**g**) *M. mengei*

Text Figure 91

♂ **palps**



(**a**) *Meta segmentata*

(**b**) *M. mengei*

(**c**) *M. merianae*

0.5mm

(**d**) *M. menardi*

(**e**) *M. bourneti*

Family ARANEIDAE

There are thirty-three British species in this family, contained within fifteen genera, and all are spinners of orb webs. They have poor vision, and prey flying into the web is located by the vibration and tension of the threads. Some species rest in a silken retreat to the side of the web, with a single 'signal' thread leading to the hub being held by the spider's first leg. Other species may rest in the centre of the web, either by day or night. The legs are usually well furnished with spines, and the tarsi have three claws plus auxiliary foot claws. In some species the males have the carapace somewhat attenuated anteriorly; they may also have thick, short spines on tibiae II and spur-like projections on coxae I and/or II.

The family has recently been revised by H. W. Levi, and this has resulted in a number of species being placed in different genera. (See also Taxonomic Note on p. 198.) *Theridiosoma*, formerly included here, is transferred to a separate family, Theridiosomatidae (p. 222).

Prey captured by the webs of these spiders is further wrapped in silk and then bitten. It is then chewed, using the rows of cheliceral teeth, and mixed with digestive juices. The fluid mixture is then ingested leaving a small, unrecognisable pellet of indigestible parts which is discarded. This method is in contrast to that of the Theridiidae which inject digestive juices and suck the prey dry, leaving it virtually unchanged in external appearance.

TAXONOMIC NOTE

The family Araneidae has undergone considerable revision by H. W. Levi (1968, 1971, 1972, 1973, 1974, 1975, 1983a) and by M. Grasshoff (1983) and this has resulted in a number of species being placed in different genera. The genus *Meta* has previously been included in the Araneidae by some authors but is here considered as belonging to the Tetragnathidae (see also Taxonomic Note on p. 198). The genus *Theridiosoma*, also formerly included in Araneidae, is transferred to the separate family Theridiosomatidae (p. 222) which has been accepted by nearly all recent authors.

Key to Genera of the ARANEIDAE

1 Posterior row of eyes distinctly procurved; abdominal markings as in Plate 156; ♂ much smaller than ♀ ..... *Argiope* (p. 222)

– Posterior row of eyes straight or recurved; different abdominal markings; less difference in size between ♂ and ♀ 2

2(1) Abdominal markings as in Plate 154; carapace with longitudinal median furrow; ♀ having group of plumose trichobothria on tibiae III ..... *Mangora* (p. 222)

– Not as above 3

3(2) Abdomen slightly pointed anteriorly with a dorsal abdominal scutum (sometimes ill-defined) and a line of short, dark spines around the anterior end. Overall colour orange-red (Plate 151) ..... *Cercidia* (p. 220)

– Not as above 4

4(3) Abdomen bright green in life (pale yellowish in spirit), without a distinct pattern but usually with paired black spots (Plates 147, 153c) and sometimes also marked with red. (The colour washes out in alcohol, leaving the black spots.) ♂ palpal patella with three long spines ..... *Araniella* (p. 216)

– Not as above 5

5(4) Abdomen extended posteriorly (less obviously in ♂); ♂ ♀ of the single British species having a highly characteristic appearance (Plates 153b, 155) ..... *Cyclosa* (p. 222)

– Not as above 6

6(5) Abdomen having a shiny surface with very few hairs; oval in shape and usually marked with a pair of broad longitudinal dark bands, separated and bordered by light areas (Plates 149, 150). Legs relatively short 7

– Abdomen not shiny and having more hairs; usually subtriangular or round in shape and with different markings. Legs relatively longer 8

7(6) Posterior median eyes the largest. Median ocular quadrangle wider behind than in front, or rectangular (Plates 149, 153a) ..... *Hypsosinga* (p. 218)

– Anterior median eyes the largest. Median ocular quadrangle wider in front than behind (Plate 150) ... . *Singa* (p. 218)

8(6) Posterior median eyes considerably closer to one another than to laterals 9

– Posterior row of eyes more nearly equidistant (Plates 152, 153d). Adult spiders spin orb webs usually with a sector missing ..... *Zygiella* (p. 220)

9(8) ♂ palp with only one patellar spine and no tibial spines. ♀ epigyne with a narrow scape originating from anterior border, projecting only slightly beyond posterior border and being 1–1½ times the length of basal part of epigyne. Small spider (2–4mm) of distinctive appearance in ♂ ♀ (Plate 148) ..... *Zilla* (p. 218)

– ♂ palp with two patellar spines and sometimes tibial spines. ♀ epigyne with scape originating anteriorly, centrally or posteriorly and being either

much shorter (×½) or longer (×2) than the basal part. Generally larger spiders with a different appearance 10

10(9) ♂ palp with a large hook-like terminal apophysis (T) (Text Figs 92c–94) and a median apophysis (M) (Text Figs 92c–94), with teeth or hooks, directed anteroventrally. ♀ epigyne with long wrinkled scape (about twice length of basal part and sometimes S-shaped) originating from anterior border of epigyne and projecting beyond the posterior border (Text Figs 92c–94) ..... *Araneus* (p. 206)

– ♂ palp with less distinctly hooked terminal apophysis and different median apophysis. ♀ epigyne with shorter or less wrinkled scape originating anteriorly, centrally or posteriorly 11

11(10) ♂ palp with bifid median apophysis (M) directed ventrally (Text Figs 95a–c). ♀ epigyne with short scape 0.4 to 0.7 times length of basal part, originating from anterior border (occasionally torn off in *Larinioides cornutus*) (Text Fig. 95a) ..... *Larinioides* (p. 212)

– Abdomen flattened dorsoventrally and bearing a wide dark folium edged with white (Plate 143). ♂ palp with a large deeply sclerotized terminal apophysis and spindle-shaped median apophysis. ♀ epigyne with tongue-like scape originating from centre of base, not projecting beyond posterior border (Text Fig. 95d) ..... *Nuctenea* (p. 212)

– Not as above 12

12(11) Abdomen with a well-defined pair of dorsal tubercles (Plate 136). ♀ epigyne with short scape originating from near posterior border of base, projecting only a little beyond posterior border. Median apophysis (M) of ♂ palp with its tip directed posteroventrally (Text Fig. 92a) ..... *Gibbaranea* (p. 206)

– Abdomen lacking tubercles. ♀ epigyne a tongue-like structure fused to the base. ♂ palp of different structure 13

13(12) ♀ epigyne broader than long. ♂ palp with a long *tibial* spine (as well as patellar spines). Spiders of reddish colour (Plate 146); abdomen as broad as long ..... *Agalenatea* (p. 214)

– ♀ epigyne longer than wide. ♂ palp with no tibial spines. Abdomen longer than broad and of highly characteristic appearance (Plates 144d, 145) ..... *Neoscona* (p. 214)

Genus *Gibbaranea* Archer, 1951

The two British species in this genus were formerly included in *Araneus*. Both have a pair of well-defined tubercles anterolaterally on the dorsal side of the abdomen. *A. angulatus* has similar tubercles.

Gibbaranea bituberculata (Walckenaer, 1802)

Plate 144c; Text Fig. 92a

Length: ♀: 5–6mm; ♂: 5mm.

Female with abdomen relatively larger than in male illustrated, but with similar markings and tubercles.

Gibbaranea gibbosa (Walckenaer, 1802)

Plate 136; Text Fig. 92b

Length: ♀: 5–7mm; ♂: 4–5mm.

Male similar in general appearance to the colour illustration of *G. bituberculata* (Plate 144c).

DISTINGUISHING THE SPECIES

The epigynes and male palps allow easy separation of these two species.

DISTRIBUTION

Gibbaranea gibbosa has a fairly widespread distribution over the British Isles. Although recorded from Scotland, it is commoner in the South of England and usually occurs on trees. *G. bituberculata* has been found in only one locality, in Buckinghamshire, on low bushes.

Genus *Araneus* Clerck, 1757

There are now seven British species considered as belonging to this genus. Several species hitherto included in *Araneus* have been transferred to other genera (*Gibbaranea*, *Larinioides*, *Nuctenea*, *Araniella*, *Agalenatea* and *Neoscona*). The species *Araneus sturmi* and *A. triguttatus* are retained in *Araneus* and not transferred to *Atea* C. L. Koch, 1837; the latter genus seems to grade into *Araneus*.

One species, *A. ceropegius* (Walckenaer), should be removed from the British list; the single record, from Chepstow, was over 130 years ago.

In some species the abdomen is rather angular; in others it is more rounded. A pair of abdominal tubercles are present anterolaterally in *A. angulatus* and, as faint traces, in large females of *A. diadematus*. Epigynes have a long scape. Male palps have a distinct hook-like terminal apophysis and a median apophysis, with teeth or hooks, directed anteroventrally. The palpal embolus has a cap which breaks off during mating.

Araneus angulatus Clerck, 1757

Plate 135d; Text Fig. 92c

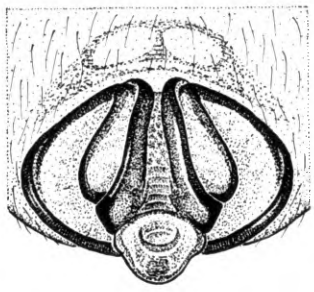
Length: ♀: 12–15mm; ♂: 10–12mm.

Male similar to female illustrated, but generally much darker.

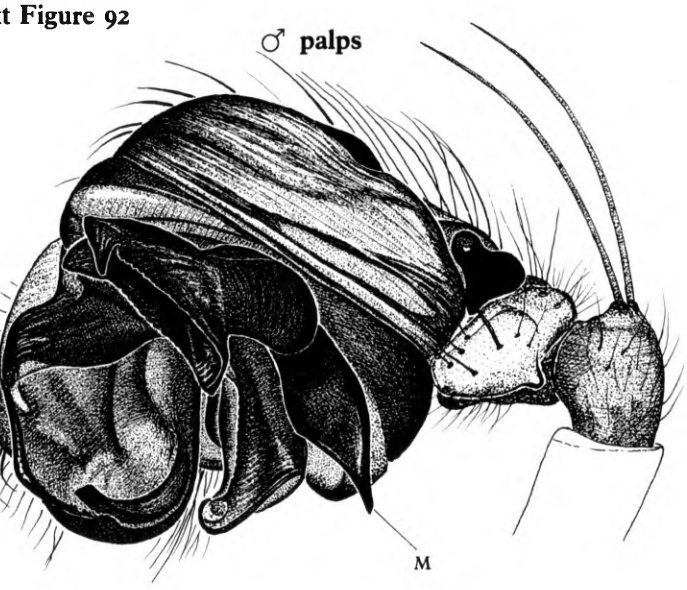
Text Figure 92

♀ epigynes

♂ palps



(a) *Gibbaranea bituberculata*



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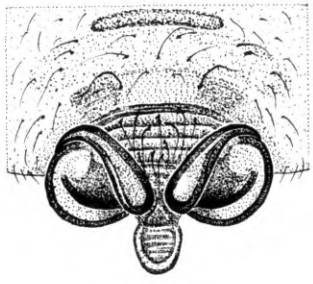
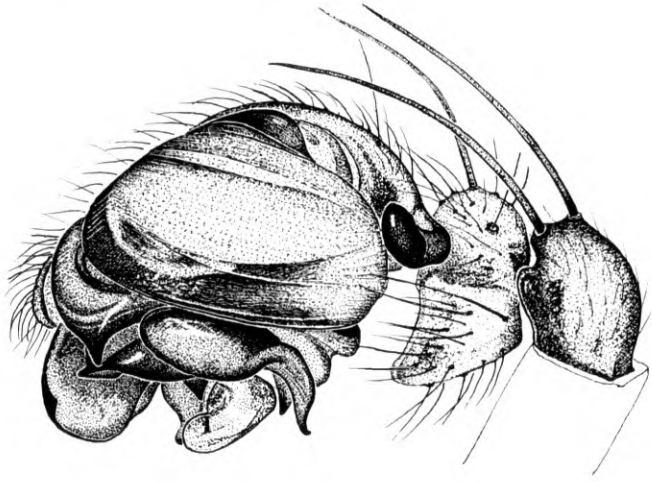
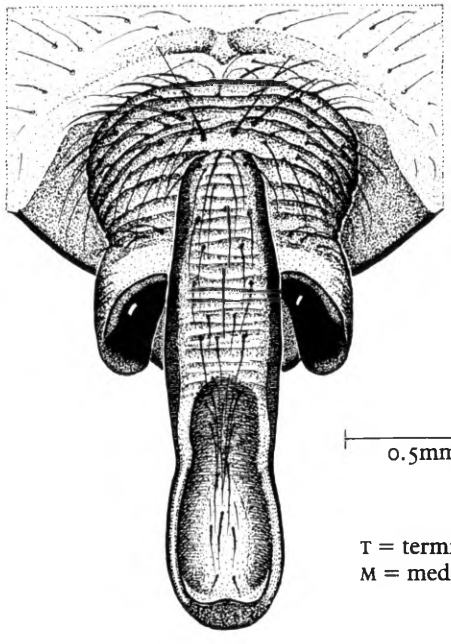
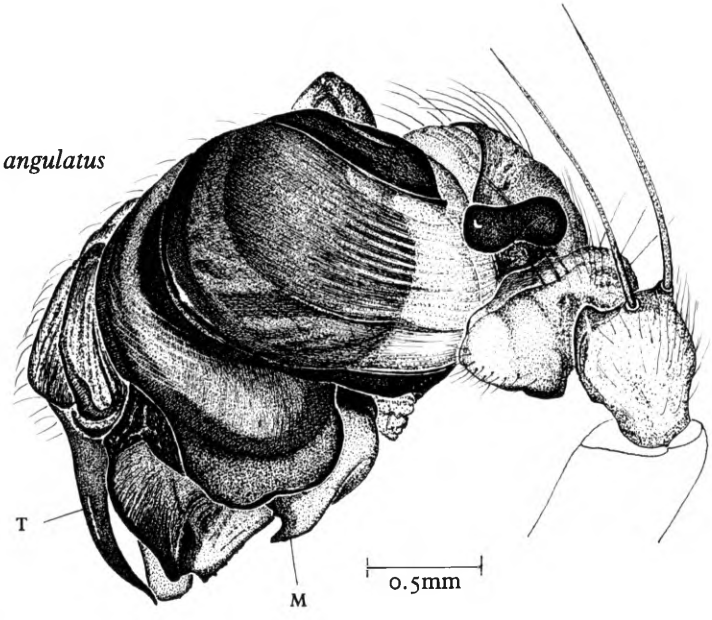


(b) *G. gibbosa*





(c) *Araneus angulatus*



0.5mm

0.5mm

T = terminal apophysis
M = median apophysis

Araneus diadematus Clerck, 1757
Plate 137; Text Fig. 93a
Length: ♀: 10–13mm; ♂: 4–8mm.
There is considerable variation in depth of colour and markings but general pattern usually distinctive. Large females have faint abdominal tubercles anterolaterally. Male has a relatively smaller abdomen than female, but with a similar pattern, and carapace is shaped like that illustrated for *A. quadratus* male (Plate 144b).

Araneus quadratus Clerck, 1757
Plates 138, 144b; Text Fig. 93b
Length: ♀: 9–15mm; ♂: 6–8mm.
Carapace markings fairly constant and differ from those of *A. marmoreus*. The colour of female abdomen varies from brown to reddish brown to green, and the markings may at times be very similar to those of *A. marmoreus*, being somewhat altered when the abdomen becomes distended with eggs, as illustrated. The markings on male abdomen are also variable.

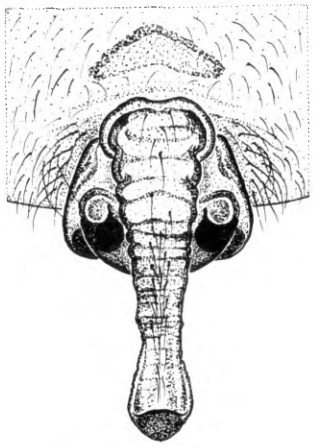
Araneus marmoreus Clerck, 1757
Plate 139; Text Fig. 93c
Length: ♀: 5–11mm; ♂: 5–6mm.
Carapace markings usually distinct from those of *A. quadratus*. The abdomen varies considerably in colour and markings. Two forms are illustrated, but intermediate specimens are frequently encountered. The colour form *pyramidatus* (Plate 139: top) with the dark brown folium occurs more commonly in the British Isles.

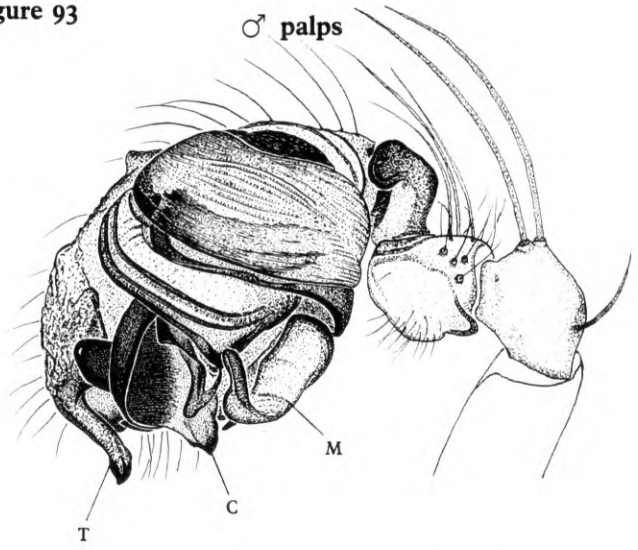
Text Figure 93

♀ epigynes

♂ palps

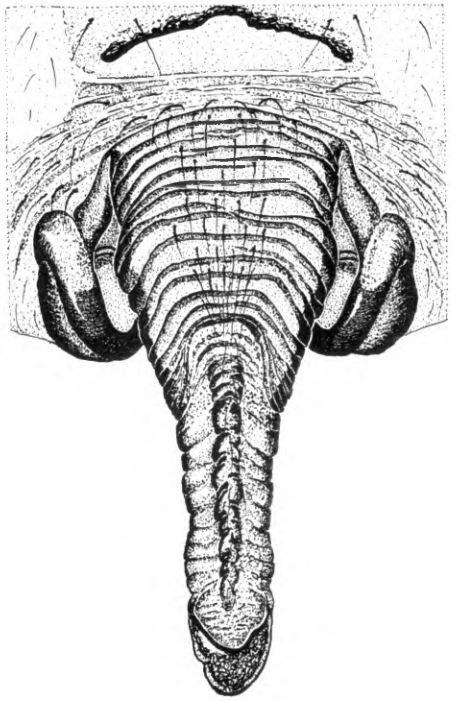
(a) *Araneus diadematus*

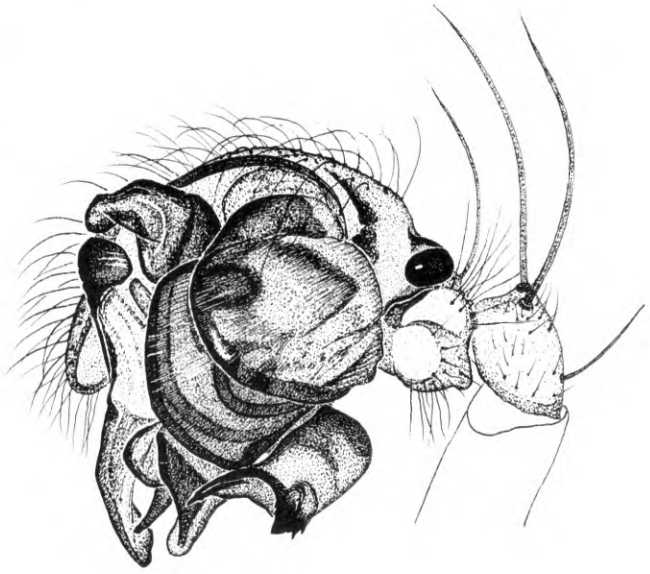




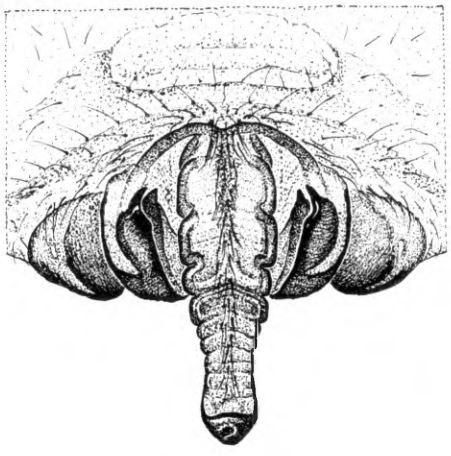
0.5mm

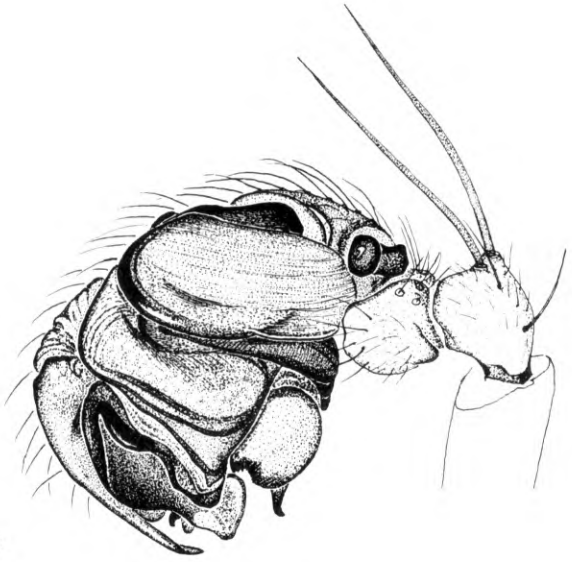
(b) *A. quadratus*





(c) *A. marmoreus*





T = terminal apophysis
C = conductor
M = median apophysis

Araneus alsine (Walckenaer, 1802)
Text Fig. 94a
Length: ♀: 7–9mm; ♂: 5–6mm.
This spider has a uniformly orange-brown carapace and a glossy, reddish orange abdomen (shaped like *A. marmoreus*) the dorsal surface of which is marked with many small creamy-white spots. Legs are coloured uniformly like carapace in female but may be faintly annulated in male.

Araneus sturmi (Hahn, 1831)
(= *Atea sturmi* (Hahn))
Plate 140; Text Fig. 94b
Length: ♀: 3–5mm; ♂: 3–4mm.
Both the colour and markings in this species are rather variable, but usually as illustrated. Male tends to be somewhat darker than female.

Araneus triguttatus (Fabricius, 1775)
(= *Atea triguttata* (Fabricius))
Text Fig. 94c
Length: ♀: 4.5–6mm; ♂: 3–4.5mm.
This species resembles *A. sturmi* in general appearance but is usually a little larger. Abdomen of females slightly more triangular and markings usually less well-defined than in *A. sturmi*.

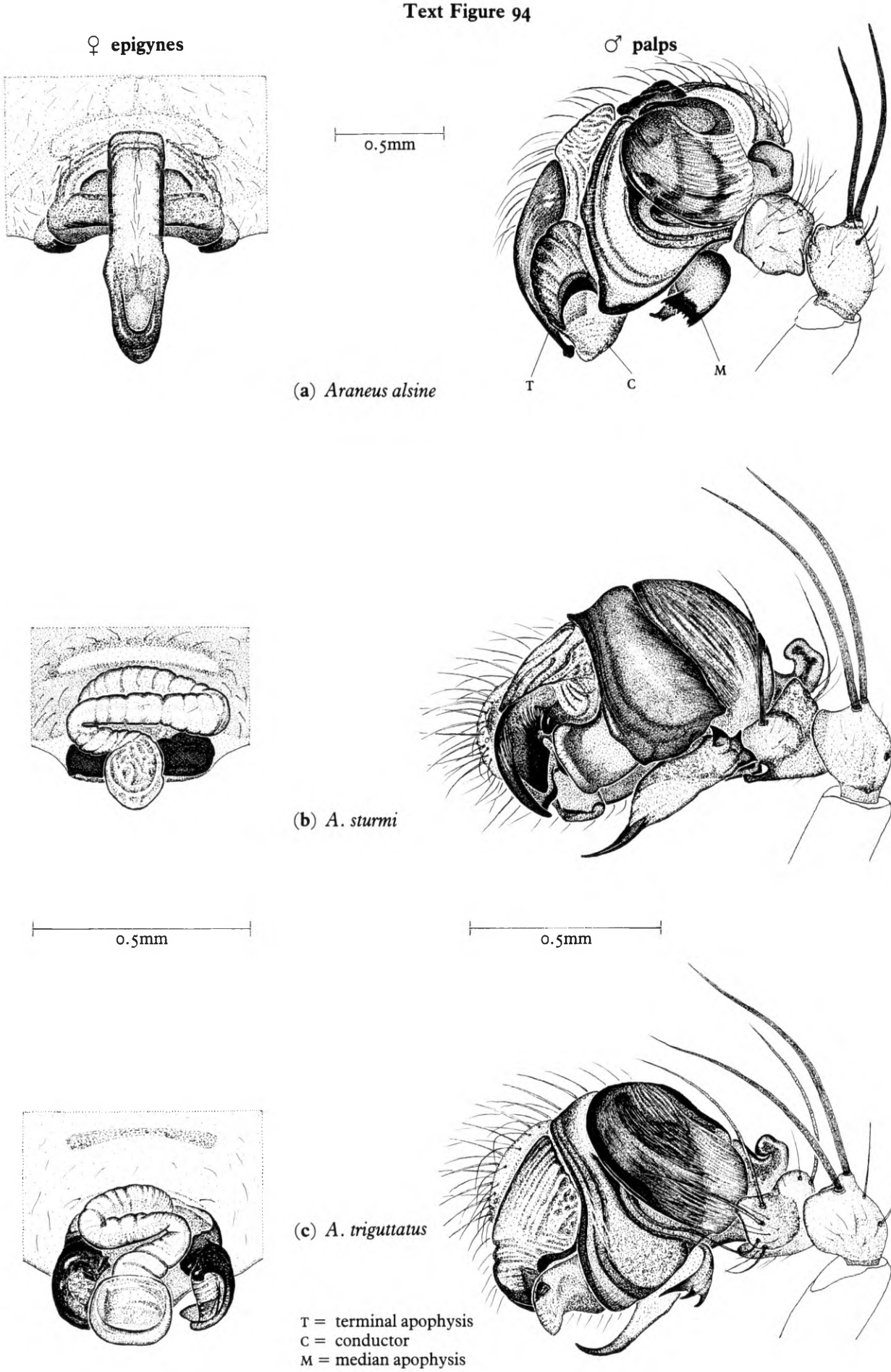
DISTINGUISHING THE SPECIES

All seven species are readily identifiable by the genitalia and in most cases by the general appearance. The scapes projecting from the epigynes are rather variable in their length and degree of wrinkling, and attention should also be directed to the form of the basal part of the epigyne when comparing the illustrations with specimens. Male palps present little problem provided that the specimen is viewed from the same angle as the illustrations. The shapes of the terminal and median apophyses are readily distinguishable and there are many other differences.

DISTRIBUTION

Araneus diadematus is very common and widely distributed over the British Isles. *A. quadratus* is a little less common but is also widely distributed. *A. marmoreus* is fairly widespread over England, Scotland and Wales but the colour form *pyramidatus* occurs far more frequently. Both colour forms, and intermediates, are fairly abundant on gorse and small birch trees in some parts of Yorkshire. *A. alsine* is usually found on grasses and other herbage in moist woodland clearings and is rare, having been recorded from England (as far north as South Humberside) and Wales. *A. angulatus* is a rare woodland species recorded from the South of England. *A. sturmi* has a widespread but local distribution over England, Scotland and Wales and usually occurs on evergreen trees. *A triguttatus* has not been found north of Lincolnshire, apart from one Scottish record, and is less common than *A. sturmi* and seems to occur more on deciduous trees.

Text Figure 94



Genus *Larinioides* Caporiacco, 1934

The three British species of *Larinioides* were once included in the genus *Araneus* and more recently in *Nuctenea*. They are mostly yellow-brown or greyish, rather than brightly coloured, and have the abdomen slightly flattened dorsoventrally. The cardiac mark over the anterior midline of the abdomen is usually dark, whereas in *Araneus* it is often light. The male palpal embolus lacks a cap (*cf. Araneus*) and the epigyne has a more complex base and smaller scape than in *Araneus*.

TAXONOMIC NOTE

Grasshoff (1983) has studied the type species of the genus *Larinioides*, *Larinioides dernae* Caporiacco, 1934, and found it very closely related to *Araneus cornutus* Clerck, 1757, *A. sclopetarius* Clerck, 1757, and *A. patagiatus* Clerck, 1757. These three species are now considered as belonging to *Larinioides* Caporiacco, 1934. According to the rules of the International Commission on Zoological Nomenclature, names ending in *-oides* are masculine.

Araneus umbraticus Clerck, 1757, differs considerably in somatic and genitalic structure from the foregoing species and is considered as belonging to the genus *Nuctenea* Simon, 1864.

Larinioides cornutus (Clerck, 1757)

(= *Araneus cornutus* Clerck)

Plate 141; Text Fig. 95a

Length: ♀: 6–9mm; ♂: 5–8mm.

The colour and markings vary somewhat but are never very different from the illustration. Male usually has a darker, more clearly defined pattern. Scape on epigyne is variable and may be twisted or completely torn off.

Larinioides sclopetarius (Clerck, 1757)

(= *Araneus sclopetarius* Clerck)

Plate 144a; Text Fig. 95b

Length: ♀: 10–14mm; ♂: 8–9mm.

The male illustrated has the typical V of white hairs on carapace and a fringe of white hairs anteriorly and laterally. Female has a much darker, almost black carapace with similar white hairs, a larger abdomen with a similar but less distinct pattern, and relatively shorter legs. Spider appears almost velvety in life.

Larinioides patagiatus (Clerck, 1757)

(= *Araneus patagiatus* Clerck)

Plate 142; Text Fig. 95c

Length: ♀: 5–7mm; ♂: 5–6mm.

Male has darker carapace than the female illustrated and a more distinct abdominal pattern; overall very similar to male of *L. sclopetarius* (Plate 144a).

DISTINGUISHING THE SPECIES

The small scape on the epigyne is rather variable in size and in the degree to which it protrudes. It may frequently be torn off in *L. cornutus*. The base of the epigyne is usually characteristic and the general appearance of the spiders makes confusion unlikely. The male palps are readily distinguishable, particularly by the form of the median apophyses.

DISTRIBUTION

L. cornutus is widespread throughout the British Isles, usually occurring on plants near water, including the seashore. *L. sclopetarius* occurs in England and Wales but is uncommon, usually being found on buildings near water. *L. patagiatus*, although widely distributed throughout the British Isles, is rare and usually occurs on bushes and trees.

Genus *Nuctenea* Simon, 1864

The single British species of *Nuctenea* was once included in the genus *Araneus* and the three British species of *Larinioides* were, more recently, included in *Nuctenea* (see Taxonomic Note, above). The abdomen of this dark coloured spider is markedly flattened dorsoventrally. The male palp has a large, deeply sclerotized terminal apophysis and a spindle-shaped median apophysis of quite different structure to that found in *Larinioides*. The epigyne has a tongue-like scape originating from the centre of its base.

Nuctenea umbratica (Clerck, 1757)

(= *Araneus umbraticus* Clerck)

Plate 143; Text Fig. 95d

Length: ♀: 11–14mm; ♂: 8–9mm.

Male and female similar in general appearance but may be much darker, or a little lighter, than illustrated. The continuous white edges around the folium may be broken up into a series of light patches. The whole spider has a distinctly flattened appearance. The genitalia are also distinctive, making confusion of this spider with any other unlikely.

DISTRIBUTION

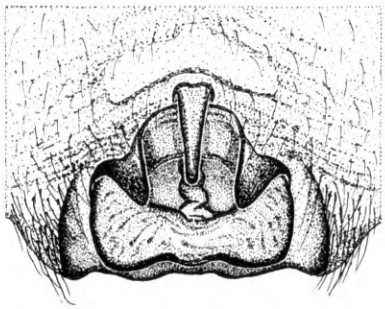
N. umbratica is widespread throughout the British Isles. It remains hidden under bark or in crevices in fences during the daytime – retreats afforded by its dorsoventral flattening – and usually emerges only at dusk.

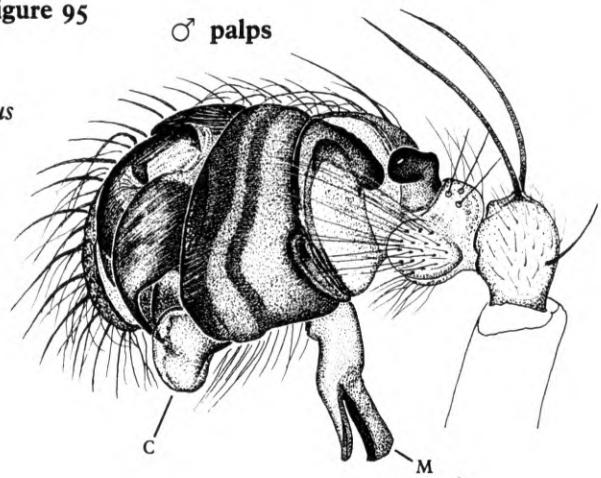
Text Figure 95

♀ epigynes

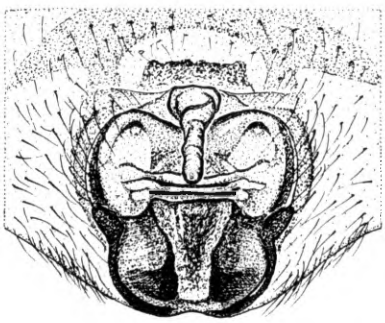
♂ palps

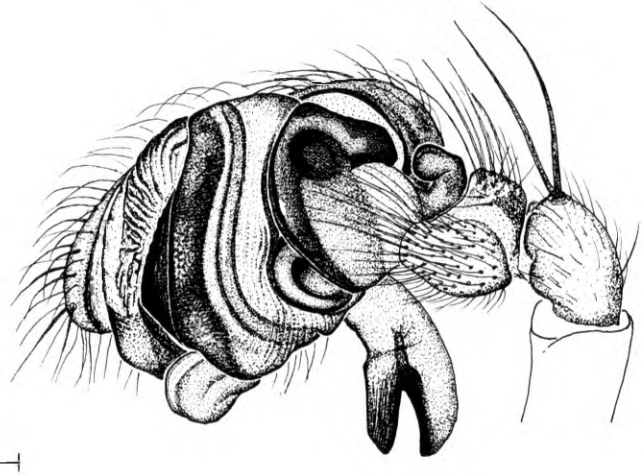
(a) *Larinioides cornutus*





(b) *L. sclopetarius*





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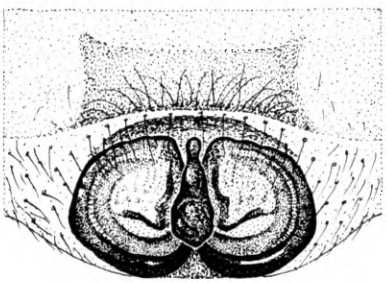
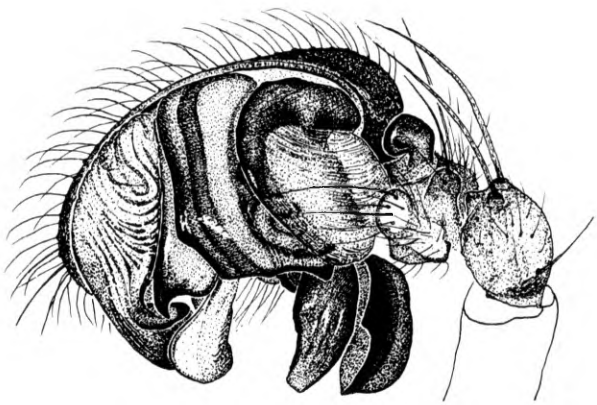
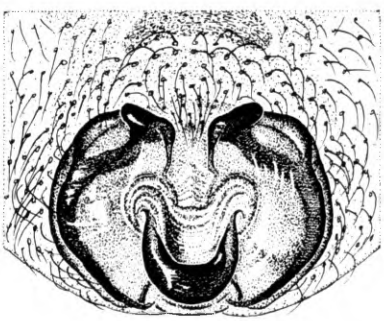
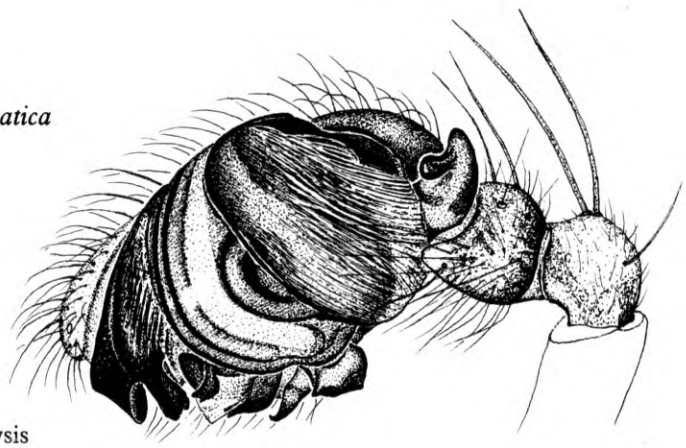
(c) *L. patagiatus*





(d) *Nuctenea umbratica*





C = conductor
M = median apophysis

Genus *Agalenatea* Archer, 1951

The single British member of this genus was formerly included in *Araneus*.

Agalenatea redii (Scopoli, 1763)

Plate 146; Text Fig. 96a

Length: ♀: 5.5–7mm; ♂: 3.5–4.5mm.

Female abdomen characteristically broader than long and the colour and markings are variable. The variability is of a similar order to that occurring in *Araneus marmoreus* (p. 208). The white patches may be larger, or absent; some specimens have a subtriangular brown patch in the posterior half. Males have abdomen slightly longer than broad and there is often a dark lanceolate midline mark edged with white. Genitalia distinctive, although epigyne viewed ventrally may vary in appearance depending on its angle of protrusion.

DISTRIBUTION

This species has a fairly wide but local distribution over the British Isles. It is commoner in the south and often occurs on gorse bushes. Not recorded from Scotland.

Genus *Neoscona* Simon, 1864

The single British species, formerly included in *Araneus*, has a highly characteristic appearance. The carapace has a longitudinal thoracic groove (less obvious in females) and the abdomen a distinct pattern.

Neoscona adianta (Walckenaer, 1802)

Plates 144d, 145; Text Fig. 96b

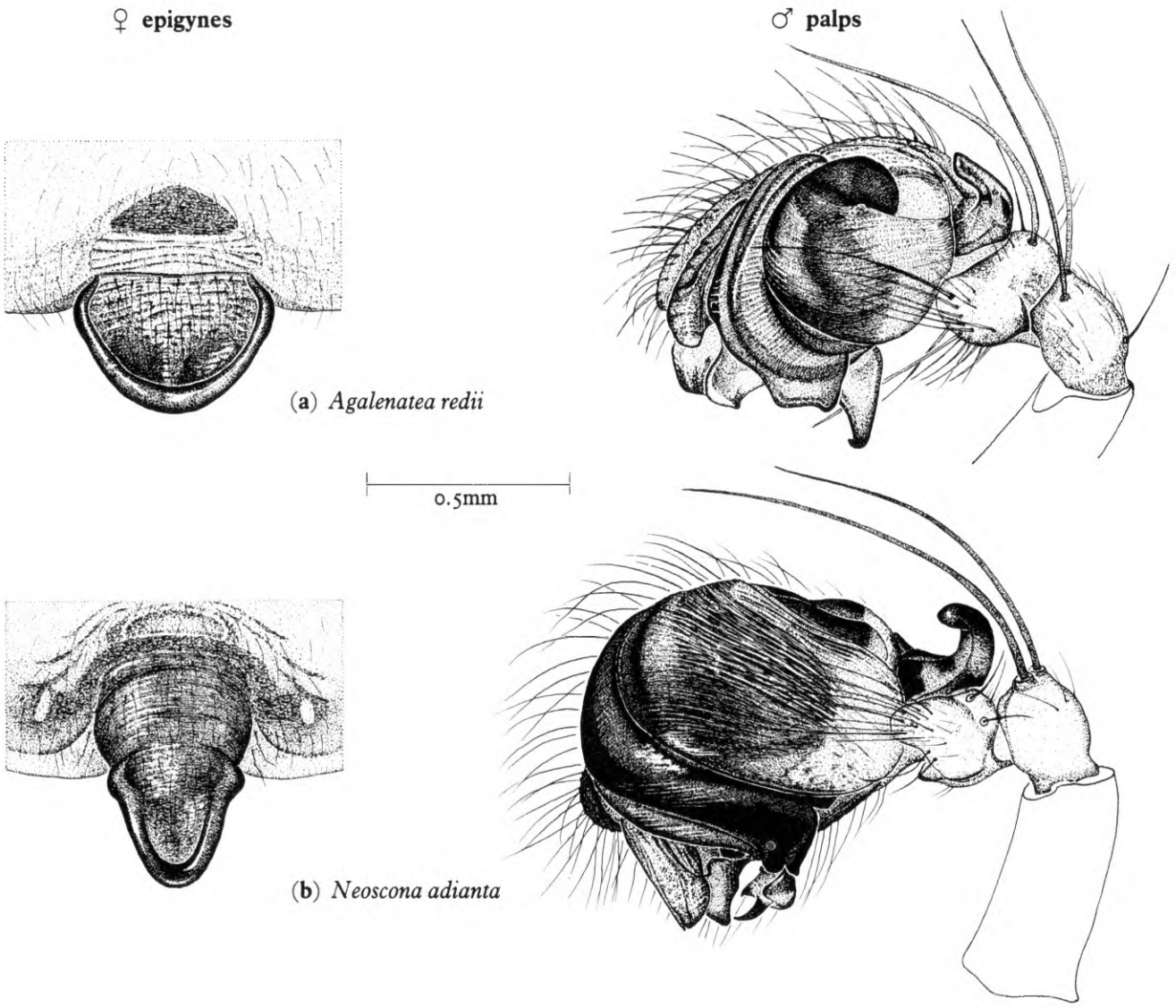
Length: ♀: 5–7mm; ♂: 4–5mm.

Epigyne a simple tongue, the scape being fused to the base; and male palp has a highly characteristic appearance.

DISTRIBUTION

This species is fairly uncommon and occurs most frequently in South and South-east England, but it has been found in Yorkshire, Wales, and the south of Ireland. It is usually found on bushes – gorse, heather, etc.

Text Figure 96



Genus *Araniella* Chamberlin & Ivie, 1942

The five British species in this genus, formerly placed in *Araneus*, all have a green abdomen, with paired black spots, sometimes marked with red. The colour, apart from the black spots, washes out in alcohol to leave a pale yellow abdomen. The epigyne has a short, wide-based, wrinkled scape and male palp has three long spines on the patella. All the species build a small orb web, often horizontal, between leaves of trees and bushes, or sometimes across a single leaf.

It seems likely that hybridization does occur between some of the British species which can occasionally cause difficulties in identification.

Araniella cucurbitina (Clerck, 1757)

Plate 153c; Text Fig. 97a

Length: ♀: 4–6mm; ♂: 3.5–4mm.

In adults there is usually a red spot dorsal to the spinners; immature specimens are often extensively marked with red. Males similar to those of *A. opistographa* (Plate 147) in general appearance.

Araniella opistographa (Kulczynski, 1905)

Plate 147; Text Fig. 97b

Length: ♀ 4–6mm; ♂ 3.5–4mm.

This species is very similar to *A. cucurbitina* and can be distinguished, sometimes with difficulty, only by the genitalia.

Araniella inconspicua (Simon, 1874)

Text Fig. 97c

Length: ♀: 5–5.5mm; ♂: 4–4.5mm.

Similar to *A. cucurbitina* in general appearance; genitalia closely similar to those of *A. alpica*.

Araniella alpica (L. Koch, 1869)

Text Fig. 97d

Length: ♀: 5–6mm; ♂: 4–5mm.

Similar to *A. cucurbitina* in general appearance; genitalia closely similar to those of *A. inconspicua*.

Araniella displicata (Hentz, 1847)

Text Fig. 97e

Length: ♀: 5–6mm; ♂: 4–5mm. (Continental specimens often larger, ♀ up to 11mm.)

This species usually differs from the others in having clear reddish orange or brownish markings on the dorsum of green abdomen. Almost all the colour washes out rapidly in alcohol. Genitalia quite distinct.

DISTINGUISHING THE SPECIES

A. displicata is readily distinguished from the other four species by the genitalia and usually, in fresh specimens, by the abdominal markings. The main difficulty lies in separating the species pairs *A. cucurbitina/opistographa* and *A. inconspicua/alpica*, particularly in the case of females. This problem is further aggravated by occasional hydridization between species, resulting in intermediate genitalia.

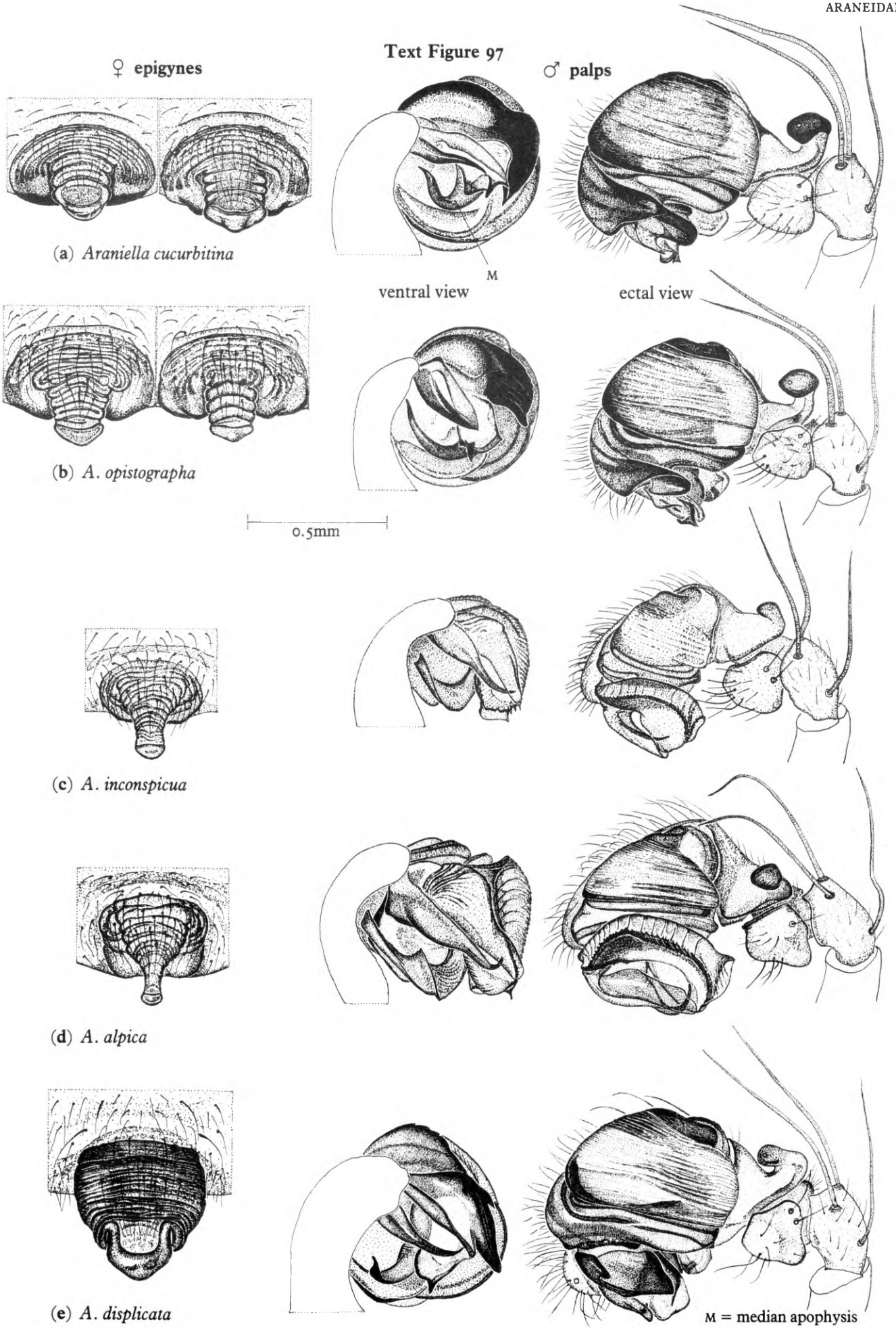
A. cucurbitina and *A. opistographa* have very similar and variable epigynes (two examples of each are illustrated: Text Figs 97a;97b). Examination of a large number of specimens, from different parts of the country, revealed that the relative length and width of the scape usually provides reliable separation. The scape of *A. opistographa* is relatively longer and narrower than that of *A. cucurbitina*. Males similarly show variation in the form of the palpal structures but can usually be distinguished by consideration of the shape of the median apophysis (M) viewed ventrally (see Text Fig. 97a) and by other differences.

Epigynes of *A. inconspicua* and *A. alpica* seem to be distinguishable in the majority of cases. The scape is usually narrower distally in *A. alpica* and a considerable part of the base of epigyne shows as two bulges posterior and lateral to the scape (in ventral view). In *A. inconspicua*, much less of the base of the epigyne is visible in ventral view and the scape is wider distally. Males of these two species are distinguished by the median apophysis (which has an extra fin in *A. alpica*) and other differences.

DISTRIBUTION

A. cucurbitina and *A. opistographa* are probably both widely distributed throughout the British Isles and common. In some collections examined (including my own) the specimens were mixed and misidentified; *A. opistographa* is possibly frequently overlooked. *A. inconspicua*, *A. alpica* and *A. displicata* are all rare species recorded from only a few localities in southern England, mostly on trees.

Text Figure 97



Genus *Zilla* C. L. Koch, 1834

The single British species in this genus has a distinctive general appearance and genitalia.

Zilla diodia (Walckenaer, 1802)

Plate 148; Text Fig. 98a

Length: ♀: 3–4mm; ♂: 2–2.5mm.

Male has similar markings to female illustrated.

DISTRIBUTION

This is an uncommon spider, being found in its orb web on heather, bushes and trees, usually in rather dark places, in southern counties of England.

Genus *Hypsosinga* Ausserer, 1871

The four British species in this genus were formerly included in the genus *Singa*. *Hypsosinga* differs from *Singa* in having the posterior median eyes the largest and the median ocular quadrangle wider behind than in front, or rectangular. The abdomen is oval, shiny and has a broadly similar pattern in all species. The epigyne differs from *Singa* and *Araneus* in lacking a scape. Frequently, the epigyne is completely or partially covered by a hard transparent structure (see epigynes, Text Figs 98b,c) transferred from the male palp. The palp has a large transparent scale attached to the base of the embolus (see male palp, Text Fig. 98d). This scale breaks off during mating and lodges in the epigyne. Thus, any female of *Hypsosinga* may have the epigyne completely or partially obscured by male palpal scales.

Hypsosinga albovittata (Westring, 1851)

Plate 153a; Text Fig. 98b

Length: ♀: 2.5–3.5mm; ♂: 2.25–3mm.

Note the distinctive white patch on carapace as well as the white marks on abdomen. Males also have a white median mark on carapace but it is usually narrower and the white median abdominal markings are usually confined to anterior half.

Hypsosinga pygmaea (Sundevall, 1831)

Text Fig. 98c

Length: ♀: 3.5–4.5mm; ♂: 2.5–3mm.

This species closely resembles *H. sanguinea* (Plate 149) in general appearance but carapace usually has light margins. The width of the white stripes is variable and occasionally they may be broken or absent. Males may have abdomen entirely black.

Hypsosinga sanguinea (C. L. Koch, 1845)

Plate 149; Text Fig. 98d

Length: ♀: 3–4mm; ♂: 2.5–3mm.

Carapace, in both male and female, often a lighter yellow-brown than illustrated. The width of the white abdominal stripes is rather variable.

Hypsosinga heri (Hahn, 1831)

Text Fig. 98e

Length: ♀: 3.5–4.5mm; ♂: 2–2.5mm.

Female has an orange carapace with broad dark markings at the junction of cephalic and thoracic regions and a dark median line. Abdomen similar to that of *H. sanguinea*. Male has thoracic part of carapace orange and the cephalic part dark brown.

DISTINGUISHING THE SPECIES

H. albovittata is easily identified by its general appearance. *H. pygmaea*, *H. sanguinea* and *H. heri* have similar abdominal patterns but the carapace markings may be useful. All four species are readily distinguished by their genitalia. The only likely source of confusion is the variable appearance of the epigynes engendered by the presence or absence of male palpal scales.

DISTRIBUTION

H. albovittata and *H. pygmaea* are probably fairly widely distributed throughout the British Isles but are not common, being most frequent on heathland and chalk grassland respectively. *H. sanguinea* has a local distribution in southern England and is rare. *H. heri* is very rare, occurring on low plants near water, and has only been recorded from two localities in England.

Genus *Singa* C. L. Koch, 1836

The single British species in this genus is distinguished from *Hypsosinga* by having the anterior median eyes the largest and the median ocular quadrangle widest in front. The epigyne has a scape.

Singa hamata (Clerck, 1757)

Plate 150; Text Fig. 99a

Length: ♀: 5–6mm; ♂: 3–4mm.

The abdomen in the female illustrated is held at a slight angle to the carapace and thus appears a little foreshortened in dorsal view. The pattern is somewhat variable, especially in males; the colour may be a darker brown with the lighter areas distinctly yellowish. Epigyne has a scape and a pair of conical protuberances on each side, directed posteriorly. Male palp easily recognizable and has a large terminal apophysis.

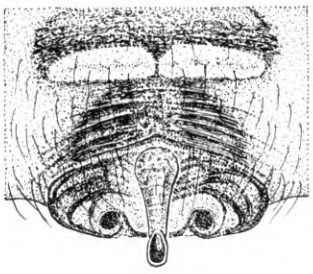
DISTRIBUTION

S. hamata may be widely distributed throughout England and has been recorded from Scotland, but is rare and found in damp habitats. Some European and American species of *Singa* seem to prefer a site along the banks of rivers and lakes. They spin orb webs on reeds, etc., just above the surface of the water and may have to be collected by boat. Perhaps this partly accounts for the rarity of *S. hamata*.

Text Figure 98

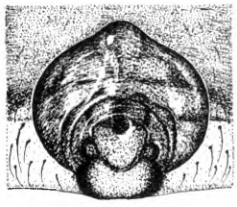
♀ epigynes

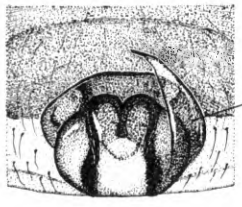
♂ palps



(a) *Zilla diodia*

0.5mm

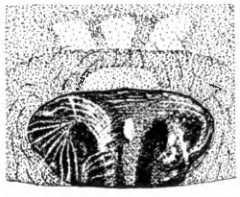


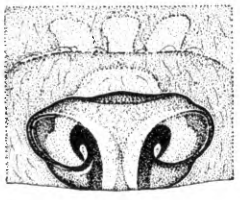


palpal scale

with palpal scales

(b) *Hypsosinga albovittata*



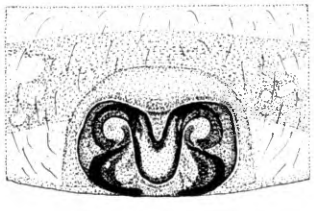


with palpal scales

(c) *H. pygmaea*

palpal scale

(d) *H. sanguinea*



(e) *H. heri*

Genus *Cercidia* Thorell, 1869

The single British species belonging to this genus has an oval, anteriorly pointed abdomen with a dorsal scutum over the anterior two-thirds. A line of short dark spines is present anteriorly. The clypeus is wide and legs IV slightly longer than legs I.

Cercidia prominens (Westring, 1851)

Plate 151; Text Fig. 99b

Length: ♀: 3.5–5mm; ♂: 3–4mm.

The orange-red coloration is characteristic. The posterior and lateral limits of the dorsal abdominal scutum are very poorly defined in female. The scutum is generally darker, more distinct and relatively larger in male. Male has a number of thick spines prolaterally on tibia II. Epigyne has a scape and the heavily sclerotized male palp is characteristic.

DISTRIBUTION

C. prominens is probably widely distributed throughout England and Wales but has not been recorded from Ireland and only once from Scotland. It spins a small orb web a few centimetres above the ground, between grasses and other low plants, and drops to the ground if disturbed. It is rather uncommon; most specimens I have taken have been from the base of mossy or heathery banks alongside footpaths, usually by sieving litter. Also on chalk grassland.

Genus *Zygiella* F. O. P.-Cambridge, 1902

There are three British representatives of this genus. They differ from *Araneus* in having the posterior row of eyes more or less equally spaced. The male palps have a modified paracymbium separate from the tarsus. This is large and subtriangular in *Zygiella x-notata* and *Z. atrica*; smaller in *Z. stroemi*. Other British Araneidae have a knob-like paracymbium attached to the tarsus. The carapace has very few hairs and the abdomen is oval, slightly flattened dorsoventrally and with a characteristic pattern which is similar in the three British species. They all build an orb web, usually with a vacant sector in the upper half; a single thread runs through this region from the hub to the spider's retreat where it serves to detect web vibration.

Some authors now place *Zygiella* in the family Metidae (see Taxonomic Note, p. 198); I am not fully convinced on this issue. Some authors consider *Zygiella* itself to be polyphyletic, arguing that whilst *Z. atrica* and *Z. x-notata* seem close to the Metidae, *Z. stroemi* is closer to the Araneidae. The obvious superficial similarities between these species are then considered as being due to convergent evolution.

Zygiella x-notata (Clerck, 1757)

Plate 152; Text Fig. 99c

Length: ♀: 6–7mm; ♂: 3.5–5mm.

The greyish-brown and dull white markings and darker anterior patches of the female illustrated are characteristic, even though variable; male similar. The light central area is sometimes more silvery.

NOTE. The specific name was used by Clerck because 'the astronomical character of the sign Pisces, or a letter X, is seen on the upper or forepart of the abdomen'. I have never seen it.

Zygiella atrica (C. L. Koch, 1845)

Plate 153d; Text Fig. 99d

Length: ♀: 6–6.5mm; ♂: 3.5–5mm.

In both sexes the anterior dark patches on the abdomen usually have a reddish tinge and the light areas are more silvery than in *Z. x-notata*. The male illustrated has abdomen held at a slight angle to the carapace and is slightly foreshortened in dorsal view. Male palpal tibia is unusually long in this species.

Zygiella stroemi (Thorell, 1870)

Text Fig. 99e

Length: ♀: 4–4.5mm; ♂: 3–3.5mm.

This species similar to *Z. x-notata* except that the dark edges of abdominal folium are wide throughout their length and there is often a dark median line. The epigyne and male palpal organs are quite different from those of the other species in the genus.

DISTINGUISHING THE SPECIES

The genitalia allow identification without difficulty.

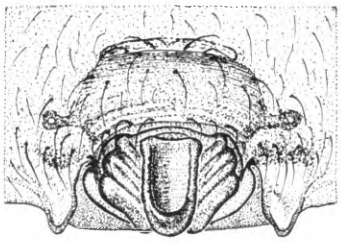
DISTRIBUTION

Z. x-notata and *Z. atrica* are common and widespread throughout the British Isles. *Z. x-notata* is most commonly found close to human habitations on fences, in window-frames and sheds, whereas *Z. atrica* usually occurs on gorse and bushes, generally away from houses. Occasionally they may occur close together. If the web of *Z. atrica* is disturbed, the spider drops to the ground from its retreat amongst leaves. This does not happen with *Z. x-notata*, presumably because its retreat is more enclosed within holes and crevices. *Z. stroemi* is rare, being known from two localities in Scotland and about half a dozen in southern England, and is usually found on pine trunks.

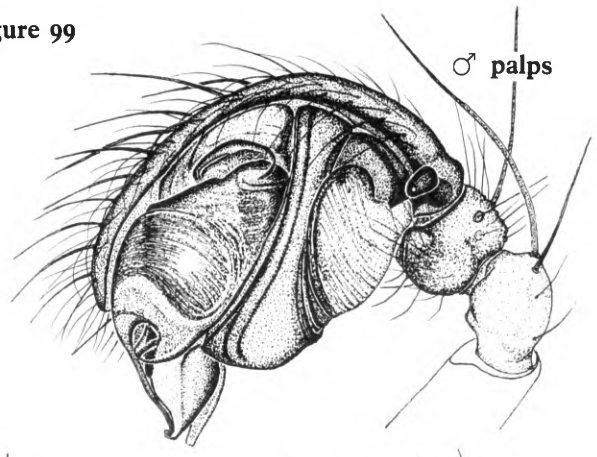
Text Figure 99

♀ epigynes

♂ palps



(**a**) *Singa hamata*



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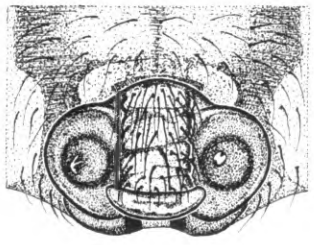
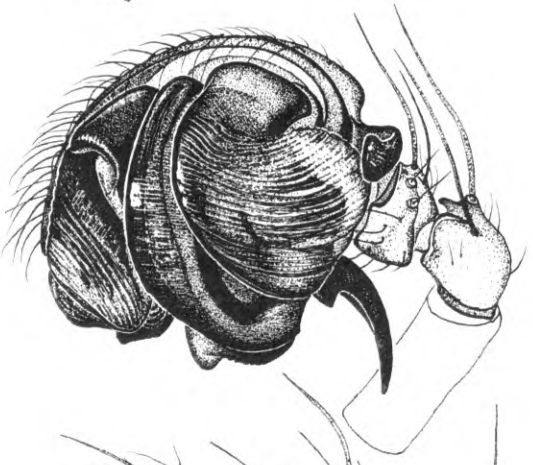
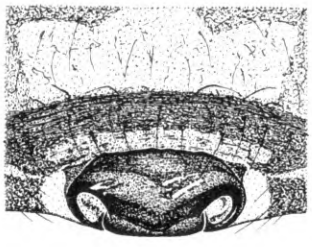


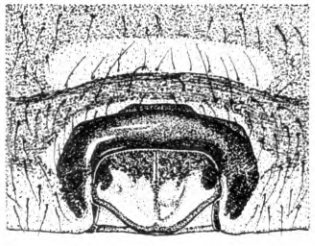
(**b**) *Cercidia prominens*

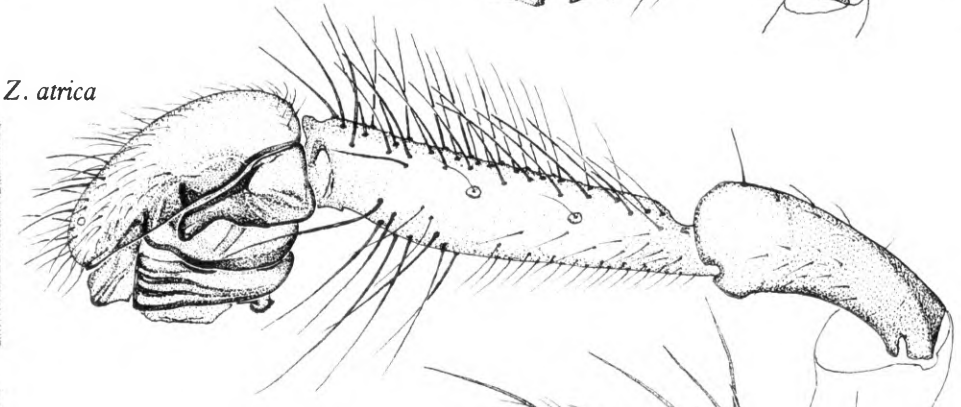


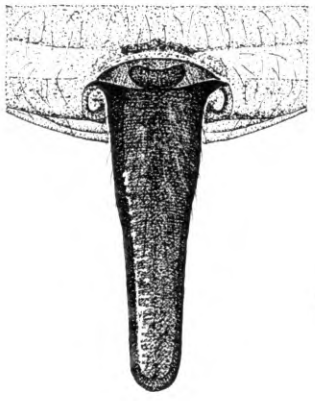


(**c**) *Zygiella x-notata*

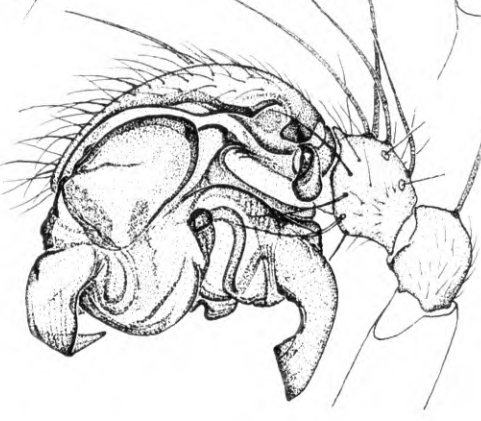
(**d**) *Z. atrica*







(**e**) *Z. stroemi*



0.5mm

Genus *Mangora* O. P.-Cambridge, 1889

The single British species in this genus has the carapace pear-shaped, highest in the thoracic region, with a slight median furrow, often difficult to see. The abdomen has a distinctive pattern and females have a group of plumose trichobothria proximally on tibia III. The male palp has only one patellar spine.

Mangora acalypha (Walckenaer, 1802)

Plate 154; Text Fig. 100a

Length: ♀: 3.5–4mm; ♂: 2.5–3mm.

Male similar to the female illustrated but carapace slightly attenuated anteriorly and the three longitudinal bars on the posterior end of the abdomen are often confluent, forming a solid black rectangle. Genitalia are highly characteristic.

DISTRIBUTION

This species is commoner in southern England but has been recorded from the north and also from Wales and southern Ireland. It may be locally abundant on gorse bushes, heather, etc.

Genus *Cyclosa* Menge, 1866

Both male and female of the single British species of this genus have a very distinctive appearance. The female abdomen has a posterior protuberance of variable size, which is present but rudimentary in males, and both sexes have a dark brown, sometimes almost black, carapace. The orb web often has a thick band of silk stretching along radii above and below the hub.

Cyclosa conica (Pallas, 1772)

Plates 153b, 155; Text Fig. 100b

Length: ♀: 4.5–7mm; ♂: 3–4.5mm.

Apart from their general appearance, male and female also readily identifiable by their genitalia. The pattern and colour of abdomen is extremely variable, especially in females.

DISTRIBUTION

This species is widely distributed over the British Isles, often occurring on bushes, especially evergreens, in rather dark, moist areas of woodland.

Genus *Argiope* Savigny, 1827

Females of the single British representative of this genus have a very striking appearance; males are much smaller (see comparative life-size drawings: Plate 156). The posterior rows of eyes are distinctly procurved in both sexes.

Argiope bruennichi (Scopoli, 1772)

Plate 156; Text Fig. 100c

Length: ♀: 11–15mm; ♂: 4–4.5mm.

Appearance of female in the field differs from the illustration which is of a fresh specimen in alcohol. The rather flat carapace is covered with silky hairs which in life obscure carapace markings and impart an overall silvery-grey appearance. Abdominal pattern is more strikingly yellow and black in life, the pigmented cells contracting in alcohol. The specimen illustrated is distended with eggs; non-gravid females have a slightly smaller abdomen which is flatter and rather blunt posteriorly. Epigyne varies somewhat in shape and length but both this and male palp are highly characteristic.

DISTRIBUTION

A. bruennichi is recorded only from a few localities near the south coast of England. It spins an orb web, usually in tall grass, which is decorated with a zig-zag band of silk between a pair of radii above and below the hub. Immature females seem to add relatively more web decoration than do adults.

Family THERIDIOSOMATIDAE

The spiders in this family have previously been included in the Araneidae. Over forty species are known from the tropics; the single British species in this family also occurs in continental Europe, Asia and North America. All the known species are small (1.5–3mm) and spin a web resembling a horizontal orb web, the centre of which is pulled up by a single strand and held by the spider. This strand is released when the web snares an insect, the latter then becoming more entangled. The female palp lacks a claw; the latter is present in the Araneidae, Theridiidae, Nesticidae and the subfamily Linyphiinae (Linyphiidae). The posterior row of eyes is procurved and the anterior median eyes are noticeably darker than the rest. The abdomen in all species is globular. The male palps are fairly large in relation to body size.

Genus *Theridiosoma* O. P.-Cambridge, 1879

This genus has one representative in the British Isles.

Theridiosoma gemmosum (L. Koch, 1877)

Plate 157; Text Fig. 100d

Length: ♀: 2–3mm; ♂: 1.5–2mm.

The general appearance and globular, silvery abdomen are unmistakable, and similar in both sexes. Epigyne varies slightly, and the opening may sometimes be covered by a transparent membrane (as illustrated). Male palp is quite distinctive.

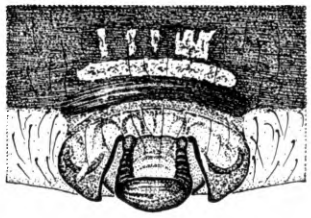
DISTRIBUTION

This is a rare species, usually found among low vegetation in damp areas, and has been recorded from a number of localities in southern England, South Wales and the south of Ireland.

Text Figure 100

♀ **epigynes**

♂ **palps**



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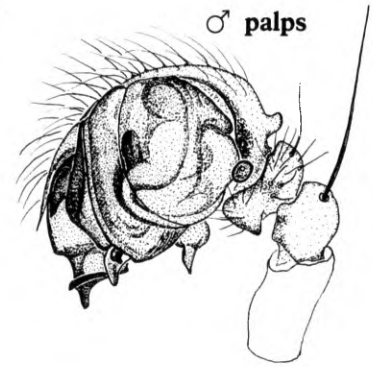
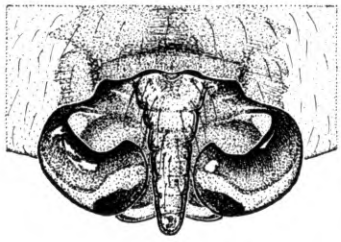
(**a**) *Mangora acalypha*





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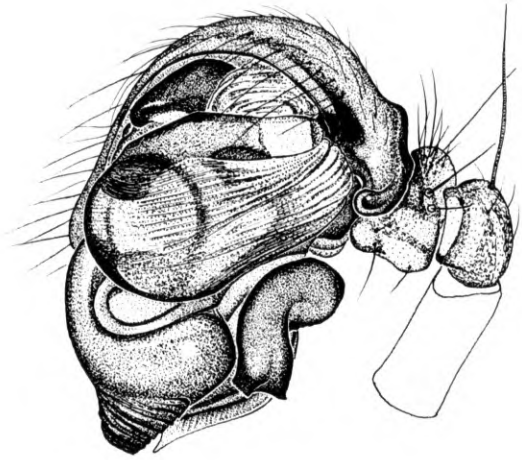
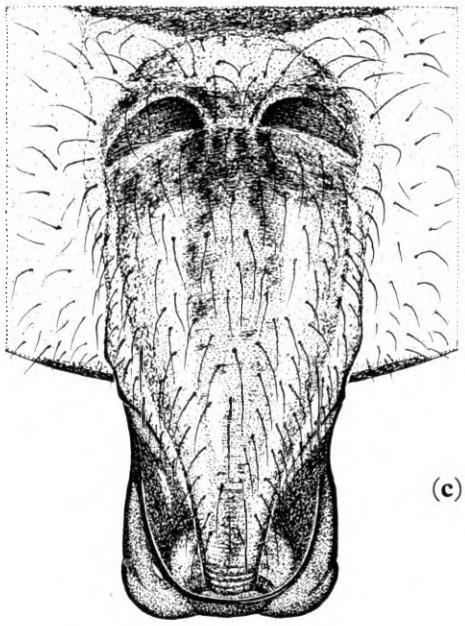
(**b**) *Cyclosa conica*





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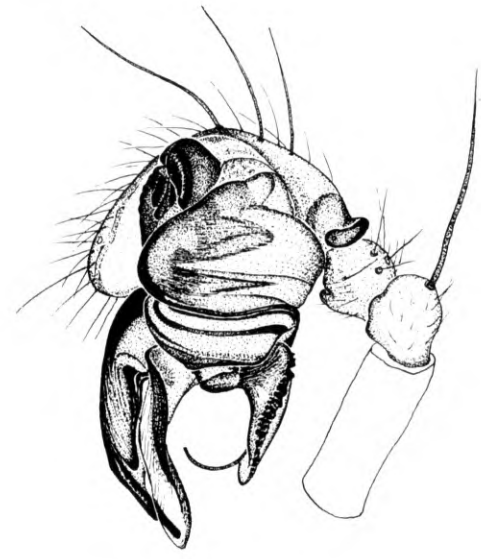
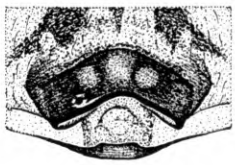
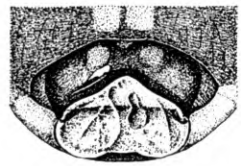
(**c**) *Argiope bruennichi*







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(**d**) *Theridiosoma gemmosum*

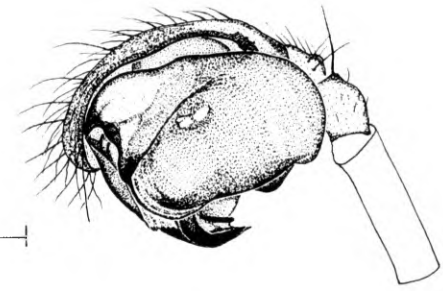

Figure 100

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NOTE. The names and abbreviations of journals are as given in *Serial Publications in the British Museum (Natural History) Library*, 3rd Edition, 1980.

Index

Principal entries are given in **bold type** followed by references to colour plates 1–157 in Volume 3, shown as (pl. 154). The index also includes references to colour plates A–C in this volume, shown as 180 (pl. B), to figures in the text, as 223 (text fig. 100a), and to keys.

THE SPIDERS OF GREAT BRITAIN AND IRELAND

VOLUME 2

Linyphiidae and Check List

The Plan of the Work

The Spiders of Great Britain and Ireland

Volume 1

Introduction; Classification and Nomenclature; Key to the Families; Description of Species – Atypidae to Theridiosomatidae

Volume 2

Description of Species – Linyphiidae; Check list of the British species

Volume 3

The Colour Plates: Atypidae to Linyphiidae

Volume 2: Contents

Contents *continued*

Foreword

This volume, which completes Roberts' work 'The Spiders of Great Britain and Ireland', deals solely with the Linyphiidae, which is numerically the largest family of spiders in the British Isles, and indeed in northern Europe generally. It is a matter of history that the development of spider taxonomy took place, until comparatively recently, almost exclusively in the northern hemisphere, where linyphiid species are much more numerous than in the southern hemisphere. The large number of species, often small in size, which were encountered by the earlier arachnologists earned for the Linyphiidae the unfortunate reputation of being a 'difficult' family. In my opinion there is no longer any sound justification for this view; consideration of the global araneid fauna makes it abundantly clear that the Linyphiidae should not be regarded as in any way more 'difficult' than other families which contain numerous species, e.g. the Theridiidae, the Araneidae or the Salticidae.

As is normally the case in the Araneae, diagnosis of the numerous species of the Linyphiidae is based ultimately on the genitalia. Intelligent use of the keys and of the fine figures provided in this volume for the male palps and the female epigynes should enable all arachnologists, even the merest tyros, to identify the British members of the family without undue difficulty.

The present time is a period of active development of taxonomic theory and practice, and it must be emphasised that the taxonomic situation in the Linyphiidae is still somewhat fluid in some areas. It is not surprising, therefore, that I find myself in mild disagreement with a small number of the names used by Roberts. It can be taken as certain that more name changes will become necessary in the future.

These volumes, the high quality of which reflects considerable credit on both author and publisher, are a valuable addition to the literature on British spiders; the arachnologist in Britain is now better equipped than in any other country to study and identify his native spider fauna. It is clear that no further books directed towards the identification of British spiders will be required for many years to come; but how wonderful it would be for arachnology if illustrated manuals of similar quality could be produced for other parts of Europe (particularly for the southern, central and eastern areas), and perhaps in the more distant future for other parts of the world!

Ottery St. Mary, Devon, A. F. MILLIDGE
January, 1987

Preface

This second volume on British spiders describes and illustrates the family Linyphiidae, together with six new British species which would ordinarily have been described in Volume 1.

Almost half of the British spider fauna belongs to the Linyphiidae and, of species collected in the field, linyphiids often constitute an even higher proportion than this, particularly in the autumn, and in more northern parts of the British Isles and on higher ground. The large number of genera and species, their homogeneity and often small size, have always presented a challenge.

In this country we have indeed been fortunate in having two very distinguished arachnologists who have made special study of the Linyphiidae – the late Dr A. R. Jackson and, in more recent years, Dr A. F. Millidge. Dr Millidge was almost entirely responsible for the treatment of the Linyphiidae in *British Spiders*, Volume II, published by the Ray Society in 1953, and has since continued to produce a wealth of taxonomic papers on the family, without which the present work would have been impossible.

Mr G. H. Locket, Dr A. F. Millidge, Dr P. Merrett (Institute of Terrestrial Ecology) and Mr F. Wanless (British Museum, Natural History) have helped greatly with the loan of specimens and in discussions on nomenclature, although they are not responsible for the views expressed in this work. The collections made by the late Mr A. A. D. La Touche, kindly loaned by Mr G. H. Locket, have proved invaluable. The following, amongst others, have also been of considerable help in loaning specimens: Dr N. P. Ashmole (University of Edinburgh), Dr R. Bosmans (Laboratorium voor Oecologie, Zoogeografie en Natuurbehoud, Gent), Mr R. B. Coleman, Dr D. R. Cowden, Mr J. Crocker, Dr E. Duffey, Mrs Dr C. L. Deeleman Reinhold, Mr S. Dobson, Mrs C. Geddes, Mr C. Hambler, Mr P. R. Harvey, Mr P. D. Hillyard (British Museum, Natural History), Dr H. Hippa (Zoological Museum, University of Helsinki), the late Dr G. T. Jefferson (University College, Cardiff), Mr R. Jones, Mr I. Lansbury (Hope Entomological Collections, Oxford), the late Mr R. Leighton, the late Mr D. W. Mackie, Mrs F. M. Murphy, Mr J. Murphy, Mr D. R. Nellist, Dr I. Oksala (University of Turku), Mr J. R. Parker, Mr C. W. Plant (Passmore Edwards Museum, London), Mrs K. Rowland (Colchester and Essex Museum), Mr C. J. Smith, Mr R. Snazell (Institute of Terrestrial Ecology), Mr J. A. Stewart and Herr J. Wunderlich.

My grateful thanks go to all of these, and to the trustees and authorities of the various museums mentioned. Dr P. Merrett has provided up-dated information on the distribution of species and with Mr A. Rodger Waterston has given valuable editorial help. I am indebted to Mr Basil Harley for the continuing care and interest he has shown over the publication of this work, and to Mrs Annette Harley for preparing the index. My wife, Deborah, has been of enormous help in preparing the text, a source of great encouragement and support, and shares with me the pleasure and relief in completing this work.

Sheffield
December, 1986

MICHAEL J. ROBERTS

I. DESCRIPTION OF THE SPECIES

Family LINYPHIIDAE

There are at present 267 British species in this family, in 105 genera, ranging in size from 0.95mm to 7.4mm. Most species make sheet webs with no retreat, the spider hanging and running about on the underside of the sheet. Some of the larger sheet webs (e.g. of *Linyphia*) have a tangle of threads above; insects hitting these threads fall on to the sheet and are attacked from below by the spider. Other fairly large sheet webs have no such superstructure (e.g. *Tapinopa*). Although some species occur on bushes and trees, the majority make much smaller sheet webs at or near ground level, amongst grass, moss, leaf-litter, seaweed and stones. They constitute by far the greatest proportion of ballooning aeronauts during the gossamer season, and are responsible sometimes for covering whole fields with a shimmering mantle of silk.

The Linyphiidae are distinguished from other families biologically by the form of the web and morphologically by the male palpal paracymbium. The latter may be a simple U- or J-shaped structure or extremely complex, with teeth and branching processes; but it is always a separate chitinized structure lying ectally between tibia and cymbium, and attached to the latter by a pale or transparent membrane. There are no other positive distinguishing characters which are entirely reliable. The carapace shows great variation and the males of some species have the head region raised to form bizarre lobes and other protuberances, which are of considerable help in identification. The clypeus is generally wider than in the Araneidae, but there are exceptions (e.g. *Tapinopa*). The chelicerae usually have stridulating ridges laterally, but these are sometimes absent (e.g. in *Linyphia* and *Neriene*) and those of *Neriene* males even bear a swelling similar to the lateral condyle of some Araneidae. The cheliceral teeth are also highly variable within the family. The legs vary greatly in length and thickness and may be spineless, or furnished with many long spines. Metatarsi I to III have only one dorsal trichobothrium (except *Allomengea scopigera*); metatarsus IV may sometimes lack a trichobothrium. The tibial spines and metatarsal trichobothria form the basis of the key to the genera and species. The abdomen varies greatly in shape and may be unicolorous (with or without sigilla or a scutum) or with a well-defined pattern. The epigynes may be simple or highly complex.

The classification of the Linyphiidae continues to present considerable difficulties; the comparative somatic and genitalic morphology is an interpretative minefield. As pointed out by Millidge (1984), the taxonomic systems so far proposed for the family do not cope satisfactorily even with the known genera, let alone the new material being discovered in poorly worked areas of the world. What does seem certain, however, is that the family should no longer be split into the traditional subfamilies Linyphiinae and Erigoninae, as such a simple division has little or no phylogenetic significance. The future may see the family divided into perhaps half a dozen separate groups or subfamilies. There has been a great deal of work published in recent years making use of the detailed structure of the male palps, epigynes, tracheal systems and clypeal pits (e.g. Wiehle, 1956, 1960; Merrett, 1963; Blest, 1976; Millidge, 1977; Blest, 1979; Usher, 1983; Millidge, 1984, 1986). Whilst there are some good hypotheses and one senses some order emerging from the confusion, we are still far from being in a position to adopt formally any of the new proposals.

The large number of linyphiid genera and species, together with the homogeneity of the family, necessitates a key which will quickly and reliably guide the student to the main distinguishing characters – the genitalia (and male carapaces, where appropriate). Such a key, based on the work by Locket & Millidge (1953) and Locket, Millidge *et al.* (1974) has been used with great success by the British Arachnological Society for a number of years. Consideration of the dorsal tibial spines, metatarsal trichobothria and the size of spider allows diagnosis down to the level of a relatively few genera and species, to the genitalia (and male carapaces) of which direct reference can then be made. Examination and measurement of a large number of specimens has led, in the present work, to an expansion of this key. Although inevitably leading to some duplication of genera and species within the sections, it should minimize confusion caused by intraspecific variation.

It is worth repeating that individual spiders within any species show variation in both general appearance and genitalia. Specimens examined may therefore differ considerably from each other – in colour, markings, abdominal distension and other ways – and from the colour plates, the genitalia being much more constant. However, the genitalia too exhibit intraspecific variation and it has been necessary in some cases to illustrate a series of epigynes; the complexity of male palps usually allows easy identification despite variation, and the illustration of palpal variation would in any case have been impracticable (see variability in male palps of *Araneus diadematus* p. 180). Very occasionally, the epigyne may be distorted, or maldeveloped on one side; rarely, there may be duplication of the epigyne (Kaston, 1963; Merrett, 1983). Male palps may also be abnormally developed on one or both sides (e.g., see *Lepthyphantes pallidus*, Text Fig. 79e). Some of the palpal abnormalities may be the result of loss of a palp in the early stages of development, with only partial regeneration. Other abnormalities of palps and epigynes occur with gynandry and intersexuality, where both male and female characters may be present in the same specimen (Roberts & Parker, 1973).

NOTE REGARDING SCALE OF ILLUSTRATIONS

In Volume 1 of this work, the genitalia of all species within each genus are illustrated to the same scale. Comparative size of genitalia can sometimes be as important as structure in distinguishing between species, despite some intraspecific variation. In view of the relative difficulties in identifying linyphiids, and the fact that considerable future

rearrangement of genera is inevitable, I decided it would be useful to illustrate the whole family to the same scale.
Therefore, throughout the family Linyphiidae, all epigynes, palps and palpal tibiae are illustrated to the scale indicated by Text Fig. 1a – a magnification of 90×. All male carapaces and leg segments are illustrated to the scale indicated by Text Fig. 1b – a magnification of 60×. The very few exceptions to this are indicated alongside the appropriate figure.

INTRODUCTORY NOTES ON THE KEY

(i) *Tibial spines*

Each tibia usually has one or two dorsal spines; only rarely are spines absent and this is usually in adult males of a few species. The dorsal spines may be very short and insignificant in some species (e.g. Plate 158); other species (e.g. Plate 228) have long dorsal spines and also lateral spines. The lateral spines are not used in the key. Some species (e.g. Plate 211) may also have a spine on metatarsus I (and, rarely, tarsus I), whilst others (e.g. Plate 224) have numerous long spines on almost all leg segments. When only one tibial spine is present (e.g. Plates 184–189) then it is always in the proximal half of the tibia. If apparently there is only one dorsal spine located in the *distal* half of the tibia, it can be assumed that the proximal spine has broken off; check the contralateral leg. **The tibial spine formula, used in the key and genus descriptions, expresses the number of dorsal tibial spines on each of legs I to IV, as in the following examples:**

1–1–1–1	e.g. Plates 158, 170–172, 182, 184–189
2–2–1–1	e.g. Plates 160–169
2–2–2–1	e.g. Plate 203
2–2–2–2	e.g. Plates 204, 206, 208–237

(ii) *Metatarsal trichobothria*

A trichobothrium (Tm) is a long, fine, erect hair arising from a distinct circle on the dorsal aspect of the leg (see also Vol. 1, p. 19, Text Fig. 3c). Each leg has several trichobothria, as well as a number of smaller, erect, tactile hairs. In linyphiid spiders (except *Allomengea scopigera*) the metatarsi never have more than one trichobothrium, and this is sometimes absent on leg IV. It requires a little practice to spot the metatarsal trichobothria; under the microscope they can usually be seen to wave about slightly if the specimen is jarred. They rarely become detached, and even then the circle at the base is still visible; one can also check the contralateral leg. **The presence or absence of a trichobothrium on metatarsus IV (TmIV) is used throughout the key and genus descriptions as in the following examples:**

TmIV present	e.g. Plates 158–172, 174–181
TmIV absent	e.g. Plates 184–189, 191–193, 195–199

The position of the trichobothrium on metatarsus I (TmI) is expressed as the decimal fraction $^{a}/_{b}$ in Text Fig. 1c. When taking measurements, both ends of the metatarsus should be in focus. A range of TmI values is given for each species, based, where possible, on the examination of large numbers of specimens; occasional anomalous specimens may however occur. **The value of TmI is used throughout the key and in the descriptions of genera and species, and various illustrated examples are as follows:**

TmI 0.12–0.20	e.g. Plates 231, 233
TmI 0.40–0.49	e.g. Plates 216, 217
TmI 0.80–0.95	e.g. Plates 174–178

(iii) *Size*

The size of the spider is the length, in mm, measured from the front of the carapace to the posterior end of the abdomen. Comparative measurements (e.g. for TmI) can be made simply by using the eyepiece scale. For absolute measurements of the spider, or other structures, it is necessary to calibrate the eyepiece scale by using a micrometer scale (or even a good quality mm ruler!) on the microscope stage.

(iv) *Use of the key*

The following procedure is recommended for using the key:
First, note down *(a)* the tibial spine formula, *(b)* presence or absence of spines on metatarsi I & II, *(c)* presence or absence of TmIV, *(d)* position of TmI and *(e)* the size of spider.
Secondly, make a quick sketch of the epigyne or male palp. If the specimen is a male, note the presence or absence of lobes, protuberances, post-ocular sulci and other conspicuous features on the carapace; if present, make a quick sketch of the lateral view. Follow the key to Tables A, B, C and D and then, using TmI range, tibial spine formula and size, a simple process of elimination will narrow the identification down to a relatively small number of species. On the extreme left of each table are given the Text Figure numbers for the genitalia which can then be referred to directly. In the next column to this are the Text Figure numbers for the male carapace, *if modified*, and these also can be directly referred to; a dash (–) in this column indicates that the male carapace is not significantly modified, which negative information can also sometimes help in the process of elimination. On the extreme right of each table is an indication of the general appearance of each species with reference to the Plate numbers in Volume 3. It should be remembered that there can be considerable variation in the degree of abdominal distension and in the depth of colour; recently moulted individuals of most species are pale.

Key to the Genera and Species of the Linyphiidae

1 One dorsal spine (or no dorsal spine) on tibia IV and all metatarsi spineless 2
– Two dorsal spines on tibia IV or, if with only one, then one spine on metatarsus I and II 3

2(1) TmIV present ..... TABLE A (p. 18)
– TmIV absent ..... TABLE B (p. 20)

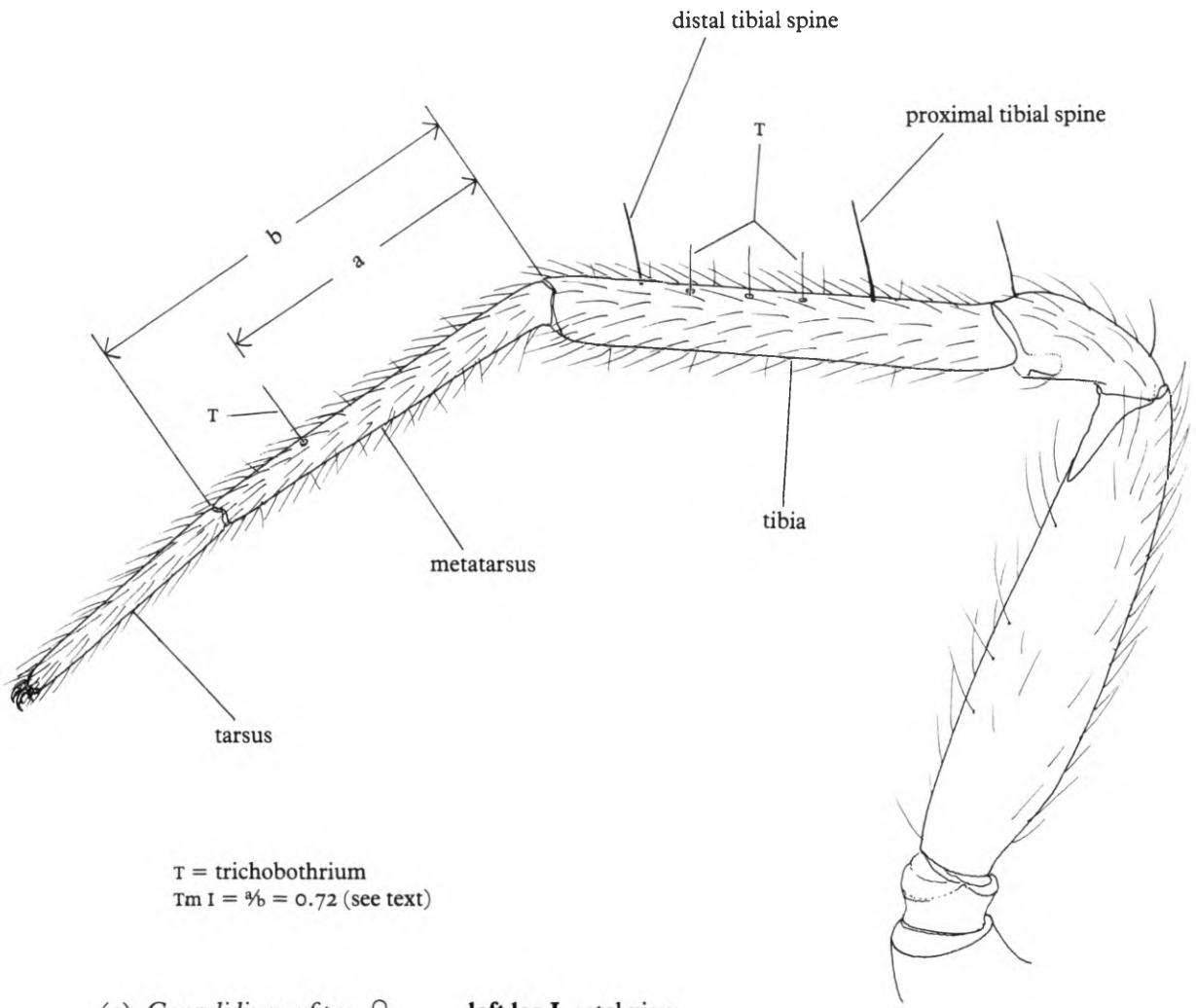
3(1) TmIV present ..... TABLE C (p. 22)
– TmIV absent ..... TABLE D (p. 23)

Text Figure 1

(**a**) 0.5mm all **epigynes, palps** and **palpal tibiae** (= x 90)

Scale lines for all illustrations of LINYPHIIDAE

(**b**) 0.5mm all **carapaces** and **legs** or **leg segments** (= x 60)



(**c**) *Gongylidium rufipes* ♀ **left leg I** ectal view

TABLE A (**TmIV present**)

♀♂ genitalia (Text Figs)	♂ carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
2a	–	*Ceratinella*	*brevipes*	0.39–0.44	1–1–1–1	1.3–1.8	Pl. 158; ♂ with scutum
2b	–		*brevis*	,,	,,	1.8–2.2	As Pl. 159
2c	–		*scabrosa*	,,	,,	1.8–2.3	Pl. 159
2d	2e	*Walckenaeria*	*dysderoides*	,,	2–2–1–1	1.7–2.2	As Pl. 160, but elongated; eyes not raised in ♀
4f	8d		*nodosa*	,,	,,	1.5–2.3	As Pl. 160; eyes larger and not raised in ♀
11a	16a	*Entelecara*	*acuminata*	,,	,,	1.7–2.4	As Pl. 164
11b	16b		*congenera*	,,	,,	1.7–2.2	As Pl. 164
11e	16e		*errata*	,,	,,	1.4–2.0	As Pl. 164
3a	–	*Walckenaeria*	*nudipalpis*	0.45–0.54	2–2–1–1	2.5–3.2	As Pl. 160; eyes larger and not raised except slightly in ♂
3b	–		*obtusa*	,,	,,	3.0–3.8	As Pl. 160; eyes larger and not raised except slightly in ♂
3c	–		*vigilax*	,,	,,	2.0–2.6	As Pl. 160; eyes larger and not raised except slightly in ♂
3d	8e		*stylifrons*	,,	,,	1.6–2.2	As Pl. 160 but smaller, elongate; and eyes not raised in ♀
4a,c	8a		*antica*	,,	,,	1.75–2.6	As Pl. 160; eyes larger and not raised in ♀
4b,d	8c		*alticeps*	,,	,,	2.3–2.8	As Pl. 160; eyes larger and not raised in ♀
4e	8b		*cucullata*	,,	,,	2.0–2.7	As Pl. 160; eyes larger and not raised in ♀
4f	8d		*nodosa*	,,	,,	1.5–2.3	As Pl. 160; eyes larger and not raised in ♀
5a	8f		*incisa*	,,	,,	2.5–3.25	As Pl. 160; eyes larger and not raised in ♀
5b	8g		*clavicornis*	,,	,,	2.25–2.75	As Pl. 160; eyes larger and not raised in ♀
5c	8h		*mitrata*	,,	,,	2.5–3.3	As Pl. 160 but ♀ eyes less conically raised
5d	8i		*cuspidata*	,,	,,	2.4–2.9	Pl. 162
10a,c,e	–	*Dicymbium*	*nigrum*	,,	2–2–1–1/0–0–0–0	1.8–2.5	Pl. 163
10b,f	–		*tibiale*	,,	2–2–1–1	2.0–2.6	As Pl. 163; ♂ tibia I thickened
11a	16a	*Entelecara*	*acuminata*	,,	,,	1.7–2.4	As Pl. 164
11b	16b		*congenera*	,,	,,	1.7–2.2	As Pl. 164
11d	16d		*erythropus*	,,	,,	1.6–2.1	Pl. 164
11e	16e		*errata*	,,	,,	1.4–2.0	As Pl. 164
43e,47a	–	*Erigone*	*longipalpis*	,,	2–2–2–1	2.4–3.5	As Pls 202c, 203
4a,c	8a	*Walckenaeria*	*antica*	0.55–0.59	2–2–1–1	1.75–2.6	As Pl. 160; eyes larger and not raised in ♀
4b,d	8c		*alticeps*	,,	,,	2.3–2.8	As Pl. 160; eyes larger and not raised in ♀
5b	8g		*clavicornis*	,,	,,	2.25–2.75	As Pl. 160; eyes larger and not raised in ♀
5c	8h		*mitrata*	,,	,,	2.5–3.3	As Pl. 160 but ♀ eyes less conically raised
5d	8i		*cuspidata*	,,	,,	2.4–2.9	Pl. 162
6a	8j		*furcillata*	,,	,,	2.2–3.0	As Pl. 161 but tibiae not darkened
6b	9a		*atrotibialis*	,,	,,	2.0–2.8	Pl. 161
6d	9c		*unicornis*	,,	,,	1.8–3.1	As Pl. 162
7a	9d		*monoceros*	,,	,,	2.0–2.9	As Pl. 160; eyes larger and not raised in ♀
7b	9e		*corniculans*	,,	,,	2.5–3.0	As Pl. 160; eyes larger and not raised in ♀
10a,c,e	–	*Dicymbium*	*nigrum*	,,	2–2–1–1/0–0–0–0	1.8–2.5	Pl. 163
10b,f	–		*tibiale*	,,	2–2–1–1	2.0–2.6	As Pl. 163; ♂ tibia I thickened
11d	16d	*Entelecara*	*erythropus*	,,	,,	1.6–2.1	Pl. 164
11e	16e		*errata*	,,	,,	1.4–2.0	As Pl. 164
12b	–	*Hylyphantes*	*graminicola*	,,	,,	2.25–3.0	Pl. 166; chelicerae with granulations anterolaterally
12d	16g	*Trematocephalus*	*cristatus*	,,	,,	2.0–2.6	As Pl. 167, but eye region black and prominent
22e	23c	*Oedothorax*	*retusus*	,,	,,	2.0–3.0	As Pl. 179
22f	23d		*apicatus*	,,	,,	2.0–3.3	As Pl. 179
43e,47a	–	*Erigone*	*longipalpis*	,,	2–2–2–1	2.4–3.5	As Pls 202c, 203

(Table A continues on next page)

TABLE A (cont'd) (**TmIV present**)

♀♂ genitalia (Text Figs)	♂ carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
6a	8j	*Walckenaeria*	*furcillata*	0.6–0.69	2–2–I–I	2.2–3.0	As Pl. 161, but tibiae not darkened
6b	9a		*atrotibialis*	,,	,,	2.0–2.8	Pl. 161
6c	9b		*capito*	,,	,,	2.6–3.5	As Pl. 160; eyes larger and only slightly raised in ♀
6d	9c		*unicornis*	,,	,,	1.8–3.1	As Pl. 162
7a	9d		*monoceros*	,,	,,	2.0–2.9	As Pl. 160; eyes larger and not raised in ♀
7b	9e		*corniculans*	,,	,,	2.5–3.0	As Pl. 160; eyes larger and not raised in ♀
7c	9f		*kochi*	,,	,,	2.2–3.6	As Pl. 162
7d	9g		*acuminata*	,,	,,	2.8–4.0	Pl. 160
12a	–	*Moebelia*	*penicillata*	,,	,,	1.4–2.0	Pl. 165; often wholly black
12b	–	*Hylyphantes*	*graminicola*	,,	,,	2.25–3.0	Pl. 166; chelicerae with granulations anterolaterally
12c	–	*Gnathonarium*	*dentatum*	,,	,,	2.2–3.0	Pl. 167; chelicerae as above
12d	16g	*Trematocephalus*	*cristatus*	,,	,,	2.0–2.6	As Pl. 167 but eye region black and prominent
12e	–	*Tmeticus*	*affinis*	,,	2–2–I–I/0–0–I–I	2.5–3.0	Pl. 168
13a	–	*Gongylidium*	*rufipes*	,,	2–2–I–I	2.5–3.7	Pl. 169; ♂ head darker
22b	21e,f,g	*Oedothorax*	*gibbosus*	,,	,,	2.0–3.2	Pl. 179
22c	23a		*fuscus*	,,	,,	1.8–2.9	Pl. 180
22d	23b		*agrestis*	,,	,,	2.0–2.9	As Pl. 179
22e	23c		*retusus*	,,	,,	2.0–3.0	As Pl. 179
22f	23d		*apicatus*	,,	,,	2.0–3.3	As Pl. 179
13c	16i	*Dismodicus*	*elevatus*	,,	I–I–I–I/0–0–0–0	1.8–2.6	As Pl. 170
13d	16j	*Hypomma*	*bituberculatum*	,,	,,	2.25–3.0	Pl. 171
7c	9f	*Walckenaeria*	*kochi*	0.7–0.79	2–2–I–I	2.2–3.6	As Pl. 162
7d	9g		*acuminata*	,,	,,	2.8–4.0	Pl. 160
12e	–	*Tmeticus*	*affinis*	,,	2–2–I–I/0–0–I–I	2.5–3.0	Pl. 168
13a	–	*Gongylidium*	*rufipes*	,,	2–2–I–I	2.5–3.7	Pl. 169; ♂ head darker
15d	17h	*Baryphyma*	*trifrons*	,,	,,	1.7–2.1	As Pl. 174
15e	17i		*maritimum*	,,	,,	1.7–2.6	Pl. 174
22b	21e,f,g	*Oedothorax*	*gibbosus*	,,	,,	2.0–3.2	Pl. 179
22d	23b		*agrestis*	,,	,,	2.0–2.9	As Pl. 179
13b	16h	*Dismodicus*	*bifrons*	,,	I–I–I–I/0–0–0–0	1.75–2.5	Pl. 170
13c	16i		*elevatus*	,,	,,	1.8–2.6	As Pl. 170
13d	16j	*Hypomma*	*bituberculatum*	,,	,,	2.25–3.0	Pl. 171
14a	17a		*fulvum*	,,	,,	2.4–3.0	As Pl. 171
14c	17c	*Metopobactrus*	*prominulus*	,,	I–I–I–I	1.4–2.0	Pl. 172
14d	17d	*Hybocoptus*	*decollatus*	,,	,,	1.5–1.9	Pl. 173a
19c	18c	*Gonatium*	*paradoxum*	,,	,,	1.9–2.2	As Pl. 175 but smaller and not reddish
24b	23f	*Trichopterna*	*cito*	,,	I–I–I–I/0–0–0–0	1.3–1.9	As Pl. 178 but abdomen and legs darker
13b	16h	*Dismodicus*	*bifrons*	0.8–0.95	I–I–I–I/0–0–0–0	1.75–2.5	Pl. 170
13d	16j	*Hypomma*	*bituberculatum*	,,	,,	2.25–3.0	Pl. 171
14a	17a		*fulvum*	,,	,,	2.4–3.0	As Pl. 171
14c	17c	*Metopobactrus*	*prominulus*	,,	I–I–I–I	1.4–2.0	Pl. 172
14d	17d	*Hybocoptus*	*decollatus*	,,	,,	1.5–1.9	Pl. 173a
19a	18a	*Gonatium*	*rubens*	,,	,,	2.5–3.2	Pl. 175; reddish
19b	18b		*rubellum*	,,	,,	2.5–3.4	As Pl. 175; reddish
19c	18c		*paradoxum*	,,	,,	1.9–2.2	As Pl. 175 but smaller and not reddish
20a	–	*Maso*	*sundevalli*	,,	,,	1.3–1.8	Pl. 176
20c	21a	*Peponocranium*	*ludicrum*	,,	I–I–I–I/0–0–I–I	1.5–2.2	Pl. 177
20d	21b	*Pocadicnemis*	*pumila*	,,	I–I–I–I	1.7–2.2	Pl. 178
20e	21d		*juncea*	,,	,,	1.7–2.2	As Pl. 178
22a	21c	*Hypselistes*	*jacksoni*	,,	,,	1.6–2.2	Pl. 183a
24a	23e	*Trichopterna*	*thorelli*	,,	I–I–I–I/0–0–0–0	1.9–2.5	As Pl. 178 but abdomen and legs darker
24b	23f		*cito*	,,	,,	1.3–1.9	As Pl. 178 but abdomen and legs darker
15a	17e	*Baryphyma*	*pratense*	,,	2–2–I–I	2.25–3.0	Pl. 173b
15b	17f		*duffeyi*	,,	,,	2.2–3.0	Pl. 173d
15c	17g		*gowerense*	,,	,,	2.6–3.3	Pl. 173c
15d	17h		*trifrons*	,,	,,	1.7–2.1	As Pl. 174
15e	17i		*maritimum*	,,	,,	1.7–2.6	Pl. 174

TABLE B (**TmIV absent**)

♀♂ genitalia (Text Figs)	♂ carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
67d	–	*Sintula*	*cornigera*	0.23–0.25	2–2–1–1	1.4–1.8	Pl. 219b
28b	27g	*Cnephalocotes*	*obscurus*	0.26–0.39	1–1–1–1	1.5–1.9	Pl. 184
28c	27h	*Acartauchenius*	*scurrilis*	,,	,,	1.5–2.0	Pl. 183c
28d	–	*Trichoncus*	*saxicola*	,,	,,	1.6–2.1	Pl. 185
28e	–		*hackmani*	,,	,,	1.8–2.4	As Pl. 185
28f	–		*affinis*	,,	,,	1.7–2.0	As Pl. 185 but tibiae not dark
29a	–	*Ceratinopsis*	*romana*	,,	,,	1.5–2.1	As Pl. 183d
33e	38e	*Lophomma*	*punctatum*	,,	2–2–1–1	1.8–2.6	Pl. 193
33f	38f	*Saloca*	*diceros*	,,	,,	1.0–1.3	Pl. 194b
34a	–	*Gongylidiellum*	*vivum*	,,	,,	1.2–1.9	As Pl. 195
34b	–		*murcidum*	,,	,,	1.2–1.7	As Pl. 195
34c	–		*latebricola*	,,	,,	1.3–1.9	Pl. 195
34d	38g	*Micrargus*	*herbigradus*	,,	,,	1.5–1.9	Pl. 196
34e	38h		*apertus*	,,	,,	1.6–2.2	As Pl. 196
35a	38i		*subaequalis*	,,	,,	1.5–2.0	As Pl. 196
35b	38j		*laudatus*	,,	,,	1.6–2.0	As Pl. 196
36b	39e	*Erigonella*	*ignobilis*	,,	,,	1.2–1.6	As Pl. 197
37a	39i	*Diplocephalus*	*latifrons*	,,	2–2–1–1/0–0–1–1	1.5–2.0	Pl. 199
40a	41b	*Araeoncus*	*humilis*	,,	2–2–1–1/1–1–1–1	1.4–1.8	Pl. 200c
40c	41d	*Panamomops*	*sulcifrons*	,,	2–2–1–1	1.2–1.5	Pl. 200d
53d	–	*Carorita*	*limnaea*	,,	,,	1.1–1.3	As Pl. 219a
53e	–		*paludosa*	,,	,,	1.35–1.6	As Pl. 219a
54a	–	*Wiehlea*	*calcarifera*	,,	,,	1.0–1.3	Pl. 194a
54b	–	*Mioxena*	*blanda*	,,	,,	1.4–1.9	Pl. 190d
54c	–	*Caviphantes*	*saxetorum*	,,	,,	1.3–1.7	As Pl. 194a
54e	–	*Jacksonella*	*falconeri*	,,	,,	0.95–1.2	Pl. 194c
40d	–	*Lessertia*	*dentichelis*	,,	2–2–2–1	2.6–3.5	Pl. 201a
42c	–	*Milleriana*	*inerrans*	,,	,,	1.4–2.5	Pl. 202a
43c,46a	–	*Erigone*	*atra*	,,	,,	1.8–2.8	As Pls 202c, 203
44e,48c	–		*aletris*	,,	,,	1.7–2.2	As Pls 202c, 203
54d,h	–	*Asthenargus*	*paganus*	,,	,,	1.25–1.8	Pl. 194d
54f,g	–	*Pseudomaro*	*aenigmaticus*	,,	,,	1.4–1.6	As Pl. 190d
28b	27g	*Cnephalocotes*	*obscurus*	0.49–0.49	1–1–1–1	1.5–1.9	Pl. 184
28c	27h	*Acartauchenius*	*scurrilis*	,,	,,	1.5–2.0	Pl. 183c
28d	–	*Trichoncus*	*saxicola*	,,	,,	1.6–2.1	Pl. 185
28e	–		*hackmani*	,,	,,	1.8–2.4	As Pl. 185
28f	–		*affinis*	,,	,,	1.7–2.0	As Pl. 185 but tibiae not dark
29a	–	*Ceratinopsis*	*romana*	,,	,,	1.5–2.1	As Pl. 183d
30a	31a,b	*Troxochrus*	*scabriculus*	,,	,,	1.7–2.0	Pl. 187
30b	27j	*Minyriolus*	*pusillus*	,,	,,	1.1–1.35	Pl. 188
30c	31c	*Tapinocyba*	*praecox*	,,	,,	1.1–1.8	As Pl. 189
30d	31d		*pallens*	,,	,,	1.5–1.7	Pl. 189
30f	31f		*mitis*	,,	,,	1.3–1.5	As Pl. 189
32a	31g	*Tapinocyboides*	*pygmaeus*	,,	,,	1.1–1.4	As Pl. 189
32b	31h	*Microctenonyx*	*subitaneus*	,,	,,	1.2–1.9	Pl. 190b
11c	16c	*Entelecara*	*flavipes*	,,	2–2–1–1	1.5–1.8	As Pl. 164; legs paler
11f	16f		*omissa*	,,	,,	1.25–1.7	As Pl. 164; legs paler
33f	38f	*Saloca*	*diceros*	,,	,,	1.0–1.3	Pl. 194b
34c	–	*Gongylidiellum*	*latebricola*	,,	,,	1.3–1.9	Pl. 195
34d	38g	*Micrargus*	*herbigradus*	,,	,,	1.5–1.9	Pl. 196
34e	38h		*apertus*	,,	,,	1.6–2.2	As Pl. 196
35a	38i		*subaequalis*	,,	,,	1.5–2.0	As Pl. 196
35b	38j		*laudatus*	,,	,,	1.6–2.0	As Pl. 196
35d	39b	*Glyphesis*	*cottonae*	,,	2–2–1–1/2–2–2–1	1.0–1.2	As Pl. 200b
35e	39c		*servulus*	,,	,,	1.0–1.2	Pl. 200b
36a	39d	*Erigonella*	*hiemalis*	,,	2–2–1–1	1.4–1.8	Pl. 197
36b	39e		*ignobilis*	,,	,,	1.2–1.6	As Pl. 197
36c	39f	*Savignya*	*frontata*	,,	,,	1.5–1.9	Pl. 198
36d	39g	*Diplocephalus*	*cristatus*	,,	2–2–1–1/0–0–1–1	1.7–2.5	As Pls 198, 199
36e	39h		*permixtus*	,,	,,	1.5–1.9	As Pl. 199
37a	39i		*latifrons*	,,	,,	1.5–2.0	Pl. 199
37b	39k,l		*connatus*	,,	,,	1.5–1.9	As Pl. 199
37c	39j		*picinus*	,,	,,	1.3–1.9	As Pl. 199
37d	41a		*protuberans*	,,	,,	1.9–2.5	As Pl. 199

(Table B continues on next page)

TABLE B (cont'd) (**TmIV absent**)

♀♂ genitalia (Text Figs)	♂ carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
40a	41b	*Araeoncus*	*humilis*	0.4–0.49	2–2–1–1/1–1–1–1	1.4–1.8	Pl. 200c
40b	41c		*crassiceps*	(cont'd)	,,	1.4–2.0	As Pl. 200c
40c	41d	*Panamomops*	*sulcifrons*	,,	2–2–1–1	1.2–1.5	Pl. 200d
54c	–	*Caviphantes*	*saxetorum*	,,	,,	1.3–1.7	As Pl. 194a
40d	–	*Lessertia*	*dentichelis*	,,	2–2–2–1	2.6–3.5	Pl. 201a
40e	–	*Scotinotylus*	*evansi*	,,	,,	1.75–2.3	Pl. 201b
42a	41e	*Typhochrestus*	*digitatus*	,,	,,	1.3–1.8	Pl. 201c
42b	41f		*simoni*	,,	,,	1.3–2.0	As Pl. 201c
42c	–	*Milleriana*	*inerrans*	,,	,,	1.4–2.5	Pl. 202a
42e,45a	–	*Erigone*	*vagans*	,,	,,	1.7–3.2	As Pls 202c, 203
43a,45b	–		*dentipalpis*	,,	,,	1.8–2.6	Pl. 203; ♀ as Pl. 202c
43b,45c	–		*promiscua*	,,	,,	1.8–2.6	As Pls 202c, 203
43c,46a	–		*atra*	,,	,,	1.8–2.8	As Pls 202c, 203
43d,46b	–		*arctica*	,,	,,	2.5–3.6	Pl. 202c; ♂ as Pl. 203
43e,47a	–		*longipalpis*	,,	,,	2.4–3.5	As Pls 202c, 203
44a,47b	–		*tirolensis*	,,	,,	2.1–2.8	As Pls 202c, 203
44b,47c	–		*capra*	,,	,,	1.8–2.8	As Pls 202c, 203
44c,48a	–		*welchi*	,,	,,	2.0–2.5	As Pls 202c, 203
44d,48b	–		*psychrophila*	,,	,,	2.0–3.1	As Pls 202c, 203
44e,48c	–		*aletris*	,,	,,	1.7–2.2	As Pls 202c, 203
49b	–	*Rhaebothorax*	*paetulus*	,,	2–2–2–1/2–2–2–0	1.9–2.1	As Pl. 202d
53b	–	*Halorates*	*distinctus*	,,	2–2–2–1	1.9–2.3	As Pl. 207a
54d,h	–	*Asthenargus*	*paganus*	,,	,,	1.25–1.8	Pl. 194d
54f,g	–	*Pseudomaro*	*aenigmaticus*	,,	,,	1.4–1.6	As Pl. 190d
24d	23h	*Pelecopsis*	*parallela*	0.5–0.59	1–1–1–1/0–0–0–0	1.25–2.0	♀ as Pl. 181; ♂ with dorsal abdominal scutum
25a	23i		*nemoralis*	,,	,,	1.4–2.1	♀ as Pl. 181; ♂ with dorsal abdominal scutum
28a	27f	*Mecopisthes*	*peusi*	,,	,,	1.2–1.6	Pl. 183b
29b	–	*Ceratinopsis*	*stativa*	,,	1–1–1–1	1.8–2.5	Pl. 183d
29c	27i	*Evansia*	*merens*	,,	,,	2.0–2.8	Pl. 190a
29d	–	*Tiso*	*vagans*	,,	,,	1.5–2.2	Pl. 186
29e	–		*aestivus*	,,	,,	1.5–1.9	As Pl. 186
30a	31a,b	*Troxochrus*	*scabriculus*	,,	,,	1.7–2.0	Pl. 187
30b	27j	*Minyriolus*	*pusillus*	,,	,,	1.1–1.35	Pl. 188
30c	31c	*Tapinocyba*	*praecox*	,,	,,	1.1–1.8	As Pl. 189
30d	31d		*pallens*	,,	,,	1.5–1.7	Pl. 189
30e	31e		*insecta*	,,	,,	1.4–1.7	As Pl. 189
30f	31f		*mitis*	,,	,,	1.3–1.5	As Pl. 189
32a	31g	*Tapinocyboides*	*pygmaeus*	,,	,,	1.1–1.4	As Pl. 189
32d	38a	*Thyreosthenius*	*parasiticus*	,,	,,	1.5–1.7	Pl. 191
33a,c	38c	*Monocephalus*	*fuscipes*	,,	1–1–1–1/0–0–1–1	1.7–2.2	Pl. 192
11c	16c	*Entelecara*	*flavipes*	,,	2–2–1–1	1.5–1.8	As Pl. 164; legs paler
11f	16f		*omissa*	,,	,,	1.25–1.7	As Pl. 164; legs paler
35c	39a	*Notioscopus*	*sarcinatus*	,,	,,	1.7–2.3	Pl. 200a
35d	39b	*Glyphesis*	*cottonae*	,,	2–2–1–1/2–2–2–1	1.0–1.2	As Pl. 200b
35e	39c		*servulus*	,,	,,	1.0–1.2	Pl. 200b
36a	39d	*Erigonella*	*hiemalis*	,,	2–2–1–1	1.4–1.8	Pl. 197
36c	39f	*Savignya*	*frontata*	,,	,,	1.5–1.9	Pl. 198
36d	39g	*Diplocephalus*	*cristatus*	,,	2–2–1–1/0–0–1–1	1.7–2.5	As Pls 198, 199
36e	39h		*permixtus*	,,	,,	1.5–1.9	As Pl. 199
37b	39k,l		*connatus*	,,	,,	1.5–1.9	As Pl. 199
37d	41a		*protuberans*	,,	,,	1.9–2.5	As Pl. 199
40e	–	*Scotinotylus*	*evansi*	,,	2–2–2–1	1.75–2.3	Pl. 201b
42b	41f	*Typhochrestus*	*simoni*	,,	,,	1.3–2.0	As Pl. 201c
42d	–	*Diplocentria*	*bidentata*	,,	,,	1.7–2.2	Pl. 202b
43a,45b	–	*Erigone*	*dentipalpis*	,,	,,	1.8–2.6	Pl. 203; ♀ as Pl. 202c
43b,45c	–		*promiscua*	,,	,,	1.8–2.6	As Pls 202c, 203
43d,46b	–		*arctica*	,,	,,	2.5–3.6	Pl. 202c; ♂ as Pl. 203
43e,47a	–		*longipalpis*	,,	,,	2.4–3.5	As Pls 202c, 203
44a,47b	–		*tirolensis*	,,	,,	2.1–2.8	As Pls 202c, 203
44d,48b	–		*psychrophila*	,,	,,	2.0–3.1	As Pls 202c, 203
49b	–	*Rhaebothorax*	*paetulus*	,,	2–2–2–1/2–2–2–0	1.9–2.1	As Pl. 202d
49c	–	*Latithorax*	*faustus*	,,	2–2–2–1	1.5–1.9	Pl. 205a
49d	–	*Semljicola*	*caliginosa*	,,	,,	1.6–2.0	As Pl. 205a
53c	–	*Halorates*	*holmgreni*	,,	,,	1.9–2.5	Pl. 201d

(Table B continues on next page)

TABLE B (cont'd) (**TmIV absent**)

♀♂ genitalia (Text Figs)	♂ carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
24d	23h	*Pelecopsis*	*parallela*	0.6–0.69	1–1–1–1/0–0–0–0	1.25–2.0	♀ as Pl. 181; ♂ with dorsal abdominal scutum
25a	23i		*nemoralis*	,,	,,	1.4–2.1	♀ as Pl. 181; ♂ with dorsal abdominal scutum
25b	23j		*elongata*	,,	,,	1.4–2.5	♀ as Pl. 181; ♂ with dorsal abdominal scutum
25c	27a		*radicicola*	,,	,,	1.3–1.6	♀♂ with dorsal abdominal scutum
26b	27c	*Silometopus*	*ambiguus*	,,	,,	1.3–2.2	As Pl. 182
26c	27d		*incurvatus*	,,	,,	1.3–1.7	As Pl. 182
26d	27e		*reussi*	,,	,,	1.3–2.0	As Pl. 182
28a	27f	*Mecopisthes*	*peusi*	,,	,,	1.2–1.6	Pl. 183b
14b	17b	*Hypomma*	*cornutum*	,,	,,	1.9–2.9	As Pl. 171; carapace darker
29b	–	*Ceratinopsis*	*stativa*	,,	1–1–1–1	1.8–2.5	Pl. 183d
32c	31i	*Satilatlas*	*britteni*	,,	,,	1.6–2.2	Pl. 190c
32d	38a	*Thyreosthenius*	*parasiticus*	,,	,,	1.5–1.7	Pl. 191
32e	38b		*biovatus*	,,	,,	1.6–2.1	As Pl. 191 but eyes smaller
33a,c	38c	*Monocephalus*	*fuscipes*	,,	1–1–1–1/0–0–1–1	1.7–2.2	Pl. 192
33b,d	38d		*castaneipes*	,,	,,	1.7–2.2	As Pl. 192
35c	39a	*Notioscopus*	*sarcinatus*	,,	2–2–1–1	1.7–2.3	Pl. 200a
49a	–	*Rhaebothorax*	*morulus*	,,	2–2–2–1/2–2–2–0	1.6–2.0	Pl. 202d
49c	–	*Latithorax*	*faustus*	,,	2–2–2–1	1.5–1.9	Pl. 205a
49d	–	*Semljicola*	*caliginosa*	,,	,,	1.6–2.0	As Pl. 205a
53c	–	*Halorates*	*holmgreni*	,,	,,	1.9–2.5	Pl. 201d
25c	27a	*Pelecopsis*	*radicicola*	0.7–0.80	1–1–1–1/0–0–0–0	1.3–1.6	♀♂ with dorsal abdominal scutum
26a	27b	*Silometopus*	*elegans*	,,	,,	1.0–1.6	Pl. 182
26b	27c		*ambiguus*	,,	,,	1.3–2.2	As Pl. 182
26c	27d		*incurvatus*	,,	,,	1.3–1.7	As Pl. 182
26d	27e		*reussi*	,,	,,	1.3–2.0	As Pl. 182
14b	17b	*Hypomma*	*cornutum*	,,	,,	1.9–2.9	As Pl. 171; carapace darker
32e	38b	*Thyreosthenius*	*biovatus*	,,	1–1–1–1	1.6–2.1	As Pl. 191 but eyes smaller
33b,d	38d	*Monocephalus*	*castaneipes*	,,	1–1–1–1/0–0–1–1	1.7–2.2	As Pl. 192
49a	–	*Rhaebothorax*	*morulus*	,,	2–2–2–1/2–2–2–0	1.6–2.0	Pl. 202d
24c	23g	*Pelecopsis*	*mengei*	0.81–0.88	1–1–1–1/0–0–0–0	1.8–2.3	Pl. 181; ♂ with dorsal abdominal scutum
14b	17b	*Hypomma*	*cornutum*	,,	,,	1.9–2.9	As Pl. 171; carapace darker
20b	–	*Maso*	*gallicus*	0.9–0.95	1–1–1–1	1.3–2.0	As Pl. 176

TABLE C (**TmIV present**)

♀♂ Genitalia (Text Figs)	♂ Carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
73c,74b	–	*Stemonyphantes*	*lineatus*	0.25–0.35	2–2–2–2	4.0–6.4	Pl. 225
50a	–	*Leptorhoptrum*	*robustum*	0.5–0.59	2–2–2–2	3.0–4.8	Pl. 204
51a	52a	*Hilaira*	*excisa*	,,	,,	2.25–3.9	Pl. 206
51a	52a	*Hilaria*	*excisa*	0.6–0.07	2–2–2–2	2.25–3.9	Pl. 206
51b	52c		*frigida*	,,	,,	2.7–4.0	As Pl. 206
51c	52d		*nubigena*	,,	,,	3.0–5.3	As Pl. 206
51d	52b		*pervicax*	,,	,,	2.5–3.3	As Pl. 206
53a	–	*Halorates*	*reprobus*	,,	,,	2.5–4.0	Pl. 207a
60e	–	*Agyneta*	*conigera*	,,	,,	1.8–2.2	Pl. 210
62e	–	*Microneta*	*viaria*	,,	,,	2.5–3.0	Pl. 213
82a	–	*Helophora*	*insignis*	,,	,,	3.0–4.0	Pl. 230
87b,d	–	*Allomengea*	*vidua*	,,	,,	3.0–5.0	As Pl. 237
51c	52d	*Hilaira*	*nubigena*	0.71–0.8	2–2–2–2	3.0–5.3	As Pl. 206
51d	52b		*pervicax*	,,	,,	2.5–3.3	As Pl. 206

(Table C continues on next page)

TABLE C (cont'd) (**TmIV present**)

♀♂ Genitalia (Text Figs)	♂ Carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
60a	–	*Agyneta*	*subtilis*	0.71–0.8	2–2–2–2	2.0–2.5	Pl. 209; ♀ palp swollen
60e	–		*conigera*	(cont'd)	,,	1.8–2.2	Pl. 210
71d	–	*Poeciloneta*	*globosa*	,,	,,	1.75–2.6	Pl. 220
82a	–	*Helophora*	*insignis*	,,	,,	3.0–4.0	Pl. 230
87a,c	–	*Allomengea*	*scopigera*	,,	,,	4.0–5.5	Pl. 237
87b,d	–		*vidua*	,,	,,	3.0–5.0	As Pl. 237
49e	–	*Donacochara*	*speciosa*	0.81–0.9	2–2–2–2	3.5–5.0	Pl. 205b
50c	50d	*Leptothrix*	*hardyi*	,,	,,	2.0–4.8	Pl. 205d
60a	–	*Agyneta*	*subtilis*	,,	,,	2.0–2.5	Pl. 209; ♀ palp swollen
60b	–		*decora*	,,	,,	1.8–2.5	As Pl. 209; ♀ palp swollen
60c	–		*cauta*	,,	,,	1.8–2.6	As Pl. 209; ♀ palp swollen
60d	–		*olivacea*	,,	,,	1.8–2.4	As Pl. 209, but ♀ palp less swollen
61a	–		*ramosa*	,,	,,	2.0–2.5	As Pl. 210
60c	–	*Agyneta*	*cauta*	0.91–0.98	2–2–2–2	1.8–2.6	As Pl. 209; ♀ palp swollen
60d	–		*olivacea*	,,	,,	1.8–2.4	As Pl. 209 but ♀ palp less swollen
71e	–	*Drapetisca*	*socialis*	,,	,,	3.2–4.0	Pl. 221

TABLE D (**TmIV absent**)

♀♂ Genitalia (Text Figs)	♂ Carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
70a	–	*Bathyphantes*	*approximatus*	0.12–0.20	2–2–2–2	2.0–3.0	Pl. 218
70d	–		*nigrinus*	,,	,,	2.4–2.8	As Pl. 218; may or may not have abdominal pattern
71a	–	*Kaestneria*	*dorsalis*	,,	,,	2.1–3.0	As Pl. 218; may or may not have abdominal pattern
71b	–		*pullata*	,,	,,	1.9–2.5	As Pl. 218; may or may not have abdominal pattern
72b	72c	*Floronia*	*bucculenta*	,,	,,	4.0–5.0	Pl. 223
73a	–	*Taranucnus*	*setosus*	,,	,,	2.5–3.4	Pl. 219; ♀ pattern sometimes as Pl. 229g
75a,c	76a	*Bolyphantes*	*luteolus*	,,	,,	3.0–4.0	Pl. 226
75b,d	76b		*alticeps*	,,	,,	3.0–4.5	As Pl. 226
77a	–	*Lepthyphantes*	*nebulosus*	,,	,,	3.4–4.6	Pl. 227
77b	–		*leprosus*	,,	,,	2.5–4.0	Pl. 229a,b
77c	–		*minutus*	,,	,,	3.0–4.0	Pl. 228
77d	–		*alacris*	,,	,,	2.4–3.3	Pl. 229c
78c	–		*tenuis*	,,	,,	2.0–3.2	Pl. 229h
78d	–		*zimmermanni*	,,	,,	2.0–3.2	Pl. 229g
78e	–		*cristatus*	,,	,,	2.0–2.8	Pl. 229e
79a	–		*mengei*	,,	,,	1.5–2.2	Pl. 229f
79b	–		*flavipes*	,,	,,	1.8–2.5	Pl. 229i
79c	–		*tenebricola*	,,	,,	2.4–3.0	As Pl. 229g
79d	–		*ericaeus*	,,	,,	1.3–1.9	Pl. 229j; no abdominal pattern
79e	–		*pallidus*	,,	,,	1.6–2.3	As Pl. 229j; no pattern
80b	–		*insignis*	,,	,,	1.6–2.5	As Pl. 229j; no pattern
80c	–		*angulatus*	,,	,,	1.8–2.3	As Pl. 229j; no pattern
80d	–		*antroniensis*	,,	,,	1.5–1.8	As Pl. 229j; no pattern
80e	–		*complicatus*	,,	,,	1.7–2.2	As Pl. 229j; no pattern
81b	–		*midas*	,,	,,	2.3–2.8	Plate A, p. 156, (Vol. 2)
82b	–	*Pityohyphantes*	*phrygianus*	,,	,,	4.0–6.0	Pl. 231
83a,84a	–	*Linyphia*	*triangularis*	,,	,,	4.6–6.6	Pl. 232a, 233
83b,84b	–		*hortensis*	,,	,,	3.0–5.0	Pl. 234
85a	–	*Neriene*	*clathrata*	,,	,,	3.4–5.0	As Pl. 232c
85b	–		*peltata*	,,	,,	2.2–3.7	Pl. 235
85c	–		*furtiva*	,,	,,	3.0–4.5	As Pl. 232c
86a	–		*radiata*	,,	,,	3.5–6.5	As Pl. 235 but pattern very distinct black and white
86b	–	*Microlinyphia*	*pusilla*	,,	,,	3.0–5.0	Pl. 232d, 236
86c	–		*impigra*	,,	,,	3.5–5.4	As Pl. 232d, 236; ♂ abdomen lacks white patches

(Table D continues on next page)

TABLE D (cont'd) (**TmIV absent**)

♀♂ Genitalia (Text Figs)	♂ Carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
61b	–	*Meioneta*	*innotabilis*	0.21–0.29	2–2–2–2	1.7–2.25	Pl. 211
61c	–		*rurestris*	,,	,,	1.6–2.4	Pl. 212
61d	–		*gulosa*	,,	,,	1.6–2.2	As Pl. 212
61e	–		*nigripes*	,,	,,	1.6–2.2	Very dark spider; eyes large as in Pl. 211
62a	–		*beata*	,,	,,	1.5–2.1	As Pl. 212
62b	–		*mollis*	,,	,,	1.2–2.0	As Pl. 212 but ♀ palp not dark
62c	–		*saxatilis*	,,	,,	1.6–2.2	As Pl. 212 but ♀ palp not dark
62d	–		*simplicitarsis*	,,	,,	1.5–2.0	As Pl. 212 but ♀ palp not dark
64b	–	*Centromerus*	*serratus*	,,	2–2–2–1	1.25–1.8	As Pl. 214
64c	–		*albidus*	,,	,,	1.2–1.5	As Pl. 214
64d	–		*cavernarum*	,,	,,	1.3–1.8	As Pl. 214
67d	–	*Sintula*	*cornigera*	,,	2–2–1–1	1.4–1.8	Pl. 219b
70a	–	*Bathyphantes*	*approximatus*	,,	2–2–2–2	2.0–3.0	Pl. 218
70b	–		*gracilis*	,,	,,	1.5–2.5	As Pl. 218; may or may not have abdominal pattern
70c	–		*parvulus*	,,	,,	1.6–2.5	As Pl. 218, but abdomen uniform grey with no pattern
70d	–		*nigrinus*	,,	,,	2.4–2.8	As Pl. 218; may or may not have abdominal pattern
70e	–		*setiger*	,,	,,	1.7–2.2	As Pl. 218; may or may not have abdominal pattern
71a	–	*Kaestneria*	*dorsalis*	,,	,,	2.1–3.0	As Pl. 218; may or may not have abdominal pattern
71b	–		*pullata*	,,	,,	1.9–2.5	As Pl. 218; may or may not have abdominal pattern
71c	–	*Diplostyla*	*concolor*	,,	,,	2.2–3.0	Pl. 219c
72a	–	*Tapinopa*	*longidens*	,,	,,	2.5–4.5	Pl. 222
72b	72c	*Floronia*	*bucculenta*	,,	,,	4.0–5.0	Pl. 223
73a	–	*Taranucnus*	*setosus*	,,	,,	2.5–3.4	Pl. 219; ♀ pattern sometimes as Pl. 229g
73b,74a	–	*Labulla*	*thoracica*	,,	,,	3.4–6.4	Pls 224, 232b
77b	–	*Lepthyphantes*	*leprosus*	,,	,,	2.5–4.0	Pl. 229a,b
77c	–		*minutus*	,,	,,	3.0–4.0	Pl. 228
77d	–		*alacris*	,,	,,	2.4–3.3	Pl. 229c
78a	–		*whymperi*	,,	,,	2.5–3.2	As Pl. 229j; no pattern
78c	–		*tenuis*	,,	,,	2.0–3.2	Pl. 229h
78d	–		*zimmermanni*	,,	,,	2.0–3.2	Pl. 229g
78e	–		*cristatus*	,,	,,	2.0–2.8	Pl. 229e
79a	–		*mengei*	,,	,,	1.5–2.2	Pl. 229f
79b	–		*flavipes*	,,	,,	1.8–2.5	Pl. 229i
79c	–		*tenebricola*	,,	,,	2.4–3.0	As Pl. 229g
80a	–		*pinicola*	,,	,,	1.9–2.2	As Pl. 229j; no pattern
80c	–		*angulatus*	,,	,,	1.8–2.3	As Pl. 229j; no pattern
80d	–		*antroniensis*	,,	,,	1.5–1.8	As Pl. 229j; no pattern
80e	–		*complicatus*	,,	,,	1.7–2.2	As Pl. 229j; no pattern
81a	–		*expunctus*	,,	,,	1.8–2.5	As Pl. 226; abdomen whitish
81b	–		*midas*	,,	,,	2.3–2.8	Plate A, p. 156 (Vol. **2**)
82b	–	*Pityohyphantes*	*phrygianus*	,,	,,	4.0–6.0	Pl. 231
83b,84b	–	*Linyphia*	*hortensis*	,,	,,	3.0–5.0	Pl. 234
83c,84c	–	*Neriene*	*montana*	,,	,,	4.0–7.4	Pl. 232c
85a	–		*clathrata*	,,	,,	3.4–5.0	As Pl. 232c
85b	–		*peltata*	,,	,,	2.2–3.7	Pl. 235
85c	–		*furtiva*	,,	,,	3.0–4.5	As Pl. 232c
86b	–	*Microlinyphia*	*pusilla*	,,	,,	3.0–5.0	As Pl. 232d, 236
86c	–		*impigra*	,,	,,	3.5–5.4	As Pl. 232d, 236; ♂ abdomen lacks white patches
55b	–	*Aphileta*	*misera*	0.3–0.39	2–2–2–2	1.7–2.5	Pl. 207c
56a,58a	–	*Porrhomma*	*pygmaeum*	,,	,,	1.6–2.45	Pl. 208
56c,58c	–		*pallidum*	,,	,,	1.6–2.2	As Pl. 208, but paler
56d,58d	–		*campbelli*	,,	,,	2.0–2.9	As Pl. 208
56e,58e	–		*microphthalmum*	,,	,,	1.6–2.2	As Pl. 208
57c,59c	–		*oblitum*	,,	,,	1.2–1.7	As Pl. 208
57d,59d	–		*montanum*	,,	,,	1.5–2.2	As Pl. 208
57b,e,59b	–		*egeria*	,,	,,	2.0–2.5	As Pl. 208 but paler and with much smaller eyes
61b	–	*Meioneta*	*innotabilis*	,,	,,	1.7–2.25	Pl. 211
61c	–		*rurestris*	,,	,,	1.6–2.4	Pl. 212

(Table D continues on next page)

TABLE D (cont'd) (**TmIV absent**)

♀♂ Genitalia (Text Figs)	♂ Carapace (Text Fig.)	Genera and species		TmI range	Tibial spines	Size (mm)	General appearance
63a	–	*Maro*	*minutus*	0.3–0.39	2–2–2–2	1.1–1.5	Pl. 219a
63d	–	*Syedra*	*gracilis*	(cont'd)	,,	1.2–1.5	Pl. 207d
64a	–	*Centromerus*	*sylvaticus*	,,	,,	2.2–4.0	Pl. 214
64b	–		*serratus*	,,	2–2–2–1	1.25–1.8	As Pl. 214
64c	–		*albidus*	,,	,,	1.2–1.5	As Pl. 214
64d	–		*cavernarum*	,,	,,	1.3–1.8	As Pl. 214
65a	–		*incilium*	,,	2–2–2–2	1.8–2.5	As Pl. 214
65b	–		*prudens*	,,	,,	2.2–2.5	As Pl. 214
65c	–		*aequalis*	,,	,,	1.5–1.8	As Pl. 214
65d	–		*arcanus*	,,	2–2–2–2/2–2–2–1	1.6–2.5	As Pl. 214
66b	–		*persimilis*	,,	2–2–2–1	1.25–1.4	As Pl. 214
66d	–		*dilutus*	,,	,,	1.2–1.5	As Pl. 214
66c	–		*levitarsis*	,,	2–2–2–2	1.6–1.9	As Pl. 214
66e	–		*capucinus*	,,	,,	1.7–2.8	As Pl. 214
67a	–	*Tallusia*	*experta*	,,	,,	2.5–3.6	As Pl. 214
68a	–	*Oreonetides*	*vaginatus*	,,	,,	3.0–3.8	As Pl. 216
68c	–	*Saaristoa*	*firma*	,,	,,	1.6–2.1	As Pl. 216
70b	–	*Bathyphantes*	*gracilis*	,,	,,	1.5–2.5	As Pl. 218; may or may not have abdominal pattern
70c	–		*parvulus*	,,	,,	1.6–2.5	As Pl. 218; abdomen uniformly grey with no pattern
70e	–		*setiger*	,,	,,	1.7–2.2	As Pl. 218; may or may not have abdominal pattern
72a	–	*Tapinopa*	*longidens*	,,	,,	2.5–4.5	Pl. 222
73b,74a	–	*Labulla*	*thoracica*	,,	,,	3.4–6.4	Pl. 224, 232b
81a	–	*Lepthyphantes*	*expunctus*	,,	,,	1.8–2.5	As Pl. 226; abdomen whitish
83c,84c	–	*Neriene*	*montana*	,,	,,	4.0–7.4	Pl. 232c
49b	–	*Rhaebothorax*	*paetulus*	0.4–0.49	2–2–2–2	1.9–2.1	As Pl. 202d
55a	–	*Ostearius*	*melanopygius*	,,	,,	2.0–2.6	Pl. 207b
55b	–	*Aphileta*	*misera*	,,	,,	1.7–2.5	Pl. 207c
56a,58a	–	*Porrhomma*	*pygmaeum*	,,	,,	1.6–2.45	Pl. 208
56b,58b	–		*convexum*	,,	,,	2.2–3.2	As Pl. 208
56c,58c	–		*pallidum*	,,	,,	1.6–2.2	As Pl. 208 but paler
56d,58d	–		*campbelli*	,,	,,	2.0–2.9	As Pl. 208
56e,58e	–		*microphthalmum*	,,	,,	1.6–2.2	As Pl. 208
57b,e,59b	–		*egeria*	,,	,,	2.0–2.5	As Pl. 208 but paler and with much smaller eyes
57c,59c	–		*oblitum*	,,	,,	1.2–1.7	As Pl. 208
57d,59d	–		*montanum*	,,	,,	1.5–2.2	As Pl. 208
63a	–	*Maro*	*minutus*	,,	,,	1.1–1.5	Pl. 219a
63b	–		*sublestus*	,,	,,	1.1–1.5	As Pl. 219a
63c	–		*lepidus*	,,	,,	1.1–1.4	As Pl. 219a
64a	–	*Centromerus*	*sylvaticus*	,,	,,	2.2–4.0	Pl. 214
65d	–		*arcanus*	,,	2–2–2–2/2–2–2–1	1.6–2.5	As Pl. 214
66a	–		*incultus*	,,	,,	1.5–1.8	As Pl. 214
66c	–		*levitarsis*	,,	2–2–2–2	1.6–1.9	As Pl. 214
66e	–		*capucinus*	,,	,,	1.7–2.8	As Pl. 214
67a	–	*Tallusia*	*experta*	,,	,,	2.5–3.6	As Pl. 214
67b	–	*Centromerita*	*bicolor*	,,	,,	3.0–3.5	Pl. 215
67c	–		*concinna*	,,	,,	2.0–3.0	As Pl. 215
68a	–	*Oreonetides*	*vaginatus*	,,	,,	3.0–3.8	As Pl. 216
68b	–	*Saaristoa*	*abnormis*	,,	,,	2.8–4.0	Pl. 216
68c	–		*firma*	,,	,,	1.6–2.1	As Pl. 216
69a,c	–	*Macrargus*	*rufus*	,,	,,	3.25–4.6	Pl. 217
69b,d	–		*carpenteri*	,,	,,	2.5–3.4	As Pl. 217
49b	–	*Rhaebothorax*	*paetulus*	0.5–0.64	2–2–2–2	1.9–2.1	As Pl. 202d
50b	–	*Drepanotylus*	*uncatus*	,,	,,	2.5–3.2	Pl. 205c
57a,59a	–	*Porrhomma*	*errans*	,,	,,	1.9–2.4	As Pl. 208 but paler
57f,59e	–		*rosenhaueri*	,,	,,	2.0–2.3	As Pl. 208 but very pale; eyes reduced and lacking pigment
67b	–	*Centromerita*	*bicolor*	,,	,,	3.0–3.5	Pl. 215
67c	–		*concinna*	,,	,,	2.0–3.0	As Pl. 215
69a,c	–	*Macrargus*	*rufus*	,,	,,	3.25–4.6	Pl. 217
69b,d	–		*carpenteri*	,,	,,	2.5–3.4	As Pl. 217
49a	–	*Rhaebothorax*	*morulus*	0.68–0.77	2–2–2–2	1.6–2.0	Pl. 202d
78b	–	*Lepthyphantes*	*obscurus*	0.83–0.86	2–2–2–2	1.8–2.4	Pl. 229d

Genus *Ceratinella* Emerton, 1882

TmI 0.4–0.44; TmIV present; tibial spines 1–1–1–1

The three British species in this genus have the abdomen furnished, in both sexes, with a dorsal scutum (except female of *C. brevipes*). In females, the abdomen is distinctly globular; this is less so in males, where the posterior end of the abdomen may protrude behind the scutum and appear slightly pointed. Legs short; tibial spines very short and difficult to distinguish from hairs. Male carapace very slightly domed in head region but without lobe or other modification.

Ceratinella brevipes (Westring, 1851)

Plate 158; Text Fig. 2a

Length: ♀: 1.6–1.8mm; ♂: 1.3–1.5mm. TmI 0.4–0.44

Carapace varies in colour from almost black to brown, with darker markings as illustrated for *C. scabrosa* (Plate 159). Female abdomen greenish or brownish grey with two pairs of distinct reddish sigilla, but without a scutum. Male has a slightly less globular abdomen, covered dorsally with a reddish brown to black scutum, and less distinct sigilla.

Ceratinella brevis (Wider, 1834)

Text Fig. 2b

Length: ♀: 1.8–2.2mm; ♂: 1.8–2mm. TmI 0.4–0.44

Female very similar to *C. scabrosa*, except that scutum tends to be smaller (about same size as carapace) and rather more orange-brown in colour. Males similar but with relatively smaller, less globular abdomen and larger scutum.

Ceratinella scabrosa (O. P.-Cambridge, 1871)

Plate 159; Text Fig. 2c

Length: ♀: 2–2.3mm; ♂: 1.8–2.0mm. TmI 0.4–0.44

Abdominal scutum usually rather dark in colour (as illustrated), larger than carapace and sometimes covering whole of dorsal surface of abdomen in both sexes.

DISTINGUISHING THE SPECIES

Female of *C. brevipes* readily distinguished by lack of abdominal scutum; this is helpful since the epigyne can be similar to that of *C. brevis*. In all three species the epigyne shows very considerable variation. There is a central depression bounded anteriorly by a thin ridge, and posteriorly and laterally by a thicker lip-like structure. In *C. scabrosa* the width of the lip is about three times the distance between the anterior ridge and the posterior edge of the epigyne; in the other species its width is only about twice this distance. Anteriorly, the epigyne of all three species projects a little and is darkened at the apex of this projection. In *C. brevipes* this dark area is relatively large and subtriangular; in *C. brevis* it is rather smaller; in *C. scabrosa* it is smaller and further away from the central depression. Males easily distinguished by their palps, which differ in size, and in the form of the tibial apophysis, paracymbium and palpal organs.

DISTRIBUTION

C. brevipes and *C. brevis* are widely distributed in moss, grass, leaf-litter and other detritus. *C. scabrosa* occurs in similar situations but is less common; although probably widely distributed throughout England, Wales and Ireland, it does not appear to extend into Scotland. Occasionally, *C. brevipes* and *C. scabrosa* may be collected together.

Genus *Walckenaeria* Blackwall, 1833

TmI 0.39–0.76; TmIV present; tibial spines 2–2–1–1

There are twenty-one British species now included in this genus. The males of most species have the head modified in the form of lobes or various projections (Text Figs 8, 9) and in *W. acuminata* even the female head region is elevated (Plate 160, centre). The male palpal organs are all of broadly similar structure (Text Figs 2d, 3–7). The female palp has a relatively long tibia which is widened distally. The sternum is longer than broad, and the abdomen oval or often slightly elongate and wider in its posterior half. Tibial spines rather thin in some species. The paired tarsal claws have several large teeth. The cheliceral stridulating ridges, although relatively few in number, are particularly well-defined.

TAXONOMIC NOTE

The spelling *Walckenaeria* was originally used by Blackwall in 1833, but he amended it to *Walckenaera* in 1840. According to the rules of the International Commission on Zoological Nomenclature, the original spelling must stand and this is used here. Some recent authors have considered the original spelling as a *lapsus* and continued to omit the '*i*'.

The genus *Walckenaeria* now also includes the old genera *Wideria*, *Trachynella*, *Prosopotheca*, *Cornicularia* and *Tigellinus*. *W. melanocephala* (O. P.-Cambridge) was synonymized with *W. atrotibialis* (O. P.-Cambridge) by Millidge (1983); the latter name has priority. The species here described as *Evansia merens* O. P.-Cambridge (p. 70) and *Moebelia penicillata* (Westring) (p. 42) almost certainly also belong in *Walckenaeria* but are left in their respective genera for the present time.

Walckenaeria dysderoides (Wider, 1834)

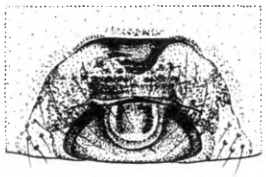
Text Fig. 2d,e

Length: ♀: 1.8–2.2mm; ♂: 1.7–1.9mm. TmI 0.39–0.42

Female similar in general appearance to *W. acuminata* (Plate 160) but eyes larger, occupying a larger area, and the slightly rugose carapace is not raised into a conical elevation; abdomen more elongate and paler grey than in *W. acuminata*. Male similar; head not raised into lobe or horn, but very slightly domed behind posterior median eyes (Text Fig. 2e) with sulci running back from between posterior median and lateral eyes; a minute tubercle, bearing a few hairs, is present between the median eyes. This rather elongate spider with its orange carapace and legs, grey abdomen and fairly large eyes arranged in a ring, bears a vague resemblance to *Dysdera* (Dysderidae).

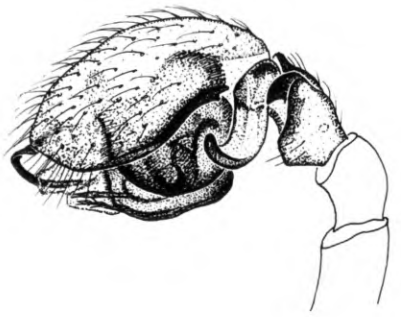
Text Figure 2

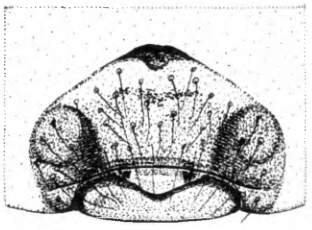
♀ **epigynes** ♂ **palps**



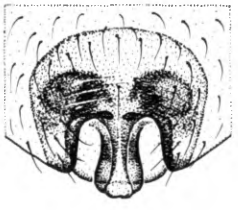
(**a**) *Ceratinella brevipes*

(**b**) *C. brevis*

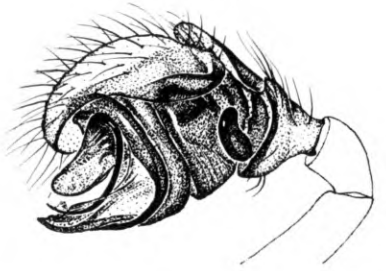




(**c**) *C. scabrosa*



(**d**) *Walckenaeria dysderoides*



(**e**) *W. dysderoides* ♂ **carapace** lateral view

Walckenaeria nudipalpis (Westring, 1851)
Text Fig. 3a
Length: ♀: 2.6–3.2mm; ♂: 2.5–3.2mm. TmI 0.47–0.54
Female similar to *W. acuminata* but eyes a little larger, occupying a slightly larger area and carapace not raised into conical elevation; abdomen generally more elongate than in *W. acuminata*; legs quite orange. Male similar, with carapace slightly raised in ocular region (a little less than in female of *W. acuminata*, and less conically).

Walckenaeria obtusa Blackwall, 1836
Text Fig. 3b
Length: ♀: 3–3.8mm; ♂: 3mm. TmI 0.45–0.5
Very similar in general appearance to *W. nudipalpis*; usually, but not always, a little larger.

Walckenaeria vigilax (Blackwall, 1853)
Text Fig. 3c
Length: ♀: 2–2.6mm; ♂: 2–2.2mm. TmI 0.5–0.53
Similar in general appearance to *W. nudipalpis* but smaller. Male head not noticeably elevated.

Walckenaeria stylifrons (O. P.-Cambridge, 1875)
Text Figs 3d,8e
Length: ♀: 1.6–2.2mm; ♂: 1.6–1.75mm. TmI 0.45–0.52
This small, slightly elongate, species has a brown carapace with slightly darker margins and a grey-black abdomen. Legs pale brownish, sometimes with patellae darkened distally. Whole of female palp often darker and suffused with grey. Eyes not raised in female. Male head elevated into a rather flattened lobe (Text Fig. 8e) on the front of which is a small projection carrying a small pair of 'horns' directed anterolaterally; sulci run back on each side from the posterior lateral eyes. Epigyne variable (Text Fig. 3d).

Walckenaeria antica (Wider, 1834)
Text Figs 4a,c, 8a
Length: ♀: 2–2.6mm; ♂: 1.75–2.3mm. TmI 0.5–0.55
Female similar to *W. acuminata*; eyes larger, occupying relatively larger area and not raised on conical protuberance; posterior row of eyes procurved (*cf. W. nodosa*); head very slightly domed behind eyes. Abdomen grey-black, slightly elongate. Tibiae of legs I and II usually darkened, sometimes blackish, in both sexes. Male head elevated into a lobe (Text Fig. 8a); anterior to this is a much smaller lobe or projection carrying a pair of 'horns' directed anterolaterally; behind each posterior lateral eye is a small depression with a sulcus running back from it.

Walckenaeria alticeps (Denis, 1952)
Text Figs 4b,d, 8c
Length: ♀: 2.4–2.8mm; ♂: 2.3–2.65mm. TmI 0.5–0.55
Very similar, in both sexes, to *W. antica* with which it has previously been confused.

Walckenaeria cucullata (C. L. Koch, 1836)
Text Figs 4e, 8b
Length: ♀: 2–2.7mm; ♂: 2–2.4mm. TmI *c.* 0.5
Female similar in general appearance to *W. acuminata*, but eyes relatively larger, occupying a larger area, and carapace not raised into conical elevation. Abdomen greyish and slightly elongated. Legs as in *W. acuminata*. Male head elevated into two lobes (Text Fig. 8b), one carrying the posterior median eyes and, anterior to this, a smaller one carrying the anterior median eyes and bearing a tuft of hairs; behind each posterior lateral eye is a small depression with a shallow sulcus running back from it.

Walckenaeria nodosa O. P.-Cambridge, 1873
Text Figs 4f, 8d
Length: ♀: 1.8–2.3mm; ♂: 1.5–2.2mm. TmI 0.44–0.5
Female similar to *W. acuminata*, but eyes larger, occupying larger area and not raised on conical protuberance; posterior row of eyes straight or slightly recurved (*cf. W. antica* and *W. alticeps*). Abdomen grey and slightly elongated. Legs as in *W. acuminata*. Male head elevated into single lobe carrying posterior median eyes (Text Fig. 8d).

Walckenaeria incisa (O. P.-Cambridge, 1871)
Text Figs 5a, 8f
Length: ♀: 2.75–3.25mm; ♂: 2.5–2.8mm. TmI 0.45–0.52
Female similar to *W. acuminata*, but eyes larger and occupying larger area; posterior row of eyes procurved; carapace slightly raised in and behind ocular area, but not forming a conical protuberance. Abdomen grey-black, slightly elongate; furnished with fairly long, fine hairs. Legs as in *W. acuminata*. Male similar in general appearance but head elevated into lobe carrying posterior median eyes (Text Fig. 8f); a shallow sulcus runs back from behind each posterior lateral eye and contains a small pit; clypeus projecting somewhat anteriorly.

Walckenaeria clavicornis (Emerton, 1882)
Text Figs 5b, 8g
Length: ♀: 2.5–2.75mm; ♂: 2.25–2.5mm. TmI 0.5–0.56
Female similar to *W. acuminata*, but eyes larger and occupying a larger area; posterior row of eyes procurved; carapace not elevated and usually fairly dark brown. Abdomen grey-black; fairly elongate. Legs coloured as *W. acuminata*. Male similar but carapace often darker and contrasting more with orange legs as in *W. cuspidata* (Plate 162); a small protuberance is present, in front of posterior median eyes, which is broader and slightly bifurcate distally (Text Fig. 8g) (*cf. W. unicornis* and *W. kochi*).

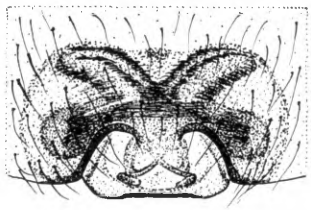
Walckenaeria mitrata (Menge, 1868)
Text Figs 5c, 8h
Length: ♀: 3–3.3mm; ♂: 2.5–3mm. TmI *c.* 0.55
Female very similar in general appearance to *W. acuminata*, with head slightly raised, but less conically so. Male similar but with head raised into a lobe carrying posterior median eyes (Text Fig. 8h). Genitalia very similar to those of *W. acuminata*.

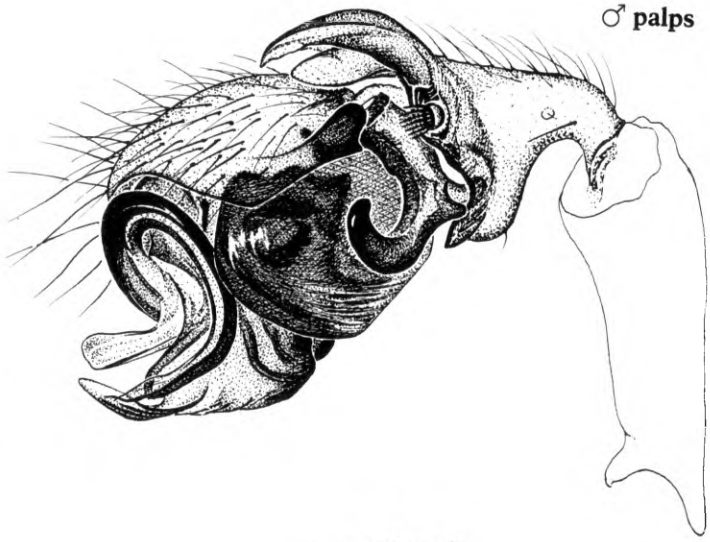
Walckenaeria cuspidata (Blackwall, 1833)
Plate 162; Text Figs 5d, 8i
Length: ♀: 2.5–2.9mm; ♂: 2.4–2.6mm. TmI 0.5–0.55
Carapace usually dark, contrasting with legs, as illustrated, but occasionally lighter. Abdomen sometimes appears more elongate. Male similar, with a small cusp-like projection just in front of the posterior median eyes, which bears a tuft of hairs (Text Fig. 8i).

Text Figure 3

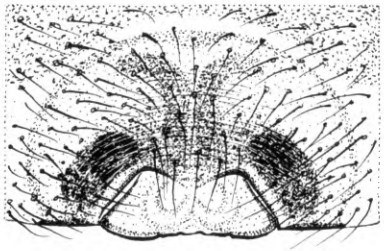
♀ epigynes

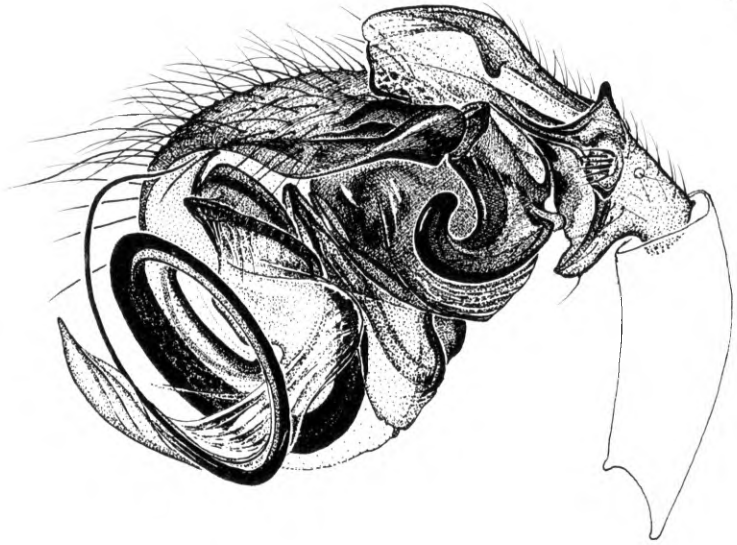
♂ palps



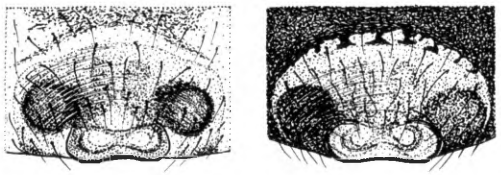


(a) *Walckenaeria nudipalpis*

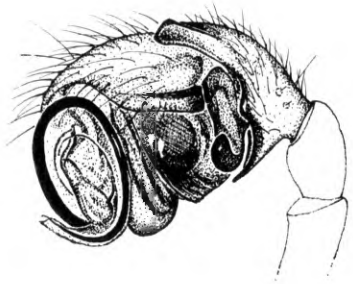


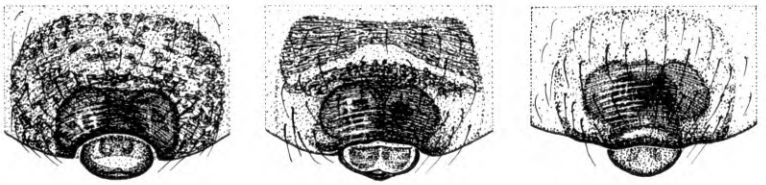


(b) *W. obtusa*

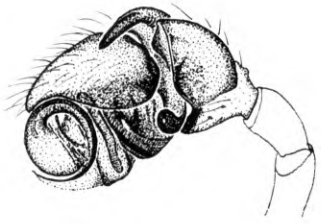


(c) *W. vigilax*

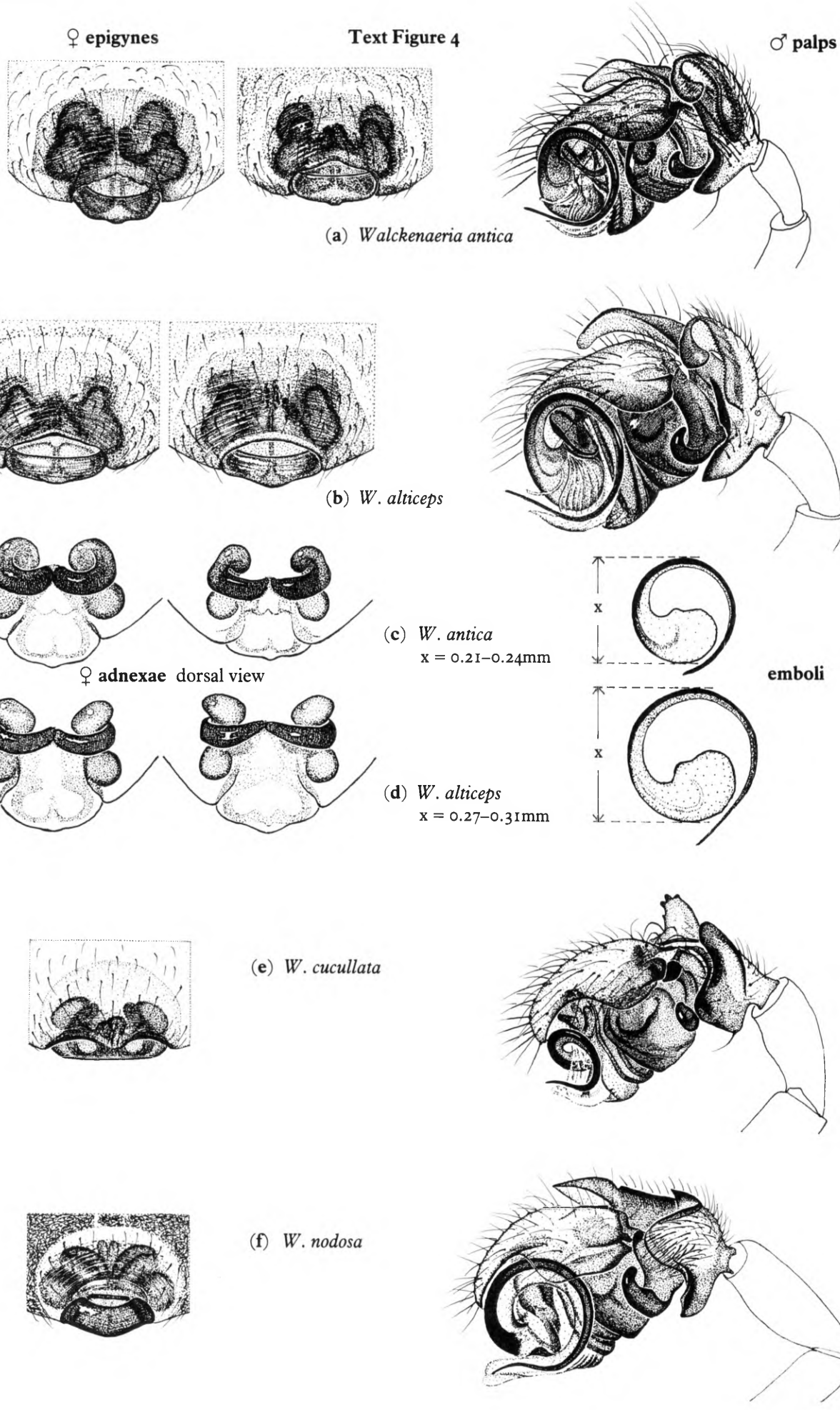




(d) *W. stylifrons*



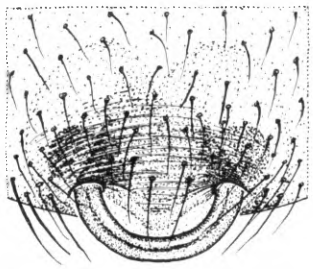
Text Figure 4



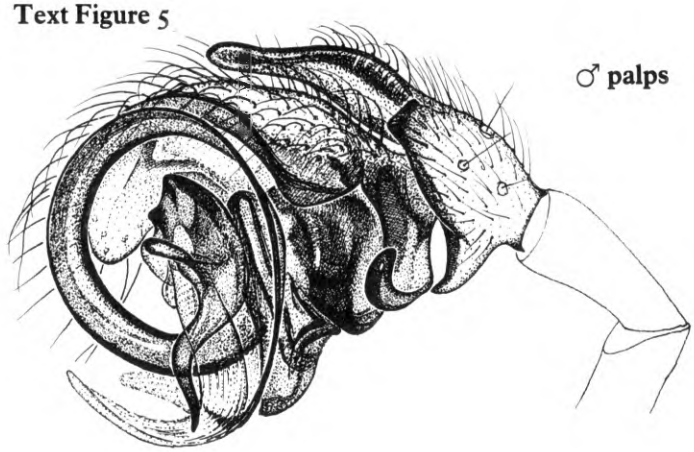
Text Figure 5

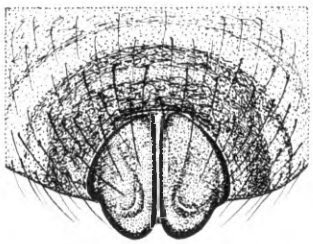
♀ epigynes

♂ palps

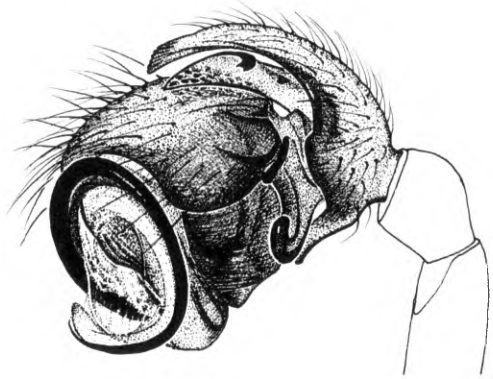


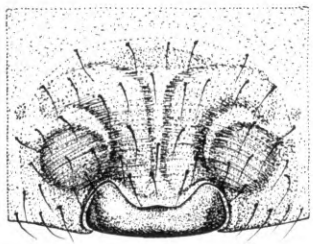
(a) *Walckenaeria incisa*



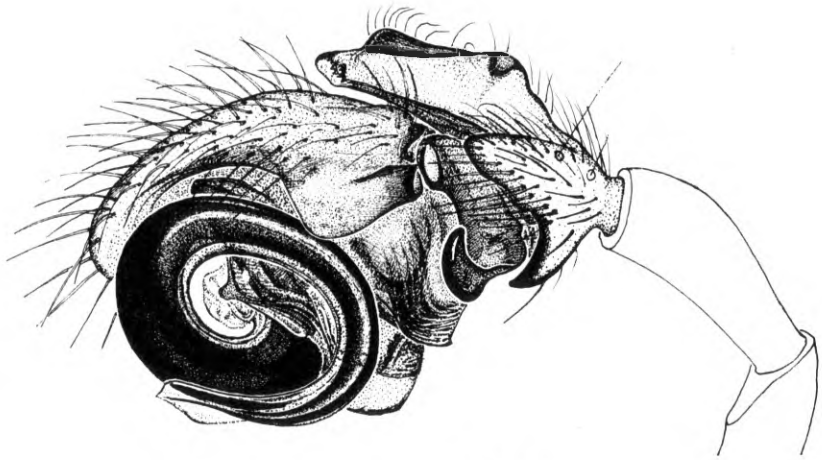


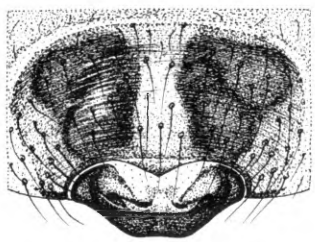
(b) *W. clavicornis*



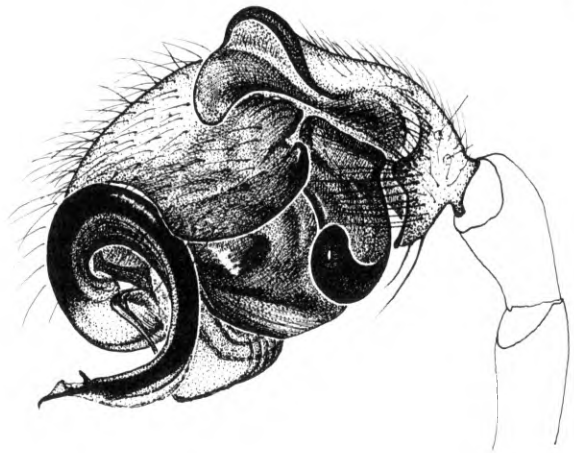


(c) *W. mitrata*





(d) *W. cuspidata*



Walckenaeria furcillata (Menge, 1869)
Text Figs 6a, 8j

Length: ♀: 2.5–3mm; ♂: 2.2–2.4mm. TmI 0.58–0.6

General appearance as *W. atrotibialis* (Pl. 161) but tibiae not darkened. Female carapace brown with head region a little darker. Eyes fairly widely spaced, with posterior medians about 1.5 diameters apart and 1 diameter from laterals; anterior medians only about 0.5 diameters apart. Abdomen grey-black, slightly elongate. Legs orange-brown. Male with a curious stalked lobe originating just in front of the fovea and directed anteriorly (Text Fig. 8j). This lobe broadens slightly near its midpoint where the posterior median eyes are situated; anterior to this it first narrows and then bifurcates, forming a structure which is distinctly Y-shaped when viewed dorsally, and carries a row of clavate hairs, directed backwards, along the lateral border of each arm. The carapace is also elevated above the anterior median eyes and bears tufts of hairs.

Walckenaeria atrotibialis (O. P.-Cambridge, 1878)
Plate 161; Text Figs 6b, 9a

Length: ♀: 2.2–2.8mm; ♂: 2–2.5mm. TmI 0.57–0.65

Carapace and legs often a little more orange than illustrated. The darkening of the head and of tibiae I and II is characteristic, but variable, and fades a little in spirit. Posterior row of eyes fairly equidistant (*cf. W. furcillata*). Male similar but with head elevated (Text Fig. 9a) and clypeus projecting somewhat anteriorly; a sulcus runs back from each posterior lateral eye and contains a small pit.

Walckenaeria capito (Westring, 1861)
Text Figs 6c, 9b

Length: ♀: 2.6–3.5mm; ♂: 2.6–3mm. TmI 0.6–0.65

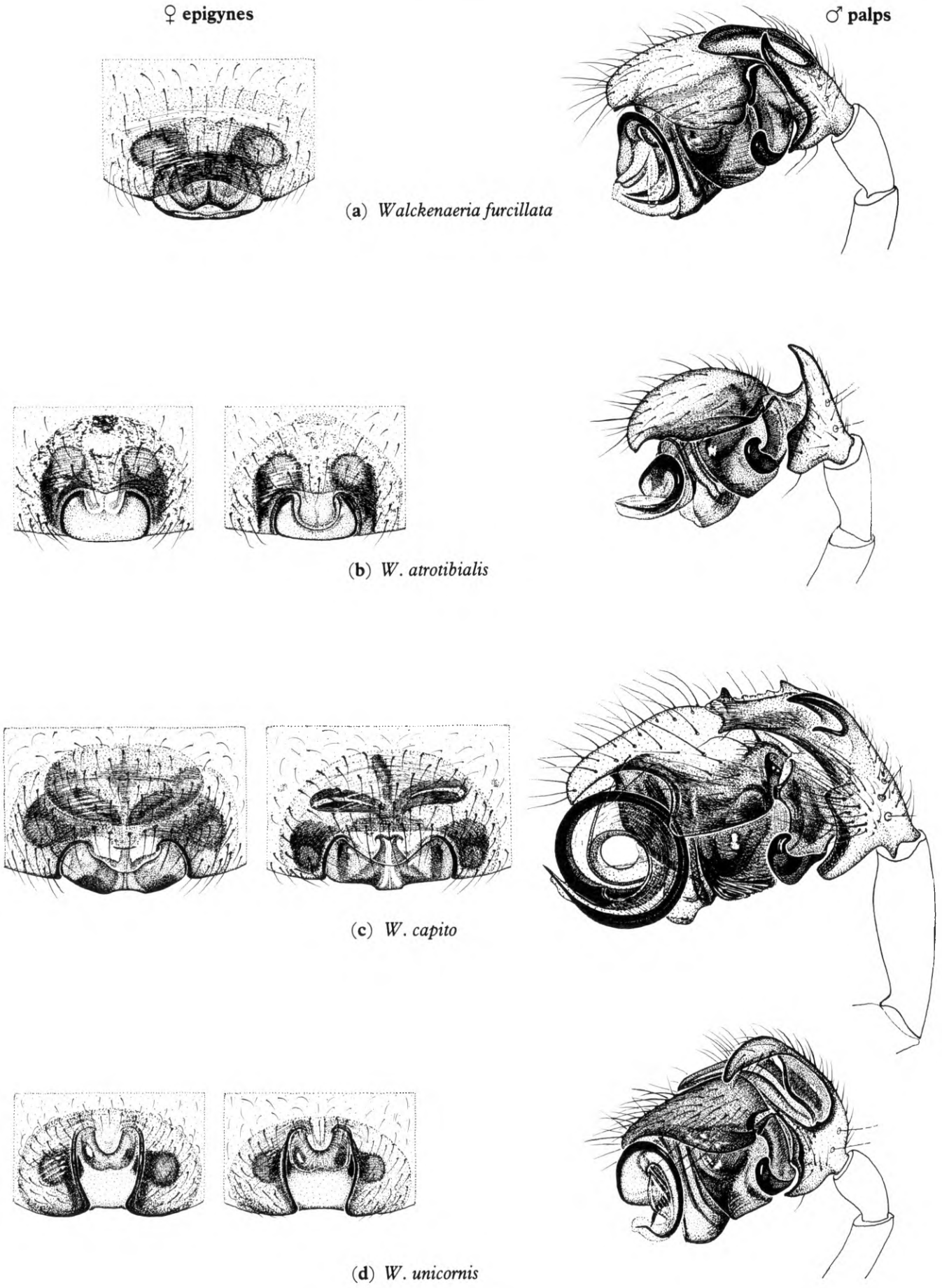
Female very similar in general appearance to *W. acuminata* (Plate 160), but with eyes relatively larger and occupying slightly larger area; head only slightly elevated. Male carapace with distinct, almost stalked, lobe carrying posterior median eyes (Text Fig. 9b) and with a considerable anterior projection, virtually forming a second lobe, carrying the anterior median eyes.

Walckenaeria unicornis O. P.-Cambridge, 1861
Text Figs 6d, 9c

Length: ♀: 2–3.1mm; ♂: 1.8–2.2mm. TmI 0.55–0.65

Female rather similar in general appearance to *W. cuspidata*. Male similar but has a small protuberance in front of posterior median eyes (Text Fig. 9c), which is broader and bifurcate distally (*cf. W. clavicornis* and *W. kochi*).

Text Figure 6



Walckenaeria monoceros (Wider, 1834)
Text Figs 7a, 9d

Length: ♀: 2.3–2.9mm; ♂: 2–2.5mm. TmI 0.56–0.65

Female similar in general appearance to *W. acuminata*, but eyes larger, occupying larger area, and head not raised; carapace with thin, dark margin. Posterior row of eyes almost straight; posterior eyes separated by roughly half their diameters. Male with head slightly elevated and projecting forwards over clypeus. Posterior median eyes close together; in front of these is a small conical elevation, carrying a crest of clavate hairs (Text Fig. 9d); another small process is usually present in front of this.

Walckenaeria corniculans (O. P.-Cambridge, 1875)
Text Figs 7b, 9e

Length: ♀: 2.6–3mm; ♂: 2.5–2.8mm. TmI 0.56–0.65

Female very similar to *W. monoceros*. Male head with a blunt protuberance carrying a crest of clavate hairs (Text Fig. 9e); posterior median eyes almost touching.

Walckenaeria kochi (O. P.-Cambridge, 1872)
Text Figs 7c, 9f

Length: ♀: 2.5–3.6mm; ♂: 2.2–2.6mm. TmI 0.68–0.76

Female rather similar in general appearance to *W. cuspidata*. Male head with a projection which bifurcates distally to form a pair of small lobes; a swollen area is present anteriorly, near the base of the projection, which carries a few upward-directed hairs (Text Fig. 9f).

Walckenaeria acuminata Blackwall, 1833
Plate 160; Text Figs 7d, 9g

Length: ♀: 3–4mm; ♂: 2.8–3.3mm. TmI 0.68–0.74

This spider has a highly characteristic appearance in both sexes. The female has the eyes arranged in a compact group on a conical elevation; the abdomen may be slimmer than illustrated in some females and most males. The male head is drawn out into a long, slender structure (Text Fig. 9g; Plate 160, top) which carries the two pairs of median eyes on its tip and the lateral eyes on its slightly thicker mid-point. Subadult males have a similar, but shorter, head elevation and are thus easily recognizable.

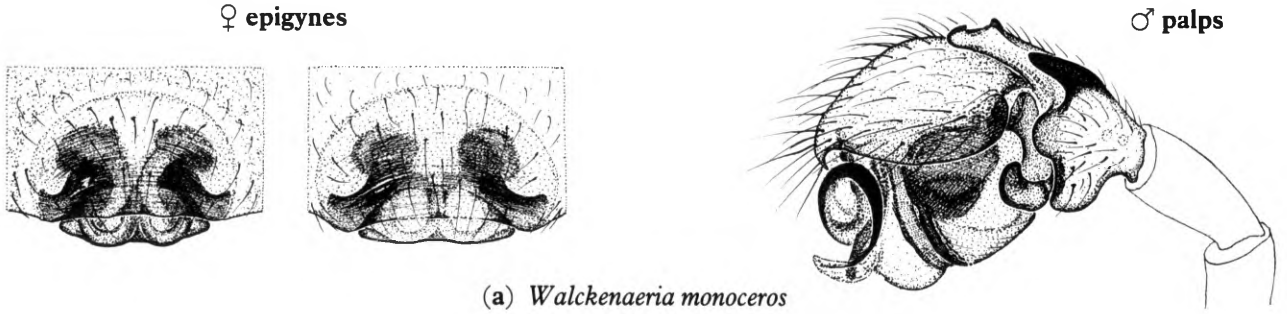
DISTINGUISHING THE SPECIES

W. dysderoides is distinguished in both sexes by the position of TmI; epigyne and male palp are characteristic, as is male carapace with post-ocular sulci and no other modification. Males of *W. nudipalpis*, *W. obtusa* and *W. vigilax* have no modification of carapace and are easily distinguished by form of palps; females of these three species distinguished by epigynes and, usually, by size. *W. antica* and *W. alticeps* require considerable care, although in many cases the size difference makes matters easier. Males of these two species distinguished by slight differences in the palpal organs and absolute measurements of emboli (Text Figs 4c,d); an additional check is the width of the cephalic lobe as seen from above, which in *W. antica* is 0.19–0.22mm, and in *W. alticeps* is 0.22–0.26mm. Females of these two species have very similar epigynes, the lip-like structure of which is usually wider in *W. alticeps* (*c.* 0.2mm) than in *W. antica* (*c.* 0.18mm); if epigyne removed and viewed dorsally, the adnexae appear quite different (Text Figs 4c,d). Males of the remaining species are readily distinguished by consideration of the lobes, or other modifications of the carapace, together with palpal organs and position of TmI. Females of the remaining species distinguished by epigynes, even though there may be considerable variation in some species (e.g. *W. stylifrons*, Text Fig. 3d). Consideration of the position of TmI is useful in the case of some closely similar epigynes, e.g. *W. mitrata*/*W. acuminata* and *W. unicornis*/*W. kochi*.

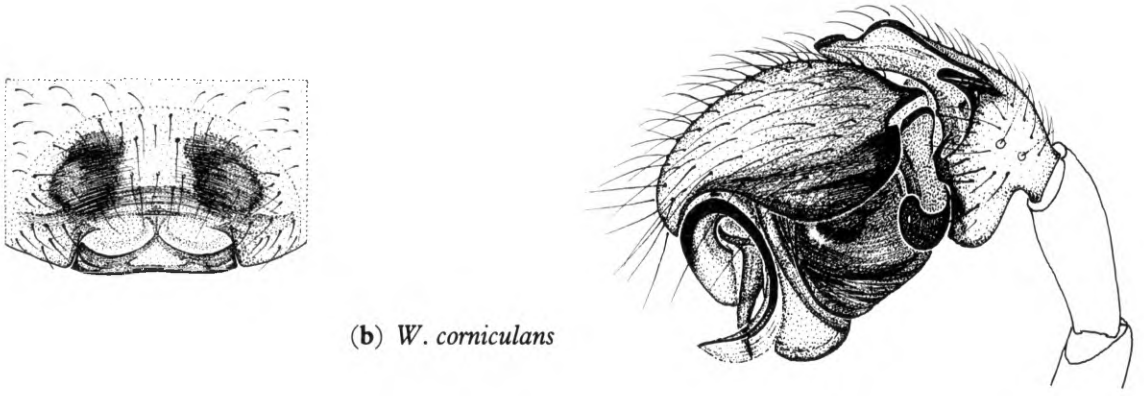
DISTRIBUTION

W. acuminata, *W. cucullata*, *W. cuspidata* and *W. nudipalpis* are widespread and common in woodland litter, moss and in more open grassland; *W. cuspidata* usually in damp habitats. *W. antica* and *W. alticeps* are probably both widespread; old records unreliable since, until recently, they have been confused. *W. antica* occurs in dry habitats in woodland litter and grassland, whereas *W. alticeps* prefers wet habitats in sphagnum and moist litter. *W. nodosa*, *W. atrotibialis*, *W. unicornis* and *W. vigilax* are widespread but rather less common, occurring in a variety of habitats; *W. nodosa* and *W. vigilax* usually in wet habitats and *W. atrotibialis* most frequently on calcareous grassland. *W. dysderoides*, *W. obtusa*, *W. monoceros*, *W. kochi* and *W. furcillata* are also rather uncommon but widespread in England and Wales – *W. dysderoides* in pine needles and moss, *W. obtusa* in deciduous litter, *W. monoceros* on sandhills, *W. furcillata* in moss, grass and on heather and *W. kochi* in wet habitats; they do not appear to have been recorded from Ireland and, apart from *W. monoceros* and *W. kochi*, appear rarely to occur in Scotland. *W. capito* and *W. clavicornis* are probably widespread, but usually occur on fairly high ground; *W. clavicornis* has not been recorded south of North Wales. Males of *W. capito* seem to be rarely collected. *W. incisa* is recorded from England, Scotland and Wales, and *W. corniculans* from England and Ireland; both species are, however, rare and have been found in only a few scattered localities in a wide variety of habitats. *W. mitrata* has been recorded from one woodland locality in Kent. *W. stylifrons* is extremely rare and recorded only from one heathland locality in Norfolk; since it was first described it seems to have been recorded only rarely in the whole of Europe.

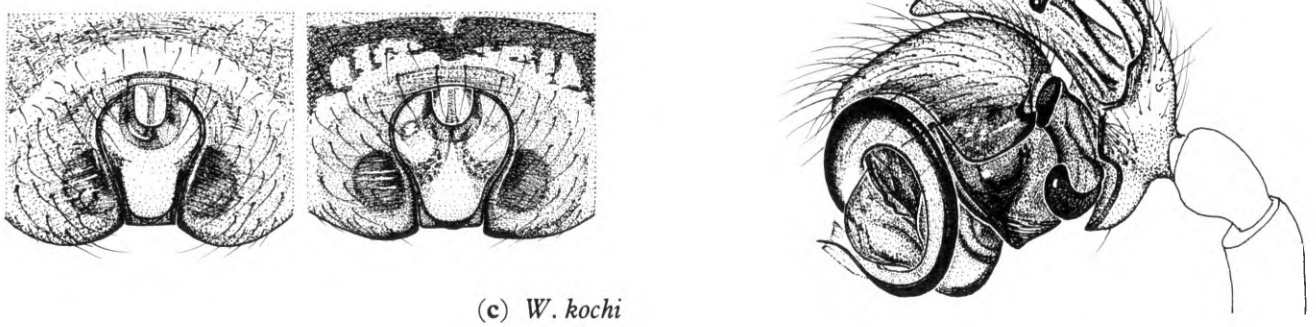
Text Figure 7



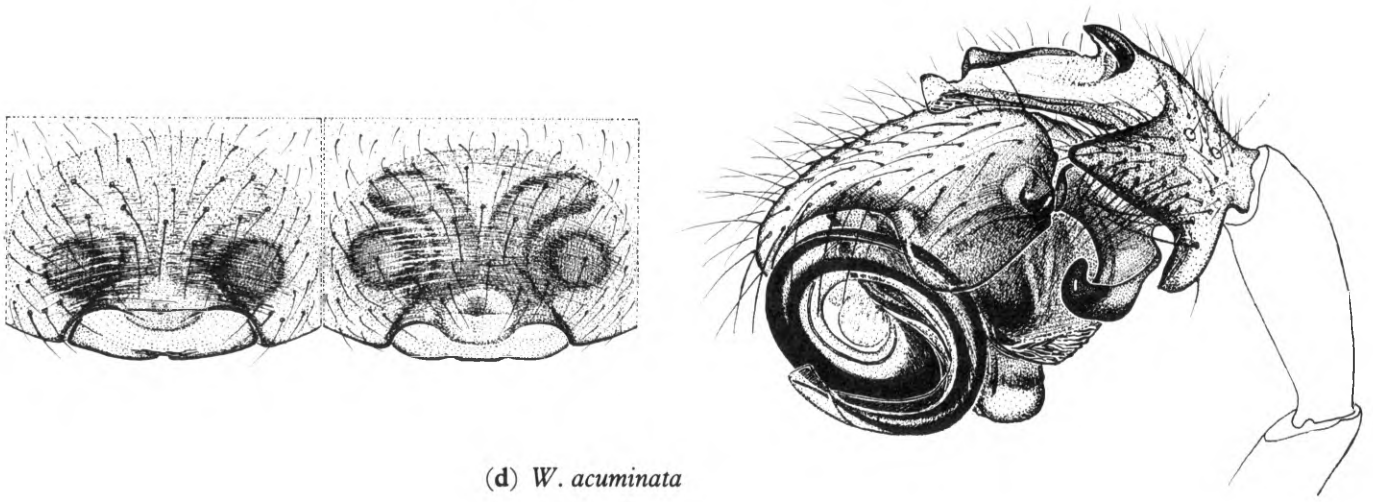
(**a**) *Walckenaeria monoceros*



(**b**) *W. corniculans*



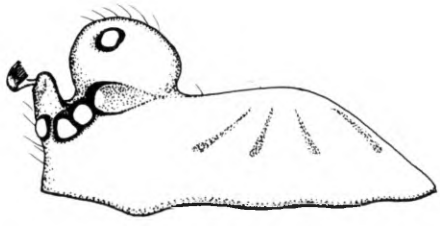
(**c**) *W. kochi*



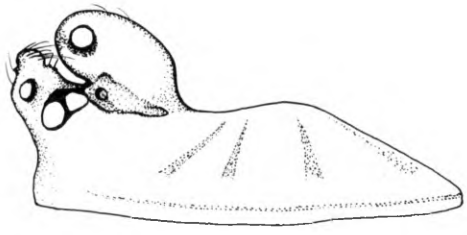
(**d**) *W. acuminata*

Text Figure 8

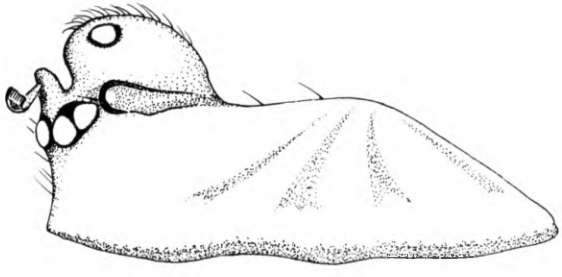
♂ **carapaces** lateral view



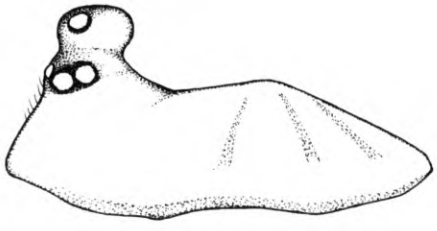
(**a**) *Walckenaeria antica*



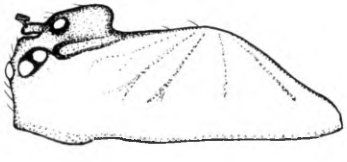
(**b**) *W. cucullata*



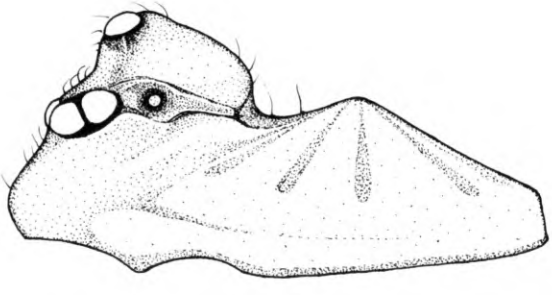
(**c**) *W. alticeps*



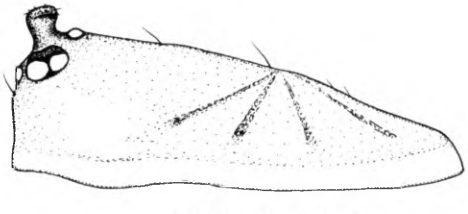
(**d**) *W. nodosa*



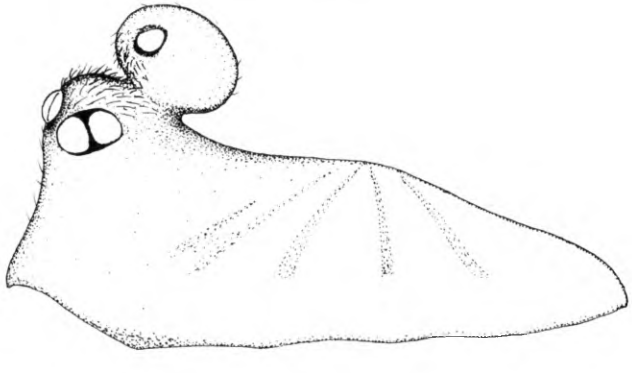
(**e**) *W. stylifrons*



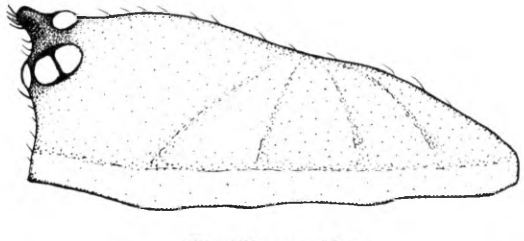
(**f**) *W. incisa*



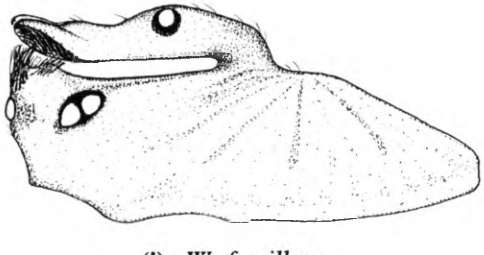
(**g**) *W. clavicornis*



(**h**) *W. mitrata*



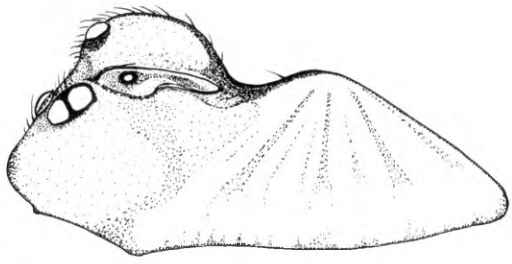
(**i**) *W. cuspidata*



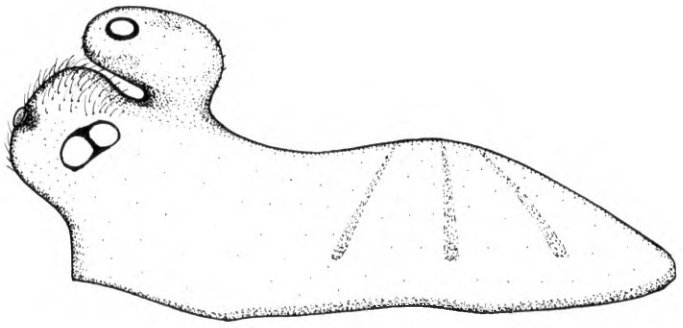
(**j**) *W. furcillata*

Text Figure 9

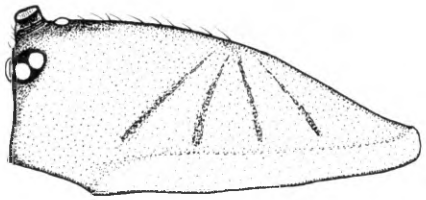
♂ **carapaces** lateral view



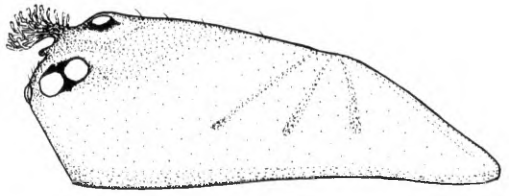
(**a**) *Walckenaeria atrotibialis*



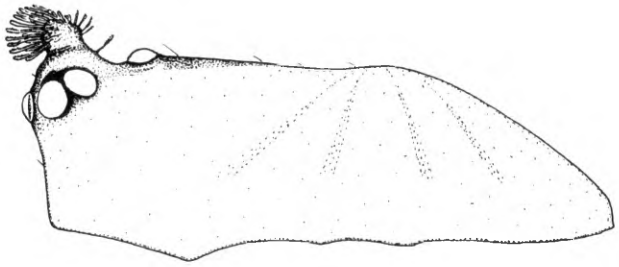
(**b**) *W. capito*



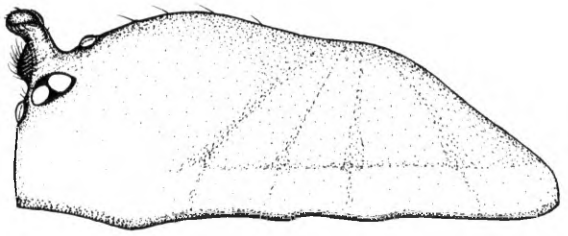
(**c**) *W. unicornis*



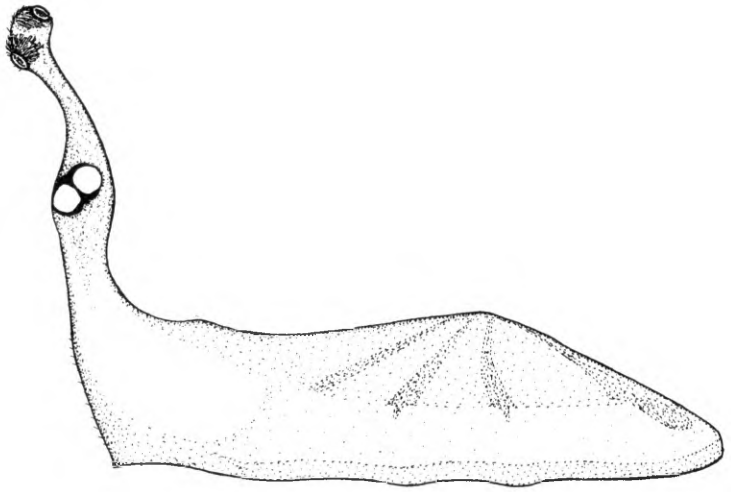
(**d**) *W. monoceros*



(**e**) *W. corniculans*



(**f**) *W. kochi*



(**g**) *W. acuminata*

Genus *Dicymbium* Menge 1867

TmI 0.5–0.59; TmIV present; tibial spines 2–2–1–1 (except in male of *D. nigrum* f. *brevisetosum* where all spines absent, or very much reduced).

There are two British species in this genus and they are very similar in general appearance and genitalia. Males have the head region slightly domed, but there is no lobe or other modification. In *D. tibiale* the male tibia I is markedly stouter than the others. Males of *D. nigrum* occur in two (usually) distinct forms – the typical form and a form known as *brevisetosum*. The latter has previously been considered a distinct species (see Taxonomic Note, below).

TAXONOMIC NOTE

D. brevisetosum was first described as a subspecies of *D. nigrum* (Locket, 1962) and later as a separate species, *D. brevisetosum* (Locket, Millidge *et al.*, 1974). Only the male sex was recognized (by the form of the hairs and spines on the legs) and the palpal organs are identical to those of *D. nigrum*. The female was presumed to be indistinguishable from *D. nigrum* and this presumption was not unreasonable when one considers that even with *D. nigrum* and *D. tibiale* the males have almost identical palpal organs and the female epigynes are not readily distinguished. However, examination of a series of specimens reveals the following:

(a) The epigynes of *D. nigrum* and *D. tibiale* are distinguishable.

(b) There are no significant epigynal differences in females collected together with known *D. nigrum* and *D. brevisetosum* males.

(c) The male palps of *D. nigrum* and *D. tibiale* differ very slightly; the proximal part of the palpal tibia is slightly more bulbous in *D. nigrum*; the process x (Text Fig. 10d) is generally shorter and broader in *D. nigrum* than in *D. tibiale*; the hole formed by the coiled embolus 'a' (Text Fig. 10d) is smaller in maximum diameter relative to the maximum (ventral) width of the embolus coil 'b' (Text Fig. 10d) in *D. nigrum* than in *D. tibiale*.

(d) The male palp of *D. brevisetosum* is indistinguishable from that of *D. nigrum*.

(e) The posterior median eyes and ocular region of *D. brevisetosum* males are indistinguishable from *D. nigrum*, whereas *D. tibiale* is quite distinctly different in this respect.

(f) The form of the male tibia I in *D. tibiale* is quite distinct from *D. nigrum*, with no signs of intermediates. Even when leg I has been lost early in development and subsequently regenerated, the limb, although smaller, still has a swollen tibia I. There is considerable variation in the density of hairs on tibia I, and slight variation in the length of hairs, spines and trichobothria in *D. tibiale*.

(g) There is a considerable difference in the density of hairs and length of hairs, spines and trichobothria between 'typical' *D. nigrum* and *D. brevisetosum* but intermediates occur (Text Fig. 10d). Even within typical *D. nigrum* the long hairs may be denser or more sparse than illustrated. The palpal organs illustrated (Text Figs 10c,d,e) are from the same specimen as each tibia I opposite and appear to show the same characteristics. The majority of specimens encountered, however, have either short or long hairs on the legs.

(h) Different populations of other spiders also often show differences in leg hairs, and other characters, which can be very marked. Males of *Lepthyphantes whymperi* (p. 150) and of *Oedothorax gibbosus/tuberosus* (p. 57) exhibit similar differences in leg hairs and spines.

In view of these findings, *brevisetosum* is here considered as a form of *D. nigrum* and not as a distinct species or subspecies.

Dicymbium nigrum (Blackwall, 1834)

Plate 163; Text Figs 10a,c

Length: ♀: 1.9–2.5mm; ♂: 1.8–2.4mm. TmI 0.5–0.59

Male similar to female illustrated but head region slightly domed; usually a little paler between the eyes; posterior median eyes widely separated (about two diameters apart).

Dicymbium nigrum f. *brevisetosum* Locket, 1962

Text Fig. 10e

This form is recognized only in males, and distinguished only by the hairs and spines on the legs; hairs shorter and more numerous than in the typical form, trichobothria shorter and dorsal tibial spines reduced or absent. The palpal patella is furnished with slightly more hairs than in the typical form.

Dicymbium tibiale (Blackwall, 1836)

Text Fig. 10b,f

Length: ♀: 2.1–2.6mm; ♂: 2–2.5mm. TmI 0.5–0.59

Female similar to *D. nigrum* in general appearance. Male with tibia I markedly thickened (Text Fig. 10f); carapace slightly domed in head region; posterior median eyes separated by only one diameter.

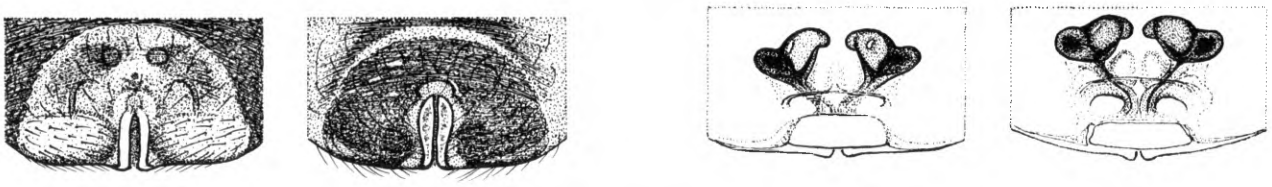
DISTINGUISHING THE SPECIES

Males of *D. nigrum* and *D. tibiale* easily distinguished by consideration of the form of tibia I and the degree of separation of posterior median eyes; the palpal organs also show slight differences (see Taxonomic Note, above). *D. nigrum* f. *brevisetosum* is distinguished from the typical form by the hairs and spines on the legs (Text Fig. 10e), but intermediate forms may be difficult to place. Females of *D. nigrum* and *D. tibiale* require rather more care. In each case the epigyne has a pair of longitudinal lip-like structures which enclose a central fissure; anterior to the fissure there is sometimes a small sclerotized arch. The lateral lips, which are usually light-coloured, vary considerably in shape and degree of separation. The spiders used in the preparation of the epigyne illustrations (Text Figs 10a,b) were of the same overall size; the epigyne fissure is longer in *D. tibiale* than in *D. nigrum*. Measurements should be made from the posterior tip of the lips to the anterior limit of the dark median line formed by the fissure (not to the anterior arch); care should be taken to view the epigyne from directly above, to avoid foreshortening. The following figures for the length of the fissure seem to be reliable: *D. nigrum*: range 0.08–0.11mm (mean 0.106mm; n = 48); *D. tibiale*: range 0.12–0.18mm (mean 0.145mm; n = 53). If the epigyne is removed and viewed dorsally, the adnexae also seem to be distinct (Text Figs 10a,b); the seminal receptacles vary considerably in degree of separation and attitude, but the structures between them, whilst variable, seem to differ in the two species.

DISTRIBUTION

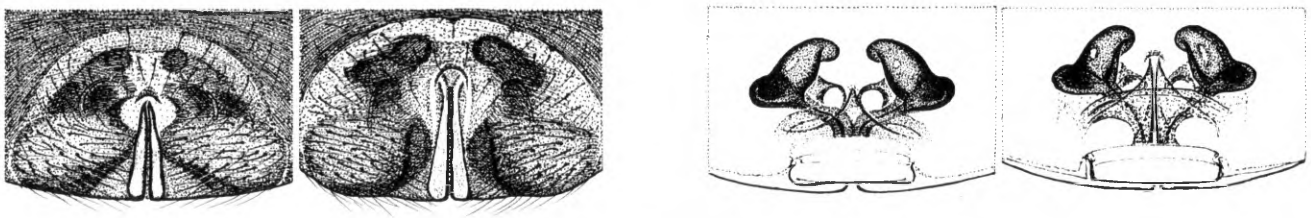
D. nigrum and *D. tibiale* are probably both widely distributed; *D. nigrum* is commoner in the south, and *D. tibiale* in the north, or on higher ground in the south. *D. nigrum* f. *brevisetosum* appears to be as common and widely distributed as the typical form, but the two are not usually found together; spiders within different populations tend to have similar forms of leg hairs and spines which may be long, short or occasionally intermediate.

Text Figure 10



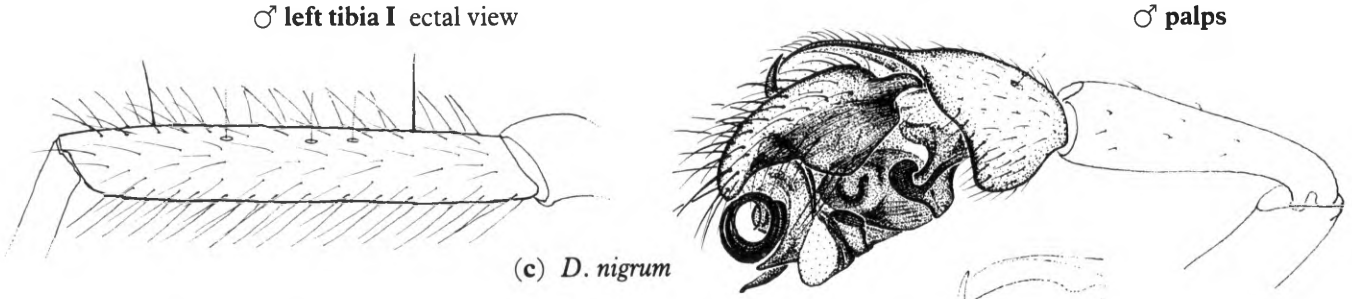
(**a**) *Dicymbium nigrum*

♀ **epigynes** ♀ **adnexae** dorsal view

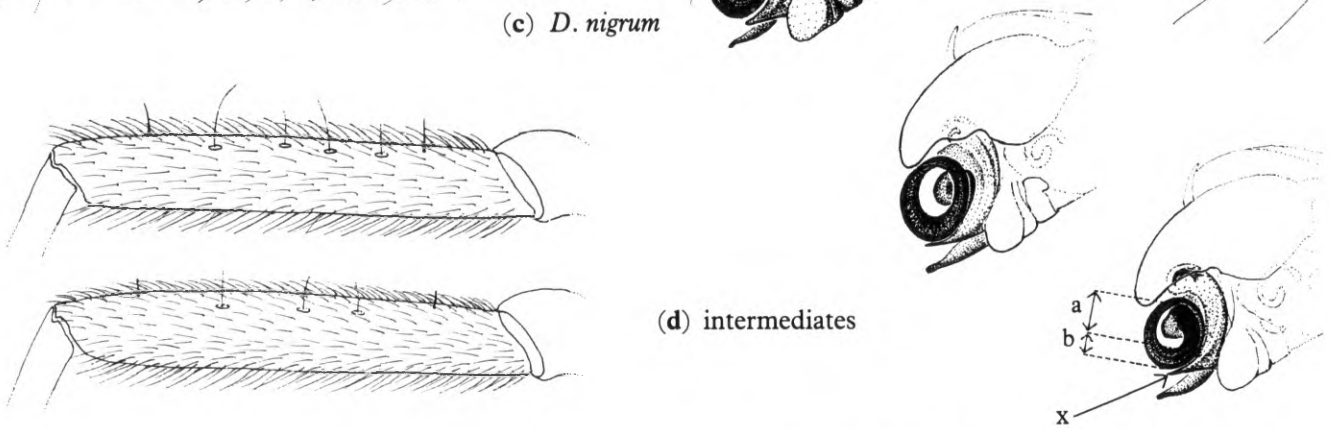


(**b**) *D. tibiale*

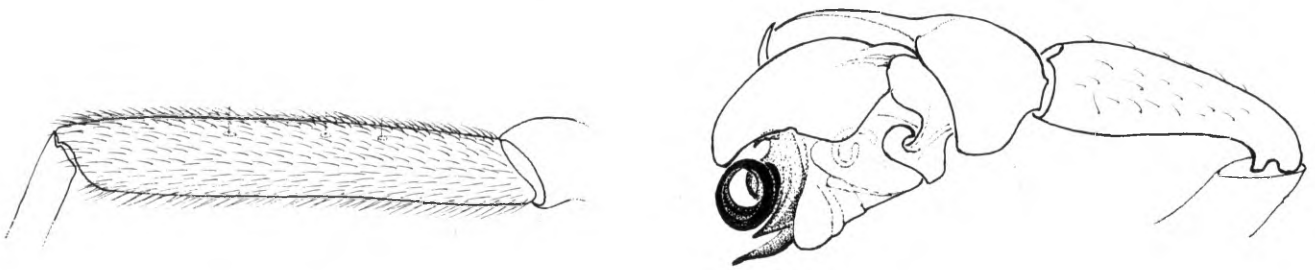
♂ **left tibia I** ectal view ♂ **palps**



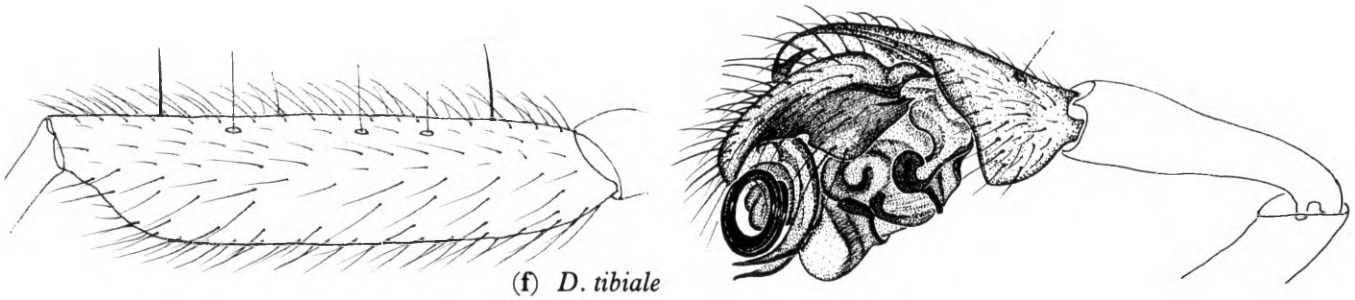
(**c**) *D. nigrum*



(**d**) intermediates



(**e**) *D. nigrum* f. *brevisetosum*



(**f**) *D. tibiale*

Genus *Entelecara* Simon, 1884

TmI 0.42–0.58; TmIV present (except in *E. flavipes* and *E. omissa*); tibial spines 2–2–1–1 (but reduced in males).

There are six British species in this genus, all of which are similar in general appearance and in the form of the genitalia. Males have the head elevated into a lobe which carries the posterior median eyes (Text Figs 16a–f); a shallow sulcus runs back from each posterior lateral eye and contains a small pit.

Entelecara acuminata (Wider, 1834)

Text Figs 11a, 16a

Length: ♀: 1.8–2.4mm; ♂: 1.7–2.1mm. TmI 0.44–0.54

Female similar in general appearance to *E. erythropus* (Plate 164); legs often slightly more orange in colour. Posterior median eyes slightly closer to one another than to laterals (*cf. E. congenera*). Male with head produced into a lobe (Text Fig. 16a).

Entelecara congenera (O. P.-Cambridge, 1879)

Text Figs 11b, 16b

Length: ♀: 1.8–2.2mm; ♂: 1.7–1.9mm. TmI 0.43–0.5

Female similar in general appearance to *E. erythropus*. Posterior row of eyes more or less equidistant (*cf. E. acuminata*). Male with head produced into a lobe (Text Fig. 16b).

Entelecara flavipes (Blackwall, 1834)

Text Figs 11c, 16c

Length: ♀: 1.6–1.8mm; ♂: 1.5–1.6mm. TmI 0.45–0.55

Female similar in general appearance to *E. erythropus*, but legs paler and yellowish, contrasting more with the dark carapace; rather like a recently moulted *E. erythropus*. TmIV *absent*. Male also with pale yellow legs, and with head produced into a lobe (Text Fig. 16c).

Entelecara erythropus (Westring, 1851)

Plate 164; Text Figs 11d, 16d

Length: ♀: 1.6–2.1mm; ♂: 1.7–2mm. TmI 0.45–0.58

Female as illustrated. Male similar but with head raised into lobe (Text Fig. 16d).

Entelecara errata O. P.-Cambridge, 1913

Text Figs 11e, 16e

Length: ♀: 1.4–2mm; ♂: 1.4–1.7mm. TmI 0.44–0.55

Female similar in general appearance to *E. erythropus*; carapace sometimes a little paler, but with more pronounced dark margins. Male head raised into lobe (Text Fig. 16e).

Entelecara omissa O. P.-Cambridge, 1902

Text Figs 11f, 16f

Length: ♀: 1.3–1.7mm; ♂: 1.25–1.6mm. TmI 0.42–0.51

Female very similar in general appearance to *E. erythropus*, but legs usually a little paler and abdomen a slightly paler grey. TmIV *absent*. Male head raised into a lobe (Text Fig. 16f).

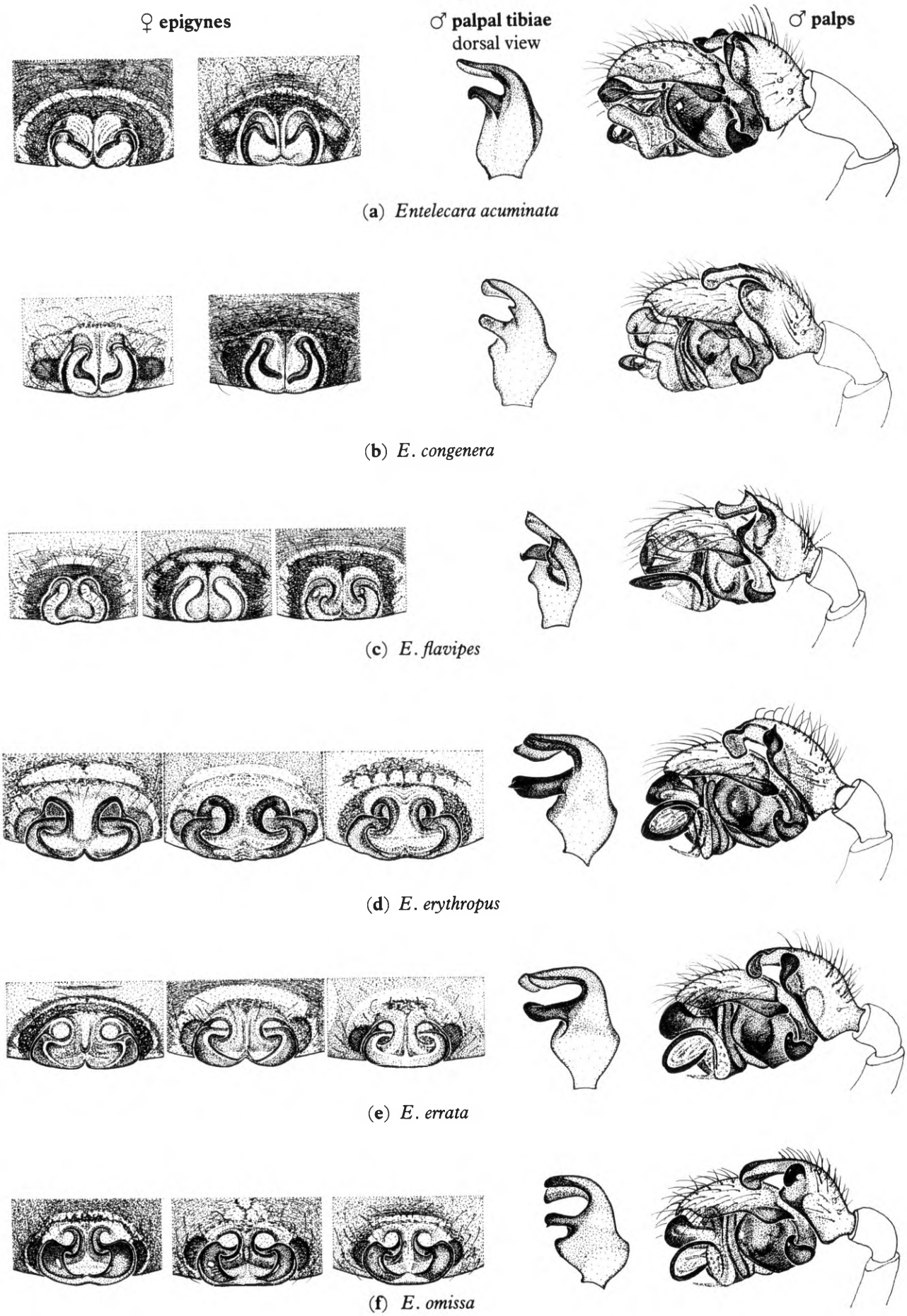
DISTINGUISHING THE SPECIES

The epigynes of all six species show very considerable variation. The shape and degree of elevation of the male head is also rather variable, both within and between different populations of each species. When viewed from the side, the area between lobe and fovea may sometimes be much more concave than illustrated, and this can considerably alter the overall appearance. The male heads of *E. acuminata* and *E. erythropus* are fairly easily distinguished from the rest. *E. flavipes* and *E. omissa* are readily separated from the other species by the absence of TmIV. They are also easily distinguished from each other by their epigynes, male palpal organs and palpal tibiae. The genitalia of *E. omissa* are very similar to those of *E. erythropus* and *E. errata*, but in both of these species TmIV is present. The proximal tibial apophysis in *E. omissa* usually bears a tiny pointed process, directed posteriorly (Text Fig. 11f); in some specimens there may be two such pointed processes, and in others the process may be absent. *E. acuminata* and *E. congenera* have very similar genitalia. The males are easily distinguished by their heads, palpal organs and palpal tibiae, but the female epigynes are variable and can present difficulties. In both epigynes (Text Figs 11a,b) there is a fairly light central area bounded on each side by a darker margin, which arches round anteriorly towards the midline; from the inside of these arches, another pair of darker lines curve posteriorly towards the midline. In *E. acuminata* these lines curve obliquely straight to the midline; in *E. congenera* they curve first outwards and then in to the midline. The slightly different arrangement of the posterior row of eyes (*q.v.*) is probably a reliable additional check to identity. *E. erythropus* and *E. errata* again have very similar genitalia. The palpal organs are rather variable and similar in the two species, but the palpal tibiae show constant differences; the proximal tibial apophysis has a slight point at its tip in *E. erythropus* (Text Fig. 11d) whereas in *E. errata* it appears as a blunt knob in both ectal and dorsal views (Text Fig. 11e). The epigynes are variable (Text Figs 11d,e), the most useful distinguishing character being the way the edges of the central portion arch around to the sides; in *E. erythropus* they are well-defined with clear outer limits which fall inside the lateral margins of the lip-like epigynal plate; in *E. errata* the less well-defined arches are almost continuous laterally with the margins of the epigynal plate.

DISTRIBUTION

E. erythropus is widely distributed and occurs fairly frequently in a wide variety of habitats. *E. acuminata* is commoner in the south of England and Wales, has been recorded from Scotland but not from Ireland; it usually occurs on bushes and grasses. *E. flavipes* occurs on bushes and in grassland, and has been recorded from several counties in England and Scotland. *E. congenera* and *E. omissa* are rare, and recorded only from a few localities in southern and eastern England, the former from bushes and trees, and the latter from marshy areas. *E. errata* is also rare and recorded from a few localities in the north and west – northern England, Wales, Scotland and the west of Ireland.

Text Figure 11



(**a**) *Entelecara acuminata*

(**b**) *E. congenera*

(**c**) *E. flavipes*

(**d**) *E. erythropus*

(**e**) *E. errata*

(**f**) *E. omissa*

Genus *Moebelia* Dahl, 1886

TmI 0.6–0.66; TmIV present; tibial spines 2–2–1–1

There is one British species at present placed in this genus. The sexes are similar in general appearance, with no modification of the male head.

TAXONOMIC NOTE

The species *Moebelia penicillata* almost certainly belongs in the genus *Walckenaeria* Blackwall, 1833, but as further generic changes are inevitable in the future, and to minimise confusion, it is for the present left in *Moebelia*.

Moebelia penicillata (Westring, 1851)

Plate 165; Text Fig. 12a

Length: ♀: 1.6–2mm; ♂: 1.4–1.6mm. TmI 0.6–0.66

Female sometimes much darker than illustrated, with abdomen black. Male very similar but with slimmer oval abdomen, which is black and distinctly glossy. The epigyne is a little variable and in black specimens the structure may be difficult to see. Male palpal organs highly characteristic; the transparent membrane around the tip of the embolus is variable in shape and often difficult to see. The palpal tibia bears a tuft of hairs dorsolaterally; the curved tibial apophysis bears, near its base, a small dark tooth directed ectally.

DISTRIBUTION

Widely distributed and common, but nearly always found in crevices on tree trunks.

Genus *Hylyphantes* Simon, 1884

TmI 0.58–0.68; TmIV present; tibial spines 2–2–1–1

There is one British species in this genus. The sexes are similar in general appearance, with no modification of the male head. The chelicerae of both sexes have small warty granulations anterolaterally; those of the male have an additional tooth-like process (pointing anteromedially), at the tip of which is a fine hair.

TAXONOMIC NOTE

This species was formerly placed in the genus *Erigonidium* Smith, 1904, but the latter genus was synonymized with *Hylyphantes* Simon, 1884 by Wunderlich (1970).

Hylyphantes graminicola (Sundevall, 1829)

Plate 166; Text Fig. 12b

Length: ♀: 2.5–3mm; ♂: 2.25–2.6mm. TmI 0.58–0.68

Female similar to male illustrated; the light median band and lines are also present on the abdomen, but tend to be less clear if the latter is distended. Epigyne distinctive, although rather variable in width, as illustrated. Male palpal organs distinctive; the palpal patella has a small ventral apophysis which is somewhat variable in size.

DISTRIBUTION

H. graminicola is widely distributed in England, but there are few records of the species in Scotland, Ireland and Wales. It seems to have a rather local distribution and is usually found on bushes and the lower branches of trees.

Genus *Gnathonarium* Karsch, 1881

TmI 0.6–0.68; TmIV present; tibial spines 2–2–1–1

There is one British species in this genus. In both sexes the carapace projects slightly over the clypeus, and is slightly domed behind the eyes; this is more noticeable in males. Chelicerae of both sexes with warty granulations anteriorly; those of male have an additional tooth-like process (pointing anteromedially), at the tip of which is a fine hair.

Gnathonarium dentatum (Wider, 1834)

Plate 167; Text Fig. 12c

Length: ♀: 2.2–3mm; ♂: 2.2–2.5mm. TmI 0.6–0.68

Females with a more distended abdomen have the median light mark less distinct than illustrated. Male abdomen similar to that of female (Plate 167), or to that of the male *H. graminicola* (Plate 166). Epigyne distinctive. Male palp distinctive, but quite variable in fine structure. The long, curved embolus may be found closely applied to the palp or lying free along all, or part of, its length; the notch on the posterior edge of the palpal bulb may be absent or even deeper than illustrated; the small ventral apophysis on palpal patella is similarly variable.

DISTRIBUTION

G. dentatum is widespread and common throughout the British Isles, but almost always in wet habitats.

Genus *Trematocephalus* Dahl, 1886

TmI 0.56–0.65; TmIV present; tibial spines 2–2–1–1 (weak in male)

There is one British species in this genus. The male has the carapace distinctly modified (Text Fig. 16g).

Trematocephalus cristatus (Wider, 1834)

Text Figs 12d, 16g

Length: ♀: 2.4–2.6mm; ♂: 2–2.2mm. TmI 0.56–0.65

Female not unlike *G. dentatum* (Plate 167) in general appearance, but eyes closer together, ocular area rather black and prominent, and with three dark lines running from posterior eyes to fovea, as in *Hypomma bituberculatum* (Plate 171). The median light band on the abdomen may be absent. Male has the carapace, anterior to fovea, raised into a broad, flat area with clear anterolateral margins; this is produced anteriorly into a narrow bar which broadens slightly anteriorly, to form a flattened knob (Text Fig. 16g). The latter rests atop the head, which is elevated conically, and carries the posterior median eyes. Epigyne and male palp characteristic.

DISTRIBUTION

T. cristatus is rare and recorded only from a few localities in Surrey and Sussex, where it has been found on bushes and trees.

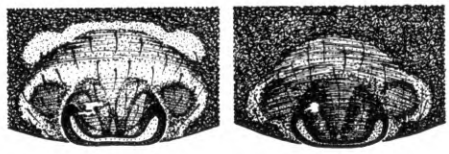
Genus *Tmeticus* Menge, 1866

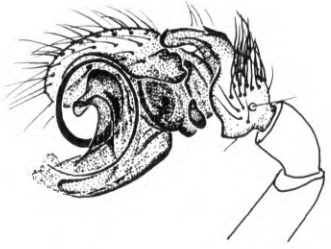
TmI 0.65–0.75; TmIV present: tibial spines 2–2–1–1 (sometimes absent on tibiae I and II in males)

There is one British species in this genus. The sexes are similar in general appearance with no modification of male carapace. Chelicerae of both sexes with a few warty granula-

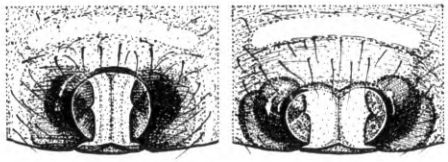
Text Figure 12

♀ **epigynes** ♂ **palps**

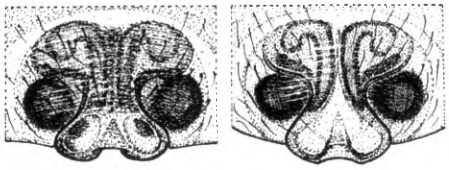


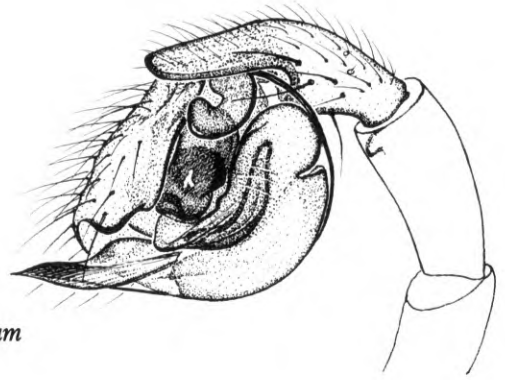


(**a**) *Moebelia penicillata*

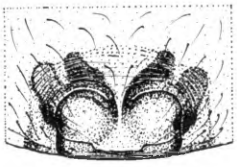


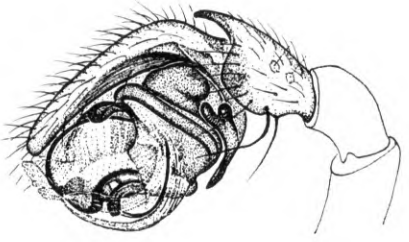
(**b**) *Hylyphantes graminicola*



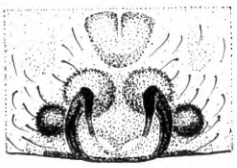


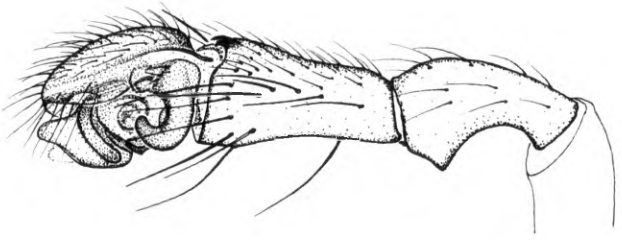
(**c**) *Gnathonarium dentatum*





(**d**) *Trematocephalus cristatus*





(**e**) *Tmeticus affinis*

tions anterolaterally, more pronounced in male. Male chelicerae with a tooth-like process (pointing anteromedially), at the tip of which is a fine hair.

Tmeticus affinis (Blackwall, 1855)
Plate 168; Text Fig. 12e
Length: ♀: 2.5–3mm; ♂: 2.5–2.8mm. TmI 0.65–0.75
Male similar to female illustrated, but abdomen slimmer. Female epigyne (Text Fig. 12e) similar to those of *Oedothorax* species (Text Figs 22b–f) and very similar to that of *Donacochara speciosa* (Text Fig. 49e). Male palpal organs small and closely resembling those of *D. speciosa*.

DISTRIBUTION
T. affinis appears to be fairly widely distributed in England and Wales, and has been recorded from Scotland and Ireland. It is, however, rather uncommon and most records are from wet habitats.

Genus *Gongylidium* Menge, 1868

TmI 0.68–0.77; TmIV present; tibial spines 2–2–1–1
There is one British species in this genus. The sexes are similar in general appearance, with no structural modification of the male carapace. Chelicerae of female with five fairly large teeth anteriorly; those of male with a tooth-like process (pointing anteromedially), at the tip of which is a fine hair.

Gongylidium rufipes (Sundevall, 1829)
Plate 169; Text Fig. 13a
Length: ♀: 2.6–3.7mm; ♂: 2.5–3mm. TmI 0.68–0.77
Legs often a brighter orange colour than appears on the illustration. Male similar but the carapace has the head region darker – sometimes black; abdomen slimmer, occasionally with a pale median band dorsally. Epigyne variable, but characteristic. Male palpal organs, palpal tibia and swollen palpal patella highly characteristic.

DISTRIBUTION
G. rufipes is common and widespread throughout the British Isles, usually being found on bushes and other low vegetation.

Genus *Dismodicus* Simon, 1884

TmI 0.66–0.81; TmIV present; tibial spines 1–1–1–1 (very short and occasionally absent in males)
The two British species in this genus have a very similar general appearance and genitalia. Males have the head elevated into a lobe which is slightly bifid longitudinally, and the clypeus projects anteriorly; a small pit is present just above posterior lateral eyes and often has a colourless dried exudate attached to it.

Dismodicus bifrons (Blackwall, 1841)
Plate 170; Text Figs 13b, 16h
Length: ♀: 2–2.5mm; ♂: 1.75–2.1mm. TmI 0.72–0.81
Female abdomen sometimes slimmer, like that illustrated for *Hypomma bituberculatum* (Plate 171). Male with slimmer abdomen and more pronounced, paired sigilla; head produced into a lobe (Text Fig. 16h), the top of which is slightly bifid longitudinally, and paler than rest of carapace. Tibial spines short in males; sometimes absent altogether.

Dismodicus elevatus (C. L. Koch, 1838)
Text Figs 13c, 16i
Length: ♀: 2–2.6mm; ♂: 1.8–2mm. TmI 0.66–0.76
Both sexes very similar to *D. bifrons* in general appearance.

DISTINGUISHING THE SPECIES
D. bifrons is by far the commoner of the two species and much more likely to be encountered than *D. elevatus*. Females are readily distinguished by their epigynes which, although rather variable, differ considerably in overall shape; in *D. elevatus* there is a projecting rim anteriorly which makes the central part of the epigyne look like a wine glass (Text Fig. 13c). The male heads vary quite considerably and in some cases may be difficult to distinguish; that of *D. elevatus* is usually larger than *D. bifrons* (*cf.* Text Figs 16h,i). The male palpal organs vary considerably (especially in the shape of paler structures near embolus), but are usually as illustrated (Text Figs 13b,c). The palpal tibiae and tibial apophyses are distinctly different; an additional check is that the palpal tibia in *D. bifrons* is considerably smaller, relative to the patella, than in *D. elevatus*.

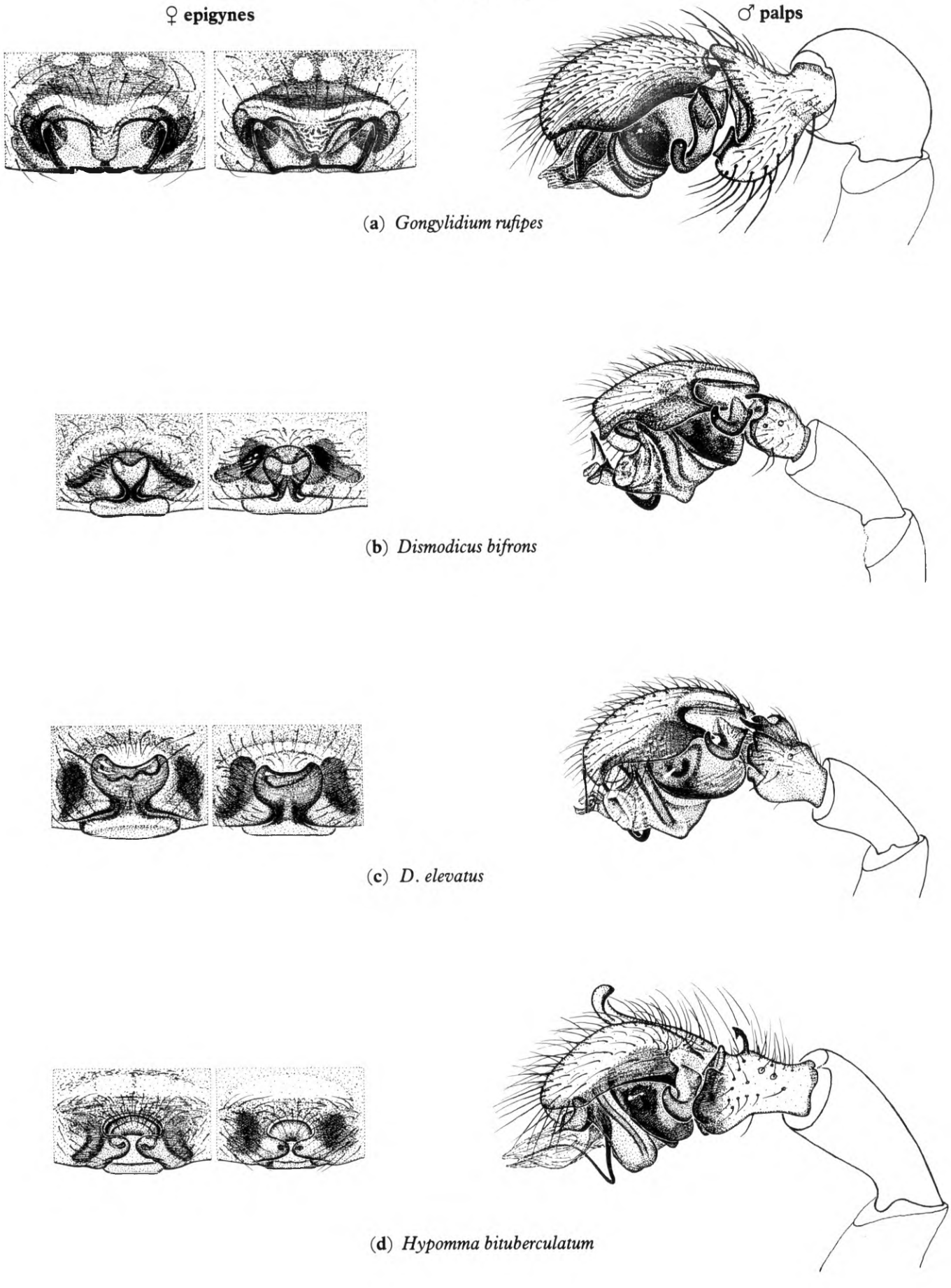
DISTRIBUTION
D. bifrons is fairly common and widely distributed throughout the British Isles, occurring in a wide variety of habitats. *D. elevatus* is rare and has been recorded only from a very few localities in Scotland and northern England, usually on conifers.

Genus *Hypomma* Dahl, 1886

TmI 0.65–0.82; TmIV present (except in *H. cornutum*); tibial spines 1–1–1–1 (very short and occasionally absent in males)
The three British species in this genus are of similar general appearance. Males have the head elevated into a lobe which is bifid longitudinally; the clypeus does not project anteriorly (*cf. Dismodicus*, above). A well-defined pit is present behind the posterior eyes and is often filled with dried exudate; behind the pit are ridges which project somewhat laterally (Text Figs 16j, 17a,b).

Hypomma bituberculatum (Wider, 1834)
Plate 171; Text Figs 13d, 16j
Length: ♀: 2.4–3mm; ♂: 2.25–2.6mm. TmI 0.69–0.81
The reddish or orange-brown carapace fades to yellowish in spirit. Male similar but with head elevated into a lobe (Text Fig. 16j) which is bifid longitudinally and paler than the rest of the carapace; in the midline there is a line of short hairs between the lobes.

Text Figure 13



(**a**) *Gongylidium rufipes*

(**b**) *Dismodicus bifrons*

(**c**) *D. elevatus*

(**d**) *Hypomma bituberculatum*

Hypomma fulvum Bösenberg, 1902
Text Figs 14a, 17a
Length: ♀♂: 2.4–3mm. TmI 0.7–0.8
Both sexes very similar in general appearance to *H. bituberculatum*.

Hypomma cornutum (Blackwall, 1833)
Text Figs 14b, 17b
Length: ♀: 2.2–2.9mm; ♂: 1.9–2.3mm. TmI 0.65–0.82
Female similar to *H. bituberculatum* but carapace darker and slightly more brownish; legs orange-brown, relatively paler than carapace. TmIV *absent*. Lobe on male head deeply bifid and in fact forming a pair of small lobes, which appear slightly conical when viewed from the side (Text Fig. 17b).

DISTINGUISHING THE SPECIES

The species are easily distinguished. *H. cornutum* has TmIV absent, whereas it is present in the other two species. The epigynes of all three species, although variable, allow easy identification of females; that of *H. fulvum* appears, at first sight, a little like the epigynes of *Oedothorax* (Text Figs 22b–f) and *Tmeticus* (Text Fig. 12e), but the roughly fan-shaped area anteriorly seems a constant feature, apart from other differences. Males are readily identified by their carapaces (Text Figs 16j, 17a,b) and palps (Text Figs 13d, 14a,b). The palpal organs and tibial apophyses are distinctly different; the thin, barbed tibial apophysis in *H. fulvum* (Text Fig. 14a) may sometimes be broken off.

DISTRIBUTION

H. bituberculatum and *H. cornutum* are both widespread and fairly common; the former usually from wet habitats and the latter from a variety of drier habitats. *H. fulvum* is rare and recorded only from a few marsh and fen habitats in the south-east of England and East Anglia.

Genus *Metopobactrus* Simon, 1884

TmI 0.75–0.82; TmIV present; tibial spines 1–1–1–1
There is one British species in this genus.

Metopobactrus prominulus (O. P.-Cambridge, 1872)
Plate 172; Text Figs 14c, 17c
Length: ♀: 1.5–2mm; ♂: 1.4–1.7mm. TmI 0.75–0.82
Specimens may be darker or lighter in colour than the female illustrated; the abdomen may have a slight pink tinge when fresh. Note the closely grouped eyes; the ocular region is slightly raised in female. Male similar, but the head is elevated more conically (Text Fig. 17c); the degree of elevation and attenuation is rather variable. Epigyne shows some variation in shape and in the degree of superficial pigmentation, as illustrated (Text Fig. 14c). Male palp distinctive.

DISTRIBUTION

M. prominulus is widely distributed throughout the British Isles, occurring in a wide variety of habitats, but is not common, except sometimes locally; it is most frequent on calcareous grassland.

Genus *Hybocoptus* Simon, 1884

TmI 0.7–0.8; TmIV present; tibial spines 1–1–1–1
There is one British species in this genus, the male of which has the head elevated into a lobe.

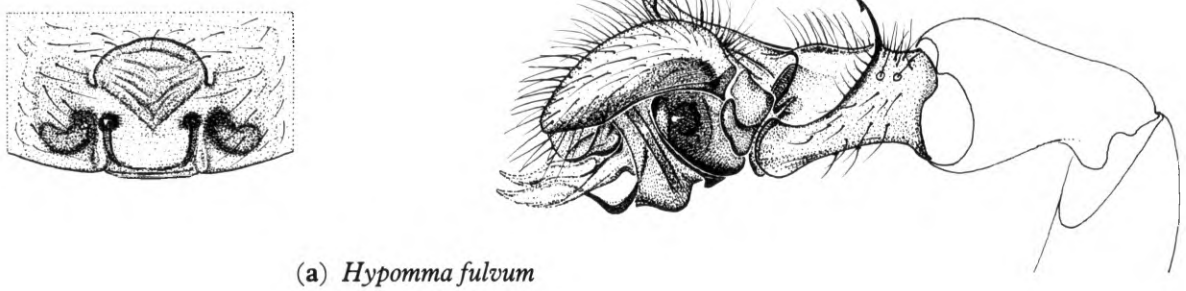
Hybocoptus decollatus (Simon, 1881)
Plate 173a; Text Figs 14d, 17d
Length: ♀: 1.6–1.9mm; ♂: 1.5–1.7mm. TmI 0.7–0.8
Female as illustrated; legs a fairly uniform yellow-brown colour, slightly lighter than the carapace. Male with head elevated into a lobe, somewhat variable in shape, carrying posterior median eyes (Text Fig. 17d); a sulcus runs back from the posterior lateral eyes and contains a small pit. There are numerous short hairs arising from the front of the lobe and around the anterior median eyes; behind the lobe is a group of rather long hairs arising from the foveal region. Epigyne rather variable (Text Fig. 14d), but readily identifiable. The male palp has a whitish, semi-transparent process ectally on the tibial apophysis; both the tibial apophysis and the palpal organs are a little variable, but readily identifiable.

DISTRIBUTION

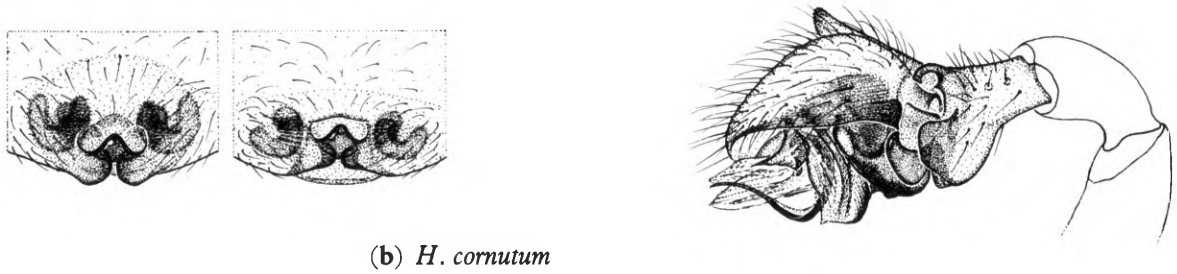
H. decollatus has been recorded from a very few localities in the south of England, including the Isle of Wight; usually on yew or gorse where it may be locally abundant.

Text Figure 14

♀ **epigynes** ♂ **palps**

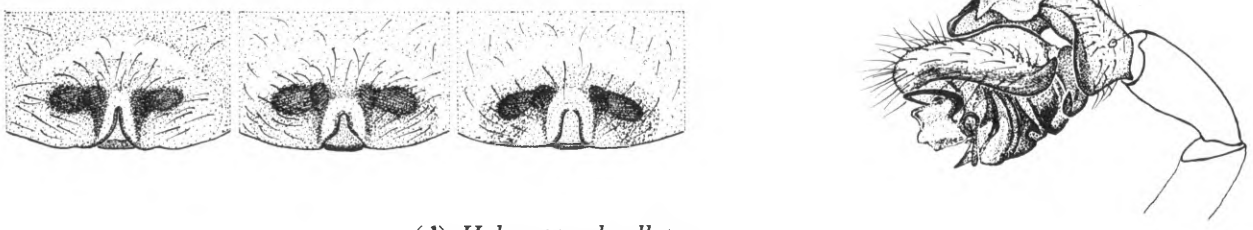


(**a**) *Hypomma fulvum*



(**b**) *H. cornutum*

(**c**) *Metopobactrus prominulus*



(**d**) *Hybocoptus decollatus*

Genus *Baryphyma* Simon, 1884

TmI 0.75–0.95; TmIV present; tibial spines 2–2–1–1

There are five British species now included in this genus. Males have the head modified in various, rather diverse, ways (Text Figs 17e–i), but have broadly similar palpal organs. Females are all similar in their general appearance (Plates 173b–d, 174) and have similar epigynes.

TAXONOMIC NOTE

The genus *Baryphyma* now includes the old genera *Praestigia* Millidge, 1954, *Acanthophyma* Locket, Millidge & Merrett, 1974, and *Minyrioloides* Schenkel, 1929; they were synonymized by Millidge (1977).

Baryphyma pratense (Blackwall, 1861)

Plate 173b, Text Figs 15a, 17e

Length: ♀: 2.5–3mm; ♂: 2.25–2.7mm. TmI 0.9–0.95

General appearance similar in both sexes; legs uniform orange-brown, paler than carapace. Male carapace with head raised very slightly; a sulcus runs back from each posterior lateral eye and contains a small pit (Text Fig. 17e). Epigyne rather variable (Text Fig. 15a); adnexae often not visible, central opening may be narrower and area around this rather paler. Male palp also rather variable but of characteristic appearance (Text Fig. 15a).

Baryphyma duffeyi (Millidge, 1954)

(= *Praestigia duffeyi* Millidge)

Plate 173d; Text Figs 15b, 17f

Length: ♀: 2.5–3mm; ♂: 2.2–2.5mm. TmI 0.86–0.93

The carapace is sometimes much darker than illustrated; legs brown, suffused with grey on patellae and distal ends of tibiae. Note that female has small median cusp projecting just above anterior median eyes. Male has this area attenuated and bearing a hat-like extension which is ridged longitudinally (Text Fig. 17f). Epigyne rather variable; male palp highly characteristic (Text Fig. 15b).

NOTE: males of this species have previously been considered as having tibia I spineless; all specimens examined, however, had two spines on tibia I, although they are rather hard to see.

Baryphyma gowerense (Locket, 1965)

(= *Acanthophyma gowerensis* (Locket))

Plate 173c; Text Figs 15c, 17g

Length: ♀: 2.7–3.3mm; ♂: 2.6–3.1mm. TmI 0.9–0.95

Note the female abdomen, which is clothed with rather long hairs; males usually have a rather shiny abdomen, clothed with very short hairs. Legs yellowish to orange-brown in colour. Male carapace with head elevated into highly characteristic lobe carrying posterior median eyes; a sulcus runs back from each posterior lateral eye and contains a small pit (Text Fig. 17g). Epigyne somewhat variable, as illustrated, but highly characteristic as also is male palp (Text Fig. 15c).

Baryphyma trifrons (O. P.-Cambridge, 1863)

(= *Minyrioloides trifrons* (O. P.-Cambridge))

Text Figs 15d, 17h

Length: ♀: 1.9–2.1mm; ♂: 1.7–1.8mm. TmI 0.75–0.85

Female very similar in general appearance to that of *B. maritimum* (Plate 174). Male carapace with head raised into lobe carrying posterior median eyes; a sulcus runs back from each posterior lateral eye and contains a small pit (Text Fig. 17h). Epigyne rather variable (Text Fig. 15d); male palp similar to that of *B. maritimum*.

Baryphyma maritimum (Crocker & Parker, 1970)

(= *Minyrioloides maritimus* Crocker & Parker)

Plate 174; Text Figs 15e, 17i

Length: ♀: 2.2–2.6mm; ♂: 1.7–2.1mm. TmI 0.75–0.85

Male similar to female, but carapace with head raised into lobe carrying posterior median eyes; a sulcus runs back from each posterior lateral eye and contains a small pit (Text Fig. 17i). Epigyne rather variable (Text Fig. 15e); male palp similar to that of *B. trifrons*.

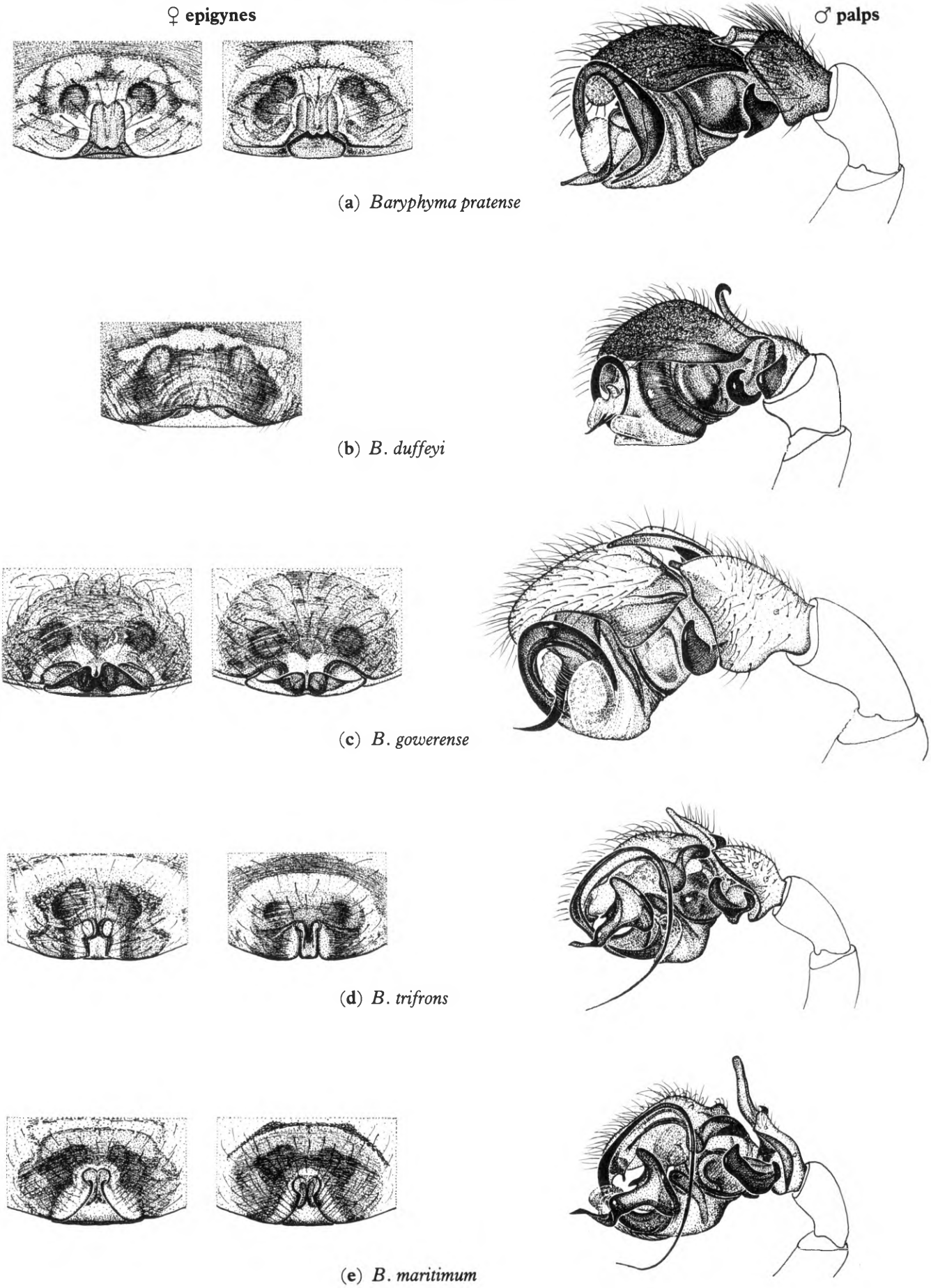
DISTINGUISHING THE SPECIES

Females are usually easy to distinguish by their epigynes, even though the latter are rather variable. As an additional check in females, *B. gowerense* has long abdominal hairs, and *B. duffeyi* has a small cusp near the anterior median eyes; *B. trifrons* and *B. maritimum* are generally smaller, have TmI of 0.75–0.85 and are readily separated from each other by their epigynes. Males are readily distinguished by the form of the palpal organs, palpal tibiae and tibial apophyses as well as by the form of the carapace. *B. trifrons* and *B. maritimum* require a little more care, as their palps are rather similar and variable; the form of the helical median apophysis, the palpal tibia and the tibial apophyses are amongst several distinguishing features.

DISTRIBUTION

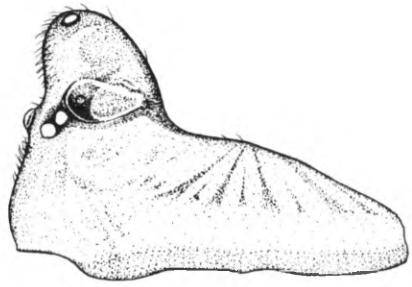
B. trifrons appears to be widely distributed throughout the British Isles, occurring in wet habitats, but is not commonly collected. *B. pratense* also occurs, uncommonly, in wet areas, appears widespread in England, but has not been recorded from Ireland and is rare in Wales and Scotland. The remaining three species all occur in coastal habitats and have been recorded from relatively few localities – *B. maritimum* from marram grass on dunes on the east coast of England, from Humberside to Suffolk; *B. duffeyi* from salt marsh and brackish marsh on the east coast of England, from Suffolk to Kent, and from south-west Ireland; *B. gowerense* from localities in salt marsh and brackish marsh in the south-west of both Wales and Ireland and from an inland marsh in Norfolk.

Text Figure 15

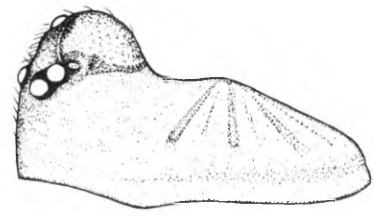


Text Figure 16

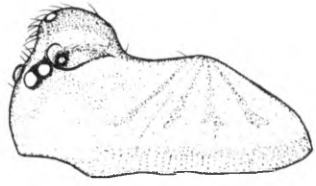
♂ **carapaces** lateral view



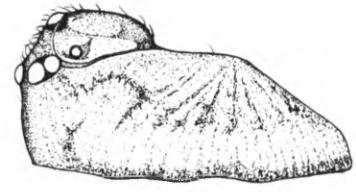
(**a**) *Entelecara acuminata*



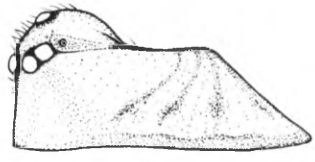
(**b**) *E. congenera*



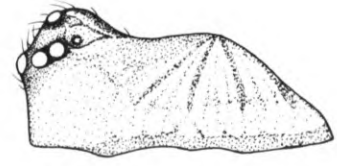
(**c**) *E. flavipes*



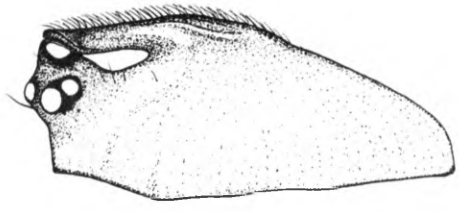
(**d**) *E. erythropus*



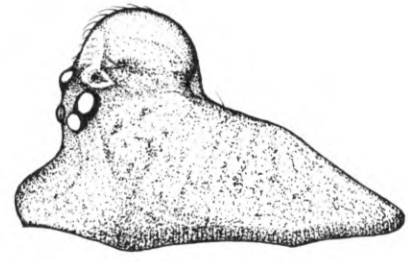
(**e**) *E. errata*



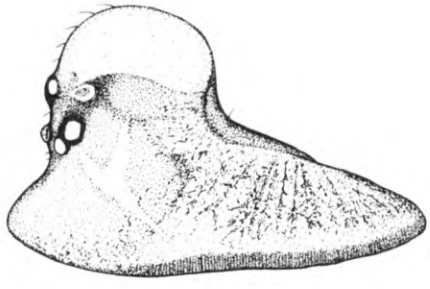
(**f**) *E. omissa*



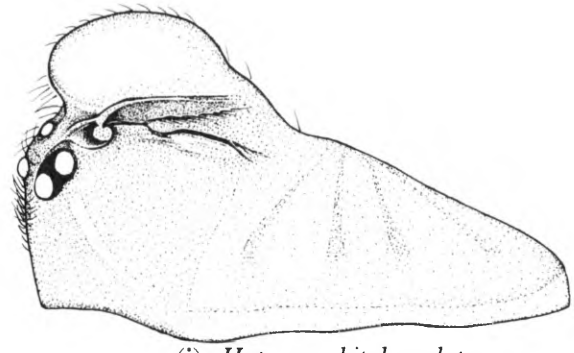
(**g**) *Trematocephalus cristatus*



(**h**) *Dismodicus bifrons*



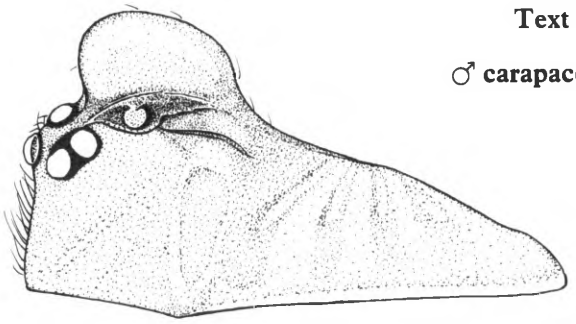
(**i**) *D. elevatus*



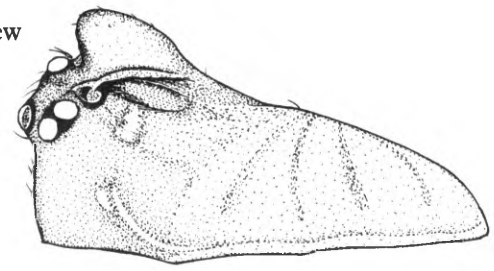
(**j**) *Hypomma bituberculatum*

Text Figure 17

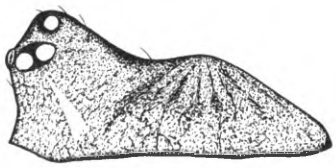
♂ **carapaces** lateral view



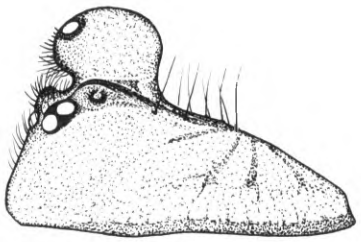
(**a**) *Hypomma fulvum*



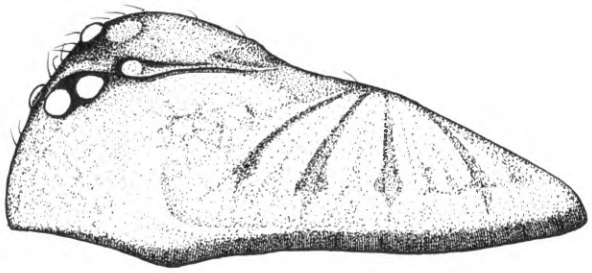
(**b**) *H. cornutum*



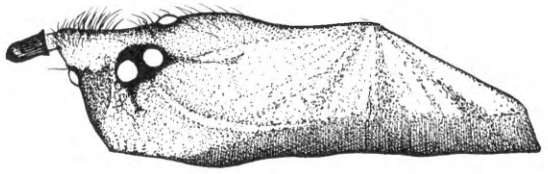
(**c**) *Metopobactrus prominulus*



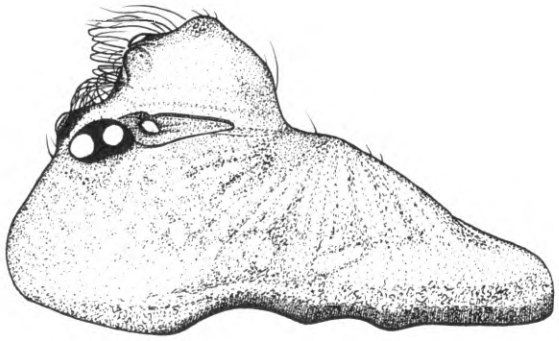
(**d**) *Hybocoptus decollatus*



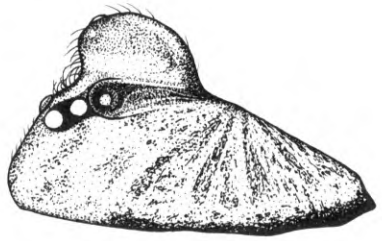
(**e**) *Baryphyma pratense*



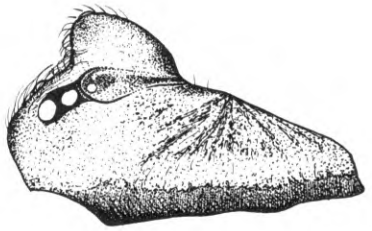
(**f**) *B. duffeyi*



(**g**) *B. gowerense*



(**h**) *B. trifrons*



(**i**) *B. maritimum*

Genus *Gonatium* Menge, 1866

TmI 0.7–0.88; TmIV present; tibial spines 1–1–1–1 (rather small on tibiae I and II of males)

There are three British species in this genus, the commonest two having a distinctly reddish appearance. Males have tibia I curved (Text Figs 18a–c) and the head only slightly raised.

TAXONOMIC NOTE

The species *Gonatium corallipes* (O. P.-Cambridge, 1875) was found to be synonymous with *G. paradoxum* (L. Koch, 1869) by Thaler (1972).

Gonatium rubens (Blackwall, 1833)

Plate 175; Text Figs 18a, 19a

Length: ♀: 2.6–3.2mm; ♂: 2.5–2.6mm. TmI 0.8–0.88

Living and freshly killed specimens are often even redder than illustrated. Male similar to female illustrated, but with head slightly narrowed and raised anteriorly (Text Fig. 18a). Male tibia I curved (Text Fig. 18a); swollen ventrally in distal third; single tibial spine rather small. Femur of male palp is enlarged (Text Fig. 19a) and bears a dorsal apophysis and numerous short, thick spines.

Gonatium rubellum (Blackwall, 1841)

Text Figs 18b, 19b

Length: ♀: 2.8–3.4mm; ♂: 2.5–2.8mm. TmI 0.8–0.88

Both sexes very similar in general appearance to *G. rubens*. Head of male is less sharply raised and tibia I less swollen (Text Fig. 18b) than in *G. rubens*. Patella of male palp is enlarged (Text Fig. 19b) and bears a blunt apophysis dorsomesally as well as a pointed apophysis ectodistally.

Gonatium paradoxum (L. Koch, 1869)

(= *G. corallipes* (O. P.-Cambridge))

Text Figs 18c, 19c

Length: ♀: 1.9–2.2mm; ♂: 1.9mm. TmI 0.7–0.8

This spider lacks the distinctly reddish appearance of the preceding two species, and is also smaller. Carapace rather dark orange-brown with dark, radiating striae and dark ocular area; abdomen brown-grey; legs pale yellowish to orange-brown. Male has head only slightly raised (Text Fig. 18c); tibia I curved (Text Fig. 18c).

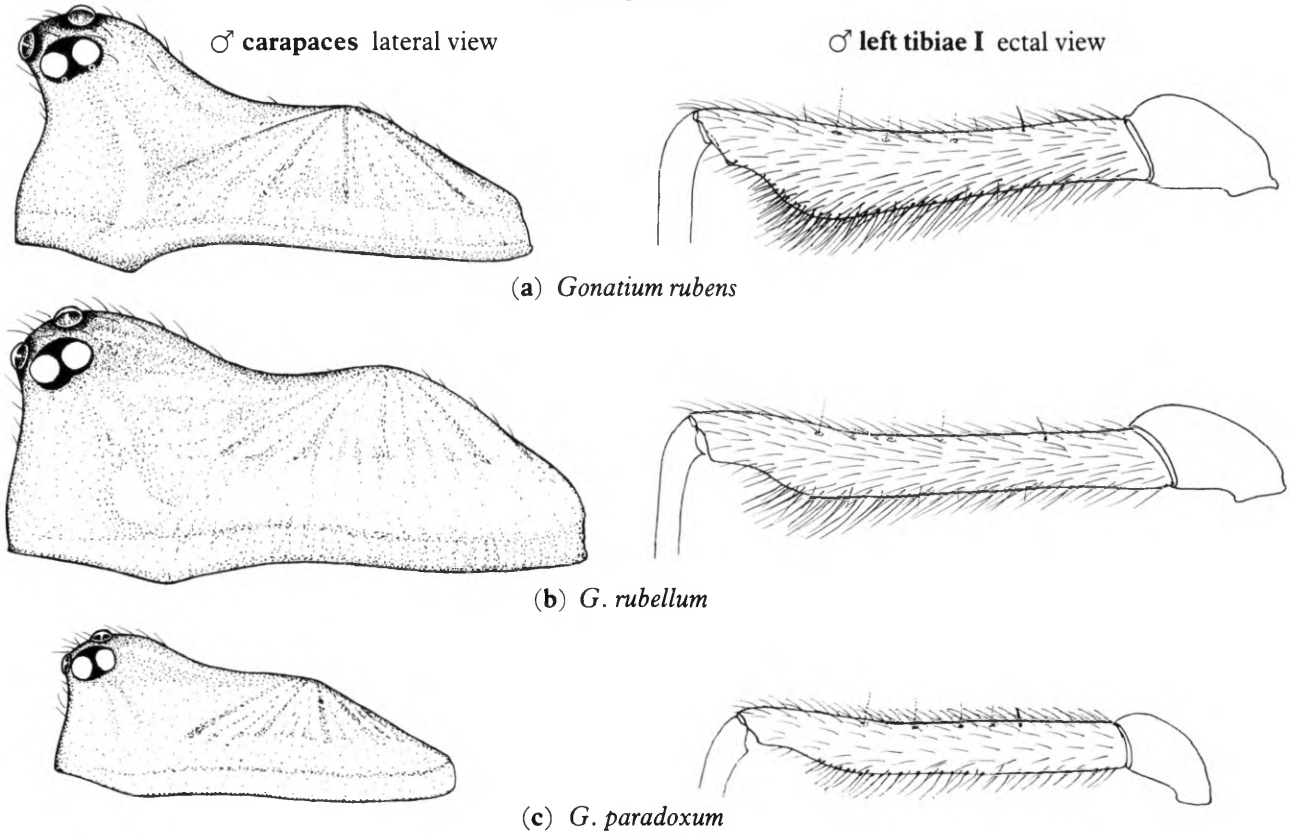
DISTINGUISHING THE SPECIES

G. rubens and *G. rubellum* are by far the commonest and may be occasionally collected together. Epigynes show considerable variation in shape and depth of sclerotization (Text Figs 19a,b), but are readily distinguished. The variation in *G. rubellum* epigynes is so great as to suggest the presence of more than one species. However, intermediate states were found between the two examples illustrated and, in *G. rubellum* males, collected with greatly differing females, there were no significant differences in palpal structure. The male palpal organs are distinctly different in the three species, as are the palpal femora, patellae and tibiae. *G. paradoxum* is much rarer, smaller, and has a highly characteristic epigyne and male palp.

DISTRIBUTION

G. rubens and *G. rubellum* are both widely distributed and occur, sometimes together, in a variety of habitats both at ground level and on bushes; *G. rubellum* nearly always in woods but *G. rubens* in many more open habitats. *G. paradoxum* is rare and has been recorded only from a very few sites (heathland, grassland) in south-eastern England.

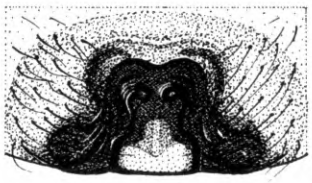
Text Figure 18

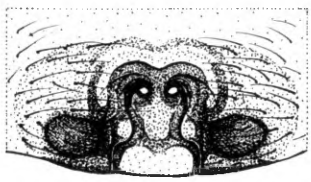


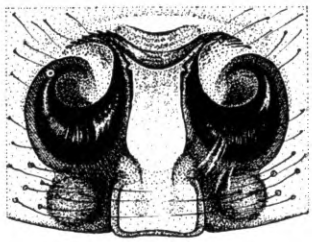
Text Figure 19

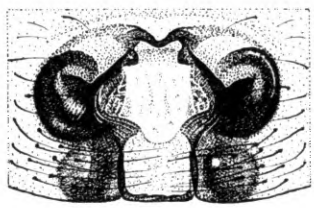
♀ epigynes

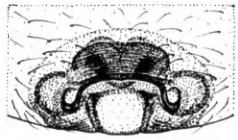
♂ palps

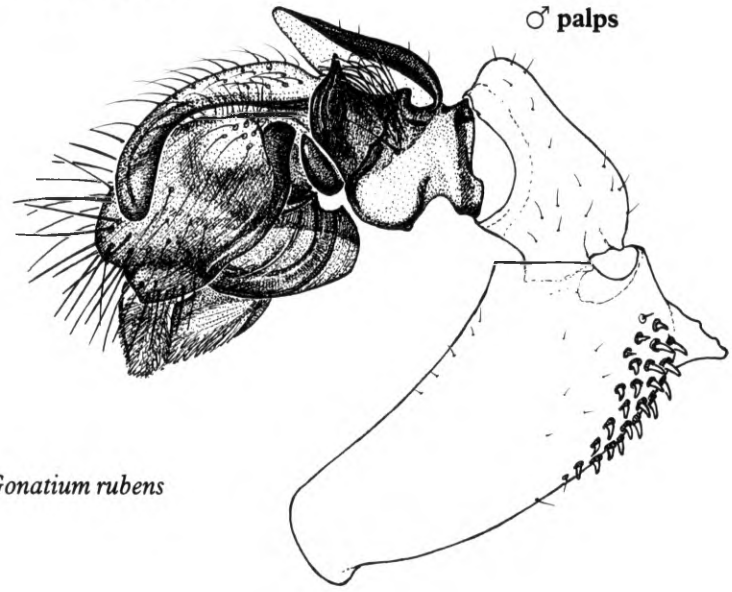




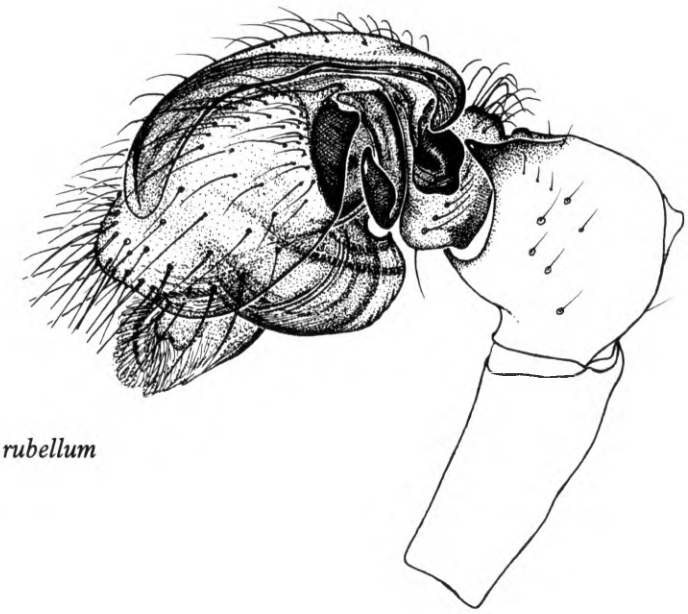








(**a**) *Gonatium rubens*



(**b**) *G. rubellum*

(**c**) *G. paradoxum*

Genus *Maso* Simon, 1884

TmI 0.9–0.95; TmIV present in *Maso sundevalli* but *absent* in *M. gallicus*; tibial spines 1–1–1–1

The two British species in this genus are of highly characteristic appearance (Plate 176), tibia and metatarsus I and II having two rows of stout ventrolateral spines (similar spines also present in *Satilatlas britteni*, p. 75). Trichobothria relatively long. Male head is not elevated or modified and the sexes are very similar in general appearance.

Maso sundevalli (Westring, 1851)

Plate 176; Text Fig. 20a

Length: ♀: 1.3–1.8mm; ♂: 1.3–1.7mm. TmI 0.9–0.95

Male very similar to female illustrated.

Maso gallicus Simon, 1894

Text Fig. 20b

Length: ♀: 1.4–2mm; ♂: 1.3–1.6mm. TmI 0.9–0.95

Very closely similar to *M. sundevalli* in general appearance.

DISTINGUISHING THE SPECIES

The absence of TmIV in *M. gallicus* seems to have been overlooked in previous work and keys. The epigyne of *M. sundevalli* is rather variable (Text Fig. 20a), but fairly easily recognizable and quite distinct from that of *M. gallicus*, which has a finger-like projection (Text Fig. 20b). The male palps are quite distinctive; that of *M. gallicus* has the tarsus raised conically (Text Fig. 20b), bearing three plumose hairs; a pair of plumose hairs are also present on the tibia; some or all of these hairs may become detached.

DISTRIBUTION

M. sundevalli is common and widespread throughout the British Isles, usually being found at ground level in moss and litter. *M. gallicus* seems to be rare and has been recorded from only a few localities in the Midlands, East Anglia (fens) and Kent.

Genus *Peponocranium* Simon, 1884

TmI 0.85–0.91; TmIV present; tibial spines 1–1–1–1 (spines very small and insignificant on tibia I and II of males).

This genus contains only one British species, the male of which has the head elevated into a relatively large lobe.

Peponocranium ludicrum (O. P.-Cambridge, 1861)

Plate 177; Text Figs 20c, 21a

Length: ♀: 1.65–2.2mm; ♂: 1.5–1.8mm. TmI 0.85–0.91

The carapace and legs are sometimes of a paler yellow colour than illustrated, but the darker markings seem fairly constant on the carapace; the tibiae may exhibit more or less darkening than illustrated. Male of similar overall coloration, but with head elevated to form a relatively large lobe (Text Fig. 21a). A broad, shallow sulcus runs back from just above posterior lateral eyes and contains a small pit. The overall size and shape of the cephalic lobe exhibits considerable variation, but is nevertheless characteristic. Epigyne rather variable (Text Fig. 20c), but fairly easily recognizable. Male palpal organs show considerable variation and the structures can sometimes be difficult to make out. However, the shape of the palpal tibia and its apophyses, the relatively long palpal patella, the tiny conical dorsal projection on the cymbium, together with the shape of the male carapace, should allow easy identification.

DISTRIBUTION

P. ludicrum is fairly common and widely distributed throughout the British Isles, occurring in a variety of habitats at ground level (moss, grass and leaf-litter) and higher up on bushes.

Genus *Pocadicnemis* Simon, 1884

TmI 0.85–0.9; TmIV present; tibial spines 1–1–1–1

This genus contains two British species, very similar to one another in both general appearance and genitalia. Males have the head raised into a shallow lobe; the male palp has a long whip-like embolus.

TAXONOMIC NOTE

Pocadicnemis juncea was first considered as a 'variety' of *P. pumila* by Locket & Millidge (1953), but regarded as within the normal range of variation of *P. pumila* by Locket, Millidge *et al.* (1974). It was later described as a separate species by Millidge (1975), together with another four new species – *P. neglecta* and *P. jacksoni* from Europe; *P. americana* and *P. occidentalis* from North America. Examination of British material confirmed Millidge's view that *P. pumila* and *P. juncea* are separate species. However, some British specimens of *P. juncea* closely resembled *P. neglecta*, with various intermediate states occurring. Millidge (*loc. cit.*) states 'It is possible that *neglecta* should be regarded as a subspecies of *juncea*, but at present there is insufficient evidence to decide this'. Heimer (1978) synonymized *P. neglecta* with *P. juncea*. In view of these uncertainties, I felt I should not include *P. neglecta* as a distinct British species.

Pocadicnemis pumila (Blackwall, 1841)

Plate 178; Text Figs 20d, 21b

Length: ♀: 1.7–2.2mm; ♂: 1.7–1.9mm. TmI 0.85–0.9

Male similar in coloration to female illustrated, but having the head raised into a shallow lobe (Text Fig. 21b); a sulcus runs back from behind each posterior lateral eye and contains a small pit.

Pocadicnemis juncea Locket & Millidge, 1953

Text Figs 20e, 21d

Length: ♀: 1.7–2.2mm; ♂: 1.7–1.9mm. TmI 0.85–0.9

Very like *P. pumila* in general appearance and genitalia.

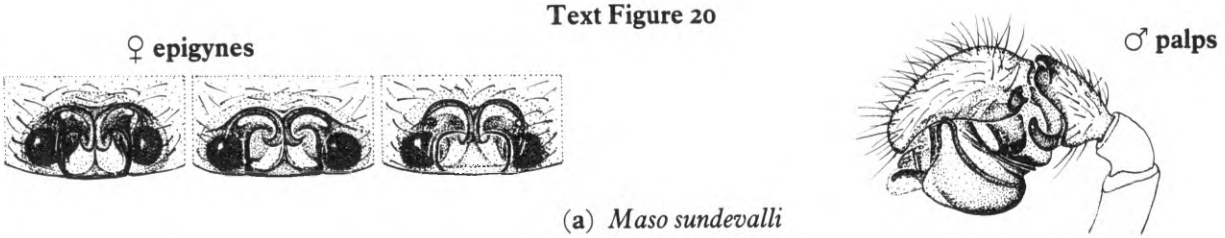
DISTINGUISHING THE SPECIES

Females of both species have rather variable epigynes (Text Figs 20d,e) but despite this seem to be readily distinguishable. Male palps also rather variable; the whip-like embolus is freely mobile and may be found in a variety of positions. The length and shape of the median apophysis (M in Text Figs 20d,e) seems to afford reliable identification despite some slight variability. It is best seen if the palp is viewed from the front; in most cases, the palp is in the correct position for such examination with the specimen on its back. Male carapace shows some variation in both species and the slight differences illustrated (Text Figs 21b,d) may not be particularly significant or useful.

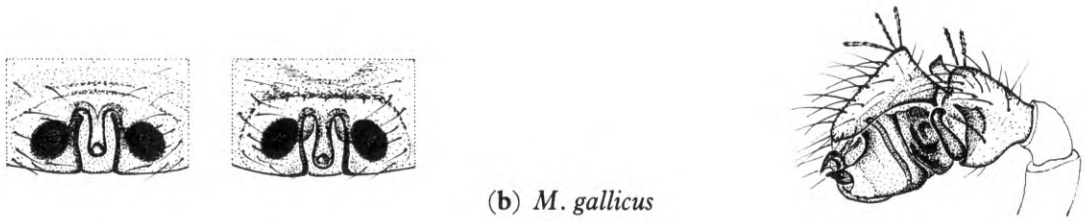
DISTRIBUTION

P. pumila and *P. juncea* are probably both widespread throughout the British Isles and occur in a wide variety of situations. The two species are frequently found together.

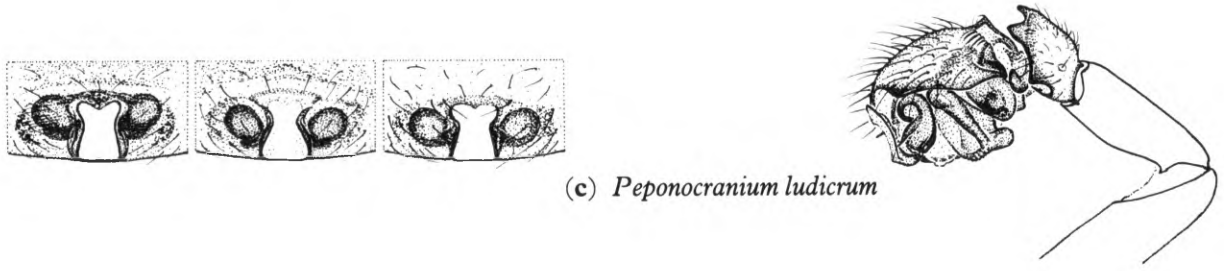
Text Figure 20



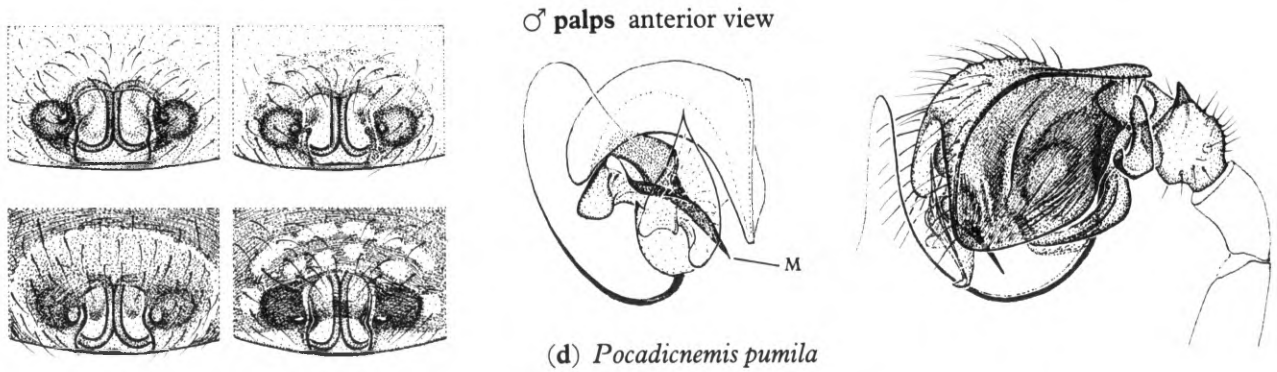
(**a**) *Maso sundevalli*



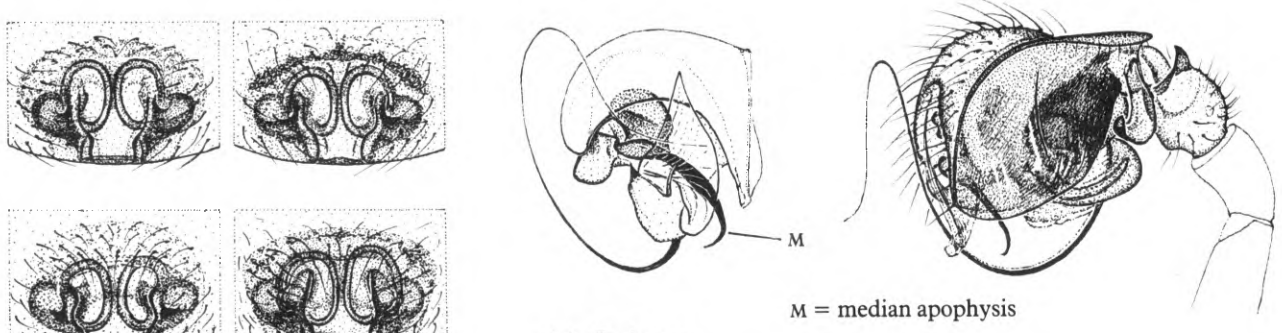
(**b**) *M. gallicus*



(**c**) *Peponocranium ludicrum*



(**d**) *Pocadicnemis pumila*

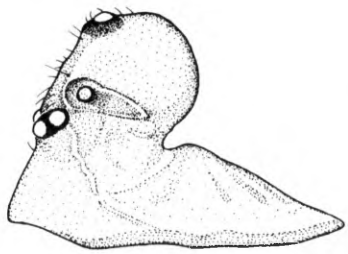


M = median apophysis

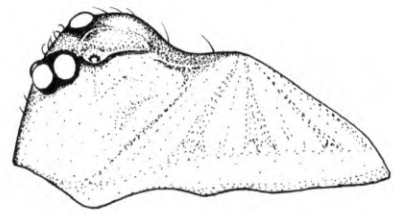
(**e**) *P. juncea*

Text Figure 21

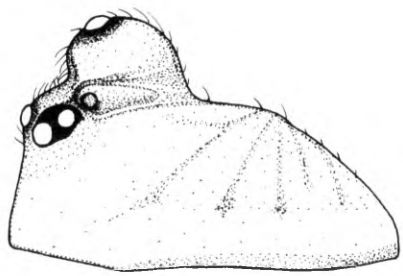
♂ **carapaces** lateral view



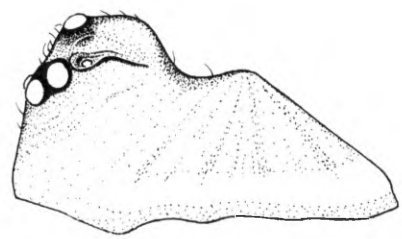
(**a**) *Peponocranium ludicrum*



(**b**) *Pocadicnemis pumila*

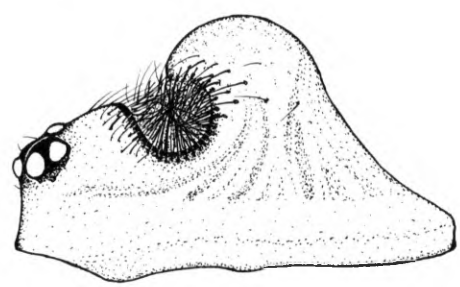


(**c**) *Hypselistes jacksoni*

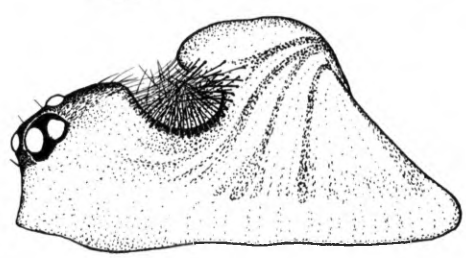


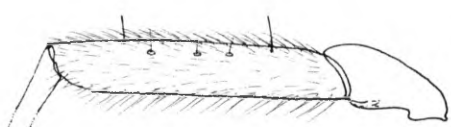
(**d**) *P. juncea*

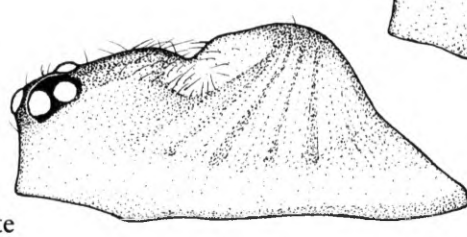
♂ **left tibiae I** ectal view



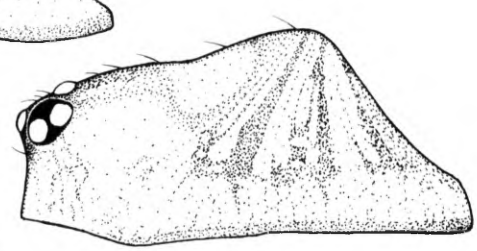
(**e**) *Oedothorax gibbosus*



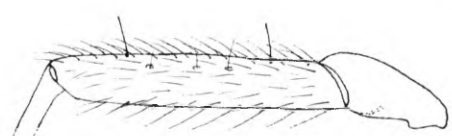


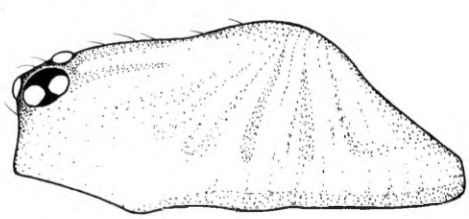


(**f**) ? intermediate



(**g**) *Oedothorax gibbosus* f. *tuberosus*





Genus *Hypselistes* Simon, 1894

TmI 0.87–0.94; TmIV present; tibial spines 1–1–1–1

This genus contains only one British species, the male of which has the head raised to form a lobe. The abdomen in both sexes is shiny and coriaceous. *H. florens* O. P.-Cambridge, a North American species, was formerly included in the British list but the authenticity of the single record, in 1909, is now doubted.

Hypselistes jacksoni (O. P.-Cambridge, 1902)

Plate 183a; Text Figs 21c, 22a

Length: ♀: 1.6–2.2mm; ♂: 1.8–2.1mm. TmI 0.87–0.94

Carapace sometimes a little more orange-red than illustrated. Abdomen characteristically dark, shiny and coriaceous, but can be quite pale in freshly moulted specimens. Femora of legs coloured as carapace, with rest of leg segments a little darker. Male with similar abdomen and coloration; head raised into lobe which is slightly bifurcate longitudinally and carries the posterior median eyes (Text Fig. 21c); a sulcus runs back from each posterior lateral eye and contains a small pit. Epigyne usually dark and well sclerotized, shows considerable variation, but is fairly easily recognizable (Text Fig. 22a). Male palp highly characteristic (Text Fig. 22a).

DISTRIBUTION

H. jacksoni appears to be widely distributed throughout the British Isles, but does not appear to have been recorded from Ireland. It is a rather rare species, usually occurring in fairly wet habitats.

Genus *Oedothorax* Bertkau, 1883

TmI 0.58–0.75; TmIV present; tibial spines 2–2–1–1

There are five British species in this genus, the males of which have the carapace modified to a greater or lesser degree (Text Figs 21e–g, 23a–d). The male of one species, *Oedothorax gibbosus* (Blackwall), occurs in two fairly distinct forms (see Taxonomic Note, below). The genitalia of all five species are closely similar.

TAXONOMIC NOTE

Although initially described as two distinct species, it has long been considered that *Oedothorax tuberosus* (Blackwall) was probably a dimorphic male of *O. gibbosus* (Blackwall) (e.g. Locket & Millidge, 1953, p. 239). The two forms are equally common and almost invariably found mixed together. Denis (1947) described and illustrated differences, in both male palps and female epigynes, between these two 'species'; my examination of a great deal of material did not support these findings. The male carapace of *O. gibbosus* (Text Fig. 21e) is rather variable as also is that of *O. tuberosus* (Text Fig. 21g). The leg hairs and spines are also much shorter and denser in *O. gibbosus* males (Text Fig. 21e) than in *O. tuberosus* (Text Fig. 21g), and there is an interesting comparison here with the legs of *Dicymbium nigrum* and *D. nigrum* f. *brevisetosum* (p. 38), and also *Lepthyphantes whymperi* (p. 150). Occasional specimens seem to represent an almost intermediate state (Text Fig. 21f). The male chelicerae of both *O. gibbosus* and *O. tuberosus* each have a tooth-like process (bearing a hair) projecting from the front and directed inferomesally. The palpal organs and tibial apophyses show some variation in all species of *Oedothorax*, and there are no significant differences between *O. gibbosus* and *O. tuberosus*. Females exhibit no differences, either in general appearance or genitalia, and only show slight variation in the leg hairs and spines.

The name *O. gibbosus* (Blackwall) has priority. The male form *O. tuberosus* (Blackwall) is not considered a distinct species and is here referred to as *O. gibbosus* f. *tuberosus* (Blackwall). Although the male dimorphism may be genetically determined, it is also possible that the two forms could be produced by differing growth rates and number of ecdyses taken to reach maturity. Breeding experiments might resolve this question. (See also *Diplocephalus connatus* (p. 86) and *Troxochrus scabriculus* (p. 72).)

Oedothorax gibbosus (Blackwall, 1841)

Plate 179; Text Figs 21e, 22b

Length: ♀: 2.4–3.2mm; ♂: 2–2.25mm. TmI 0.63–0.71

The carapace is often more orange than illustrated. Male carapace raised in foveal region to form a protuberance (Text Fig. 21e), anterior to which is a deep notch surrounded and filled by long black silky hairs. The overall shape of the carapace varies considerably. Male legs clothed densely with short, fine hairs and with short tibial spines – minute on tibia I and II (Text Fig. 21e). Epigyne and adnexae rather variable (Text Fig. 22b). Male palpal organs and palpal tibia also show some variation (Text Fig. 22b).

Oedothorax gibbosus f. *tuberosus* (Blackwall, 1841)

Text Fig. 21f,g

This form, which occurs only in the male, is recognised by the carapace which, although raised to a variable degree in the foveal region (Text Fig. 21g), lacks the deep notch and long hairs present in the typical male *O. gibbosus*. In addition, the tibial spines are longer and the leg hairs are longer and sparser – as in the female of *O. gibbosus*. Occasional specimens may be encountered which suggest an intermediate state (Text Fig. 21f). Male palpal organs and palpal tibia indistinguishable from those of the typical form.

Oedothorax fuscus (Blackwall, 1834)

Plate 180; Text Figs 22c, 23a

Length: ♀: 2.4–2.9mm; ♂: 1.8–2mm. TmI 0.6–0.66

The median light mark on the female abdomen is usually present. Carapace and legs may be more orange than illustrated. Male abdomen usually lacks median light mark, but often has vague, light chevrons in posterior half. Male carapace (Text Fig. 23a) variable, but usually slightly prominent between anterior and posterior median eyes, as well as being slightly raised behind eyes. Epigyne, adnexae, male palp and palpal tibia all rather variable (Text Fig. 22c).

Oedothorax agrestis (Blackwall, 1853)

Text Figs 22d, 23b

Length: ♀: 2.4–2.9mm; ♂: 2–2.5mm. TmI 0.6–0.75

Female similar to *O. gibbosus*. Carapace light to dark chestnut brown. Legs yellow-orange. Abdomen without median light mark, but both sexes usually with faint chevrons in posterior half. Male carapace (Text Fig. 23b) rather variable; slightly domed behind eyes, but with no prominence between median eyes (*cf. O. fuscus*). Epigyne, adnexae, male palp and palpal tibia all rather variable (Text Fig. 22d).

Oedothorax retusus (Westring, 1851)

Text Figs 22e, 23c

Length: ♀: 2.2–3mm; ♂: 2–2.2mm. TmI 0.58–0.68

Female similar to *O. gibbosus*; usually lacks central light

mark on abdomen, but fine, light chevrons usually present in posterior half. Male carapace (Text Fig. 23c) rather variable, sometimes heavily marked with black; raised abruptly behind eyes and with a shallow depression, containing a small pit, on each side. Epigyne, adnexae, male palp and palpal tibia all rather variable (Text Fig. 22e).

Oedothorax apicatus (Blackwall, 1850)

Text Figs 22f, 23d

Length: ♀: 2.3–3.3mm; ♂: 2–2.25mm. TmI 0.58–0.68

Very similar in general appearance to *O. retusus*. Male carapace raised behind eyes to form a knob-like projection carrying a few hairs (Text Fig. 23d); behind this, on each side, is a shallow depression containing a small pit. Epigyne, adnexae, male palp and palpal tibia all rather variable (Text Fig. 22f).

DISTINGUISHING THE SPECIES

Males are readily distinguished by consideration of the form of the carapace, palpal organs and palpal tibiae. Females require rather more care, but can usually be distinguished by their epigynes, despite the variability of the latter (Text Figs 22b–f). *O. gibbosus* has the central pale area roughly triangular in shape; the darker lines on each side of this converge anteriorly much more than in the other species. *O. retusus* is similar (and apparently often confused with *O. gibbosus*) but has the lines bordering the central area more curved and less convergent, and with a pair of minute circular openings usually visible anteriorly; a slightly darker line, convex anteriorly, usually runs between these two openings, and the central area of the epigyne is fairly uniform in depth of colour. These last two features help in separating *O. retusus* from the very similar *O. apicatus*, in which the central part has a distinctly paler anterior and median area, and lacks a darker line anteriorly. Another useful distinguishing feature is that in females of *O. apicatus* the length of tibia IV spine is usually less than 1.8 times the width of the tibia at that point, whereas in *O. retusus* the length of tibia IV spine is usually at least twice the tibial width. Some epigynes of *O. apicatus* occasionally resemble those of *O. fuscus*, but the latter species has relatively smaller seminal receptacles as well as, usually, a clear median light mark on the abdomen. The epigyne of *O. fuscus* has the central pale area roughly rectangular, with the darker curved lines on each side at first slightly convergent anteriorly, but then with divergent deeper structures easily visible. *O. agrestis* usually lacks the median light abdominal mark; epigyne usually less deeply sclerotized than in *O. fuscus*, and the rectangular central area is bordered on each side by rather thinner dark lines. The latter usually widen anteriorly and finally curve slightly outwards at their anterior tips; just outside each tip is a faint ridge, convergent anteriorly.

If the epigyne is detached, and the adnexae viewed dorsally, other differences become apparent, as illustrated. The majority of specimens can, however, be identified without doing this.

DISTRIBUTION

All five species have a widespread distribution throughout the British Isles, usually being found in moss, grass and undergrowth. *O. gibbosus*, and the male f. *tuberosus*, is fairly common, usually occurring in damp habitats. *O. fuscus* and *O. retusus* also occur commonly in a variety of habitats. *O. agrestis* is appreciably less common, usually being found in damp situations. *O. apicatus* is found, rather rarely, in a variety of habitats; sometimes locally abundant in shingle on river banks and on temporary grassland.

Genus *Trichopterna* Kulczynski, 1894

TmI 0.72–0.93; TmIV present; tibial spines 1–1–1–1 (minute in males, smaller than hairs, virtually absent)

This genus contains two British species, the males of which have the head raised to form a lobe.

TAXONOMIC NOTE

The species *Trichopterna mengei* (Simon) was transferred to the genus *Pelecopsis* Simon, 1864, by Millidge (1977).

Trichopterna thorelli (Westring, 1861)

Text Figs 23e, 24a

Length: ♀: 2–2.5mm; ♂: 1.9–2.2mm. TmI 0.9–0.93

Female carapace brownish with darker markings; broadly similar to that illustrated for *Pocadicnemis pumila* (Plate 178). Female abdomen dark grey to black, fairly shiny, and with four indistinct reddish sigilla. Legs orange-brown. Male with carapace raised to form a forward-projecting lobe (Text Fig. 23e) which carries the posterior median eyes; a small pit is present just behind each posterior lateral eye and frequently contains exudate; clypeus projects in front of chelicerae. Male abdomen oval to globular; black, shiny and with four reddish sigilla; fine light chevrons present in posterior half.

Trichopterna cito (O. P.-Cambridge, 1872)

Text Figs 23f, 24b

Length: ♀: 1.5–1.9mm; ♂: 1.3–1.5mm. TmI 0.72–0.82

Female carapace brownish with darker markings disposed a little like those of *Pocadicnemis pumila* (Plate 178); female head region usually slightly domed behind the eyes. Abdomen black with four sigilla. Legs brownish, often suffused with black. Male with carapace raised to form a lobe (Text Fig. 23f) which carries the posterior median eyes; a small pit is present just behind each posterior lateral eye and frequently contains exudate. Male abdomen grey-black.

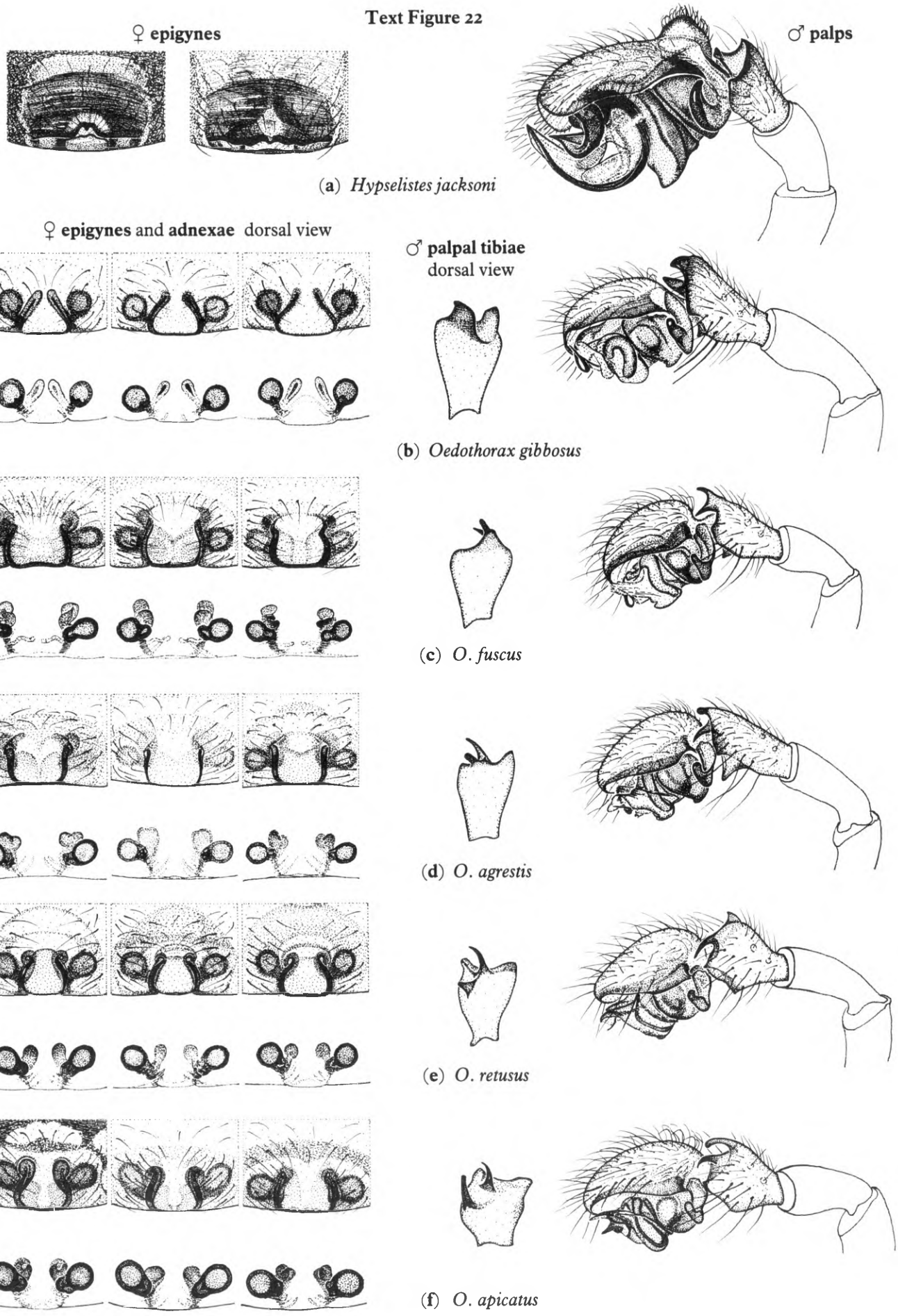
DISTINGUISHING THE SPECIES

These two species are readily distinguished from each other by size, position of TmI, form of the male carapace and by the epigynes and male palps. The epigynes show considerable variation in shape, and depth of sclerotization; in *T. cito* the central part may occasionally even be triangular in shape. Male palps also a little variable, but the tibial apophyses and palpal organs are distinctive.

DISTRIBUTION

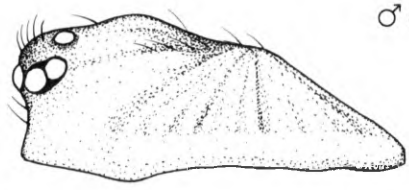
T. thorelli has a widespread, but local distribution throughout the British Isles and occurs at ground level, in moss and grass, often in rather damp habitats. *T. cito* has been recorded only from three localities on the south-east coast of England, in vegetation on sand and shingle.

Text Figure 22

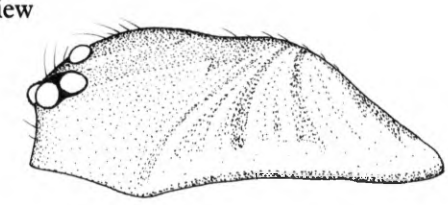


Text Figure 23

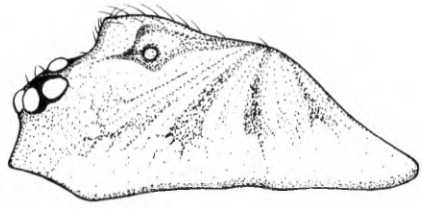
♂ **carapaces** lateral view



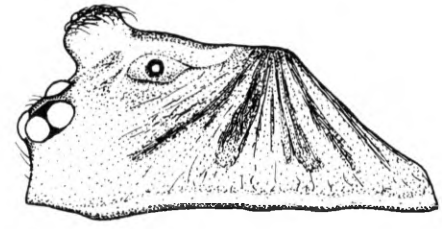
(**a**) *Oedothorax fuscus*



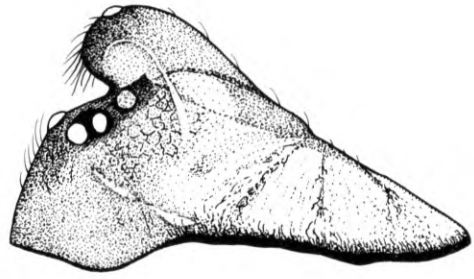
(**b**) *O. agrestis*



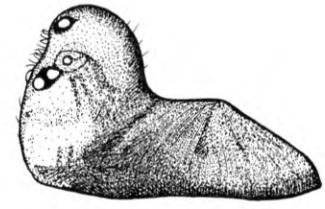
(**c**) *O. retusus*



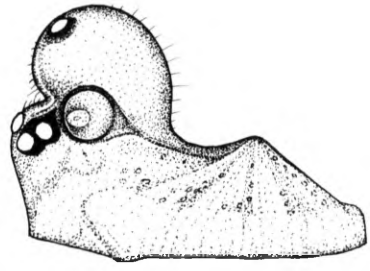
(**d**) *O. apicatus*



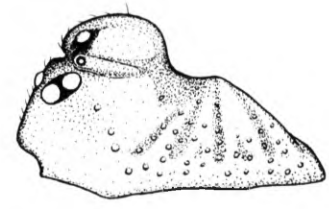
(**e**) *Trichopterna thorelli*



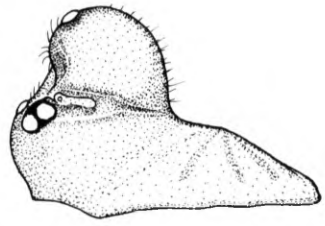
(**f**) *T. cito*



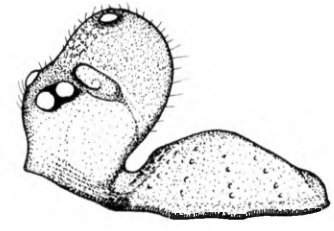
(**g**) *Pelecopsis mengei*



(**h**) *P. parallela*



(**i**) *P. nemoralis*



(**j**) *P. elongata*

Genus *Pelecopsis* Simon, 1864

TmI 0.54–0.88; TmIV absent; tibial spines 1–1–1–1 (absent in female *P. nemoralis*; minute or absent in males).

There are five British species now placed in the genus *Pelecopsis*, one species having been transferred from *Trichopterna*; two species are here considered invalid and as junior synonyms of *P. nemoralis* (see Taxonomic Note, below).

The carapace of females is usually a little domed behind the eyes, with a shallow depression between cephalic and thoracic parts; minute pits are often visible within the dark striae radiating from the fovea. Females of most species have a rather shiny, coriaceous abdomen, often with fairly large, red-brown, paired sigilla dorsally; the female of *P. radicicola* has a dorsal scutum. Males of all species have a scutum covering virtually the whole of the dorsal surface of the abdomen; the colour of the scutum varies from pale orange-brown, through red-brown to dark brown, and is sometimes virtually black. Male carapace raised to form a lobe, or lobes, carrying posterior median eyes.

TAXONOMIC NOTE

The species *Pelecopsis mengei* (Simon) was formerly included in the genus *Trichopterna* Kulczynski, 1894, but was transferred to *Pelecopsis* by Millidge (1977). Other species of *Pelecopsis* were formerly described under *Lophocarenum* Menge, 1868; the priority of the name *Pelecopsis* was pointed out by Locket, Millidge *et al.* (1974) and earlier by several authors.

The status of *Pelecopsis nemoralis* (Blackwall) and related 'species' was investigated by Cooke (1967) who suggested that there were probably three closely similar species – *P. nemoralis* (Blackwall), *P. mediocris* (Kulczynski) and *P. locketi* Cooke. These findings, and the uncertain validity of the species *P. mediocris* and *P. locketi* were later discussed by Locket, Millidge *et al.* (loc cit., p. 85–87). Males are said to be distinguishable by slight differences in the dimensions of the cephalic lobe, the number and length of hairs on the lobe, and (in part) by the palpal tibia; females are said to be distinguishable with difficulty or not at all. *P. nemoralis* is said to occur typically in woodland habitats (males adult: August to September), whilst *P. mediocris* and *P. locketi* occur (often together) typically on coastal sand dunes amongst marram (males adult: September to October).

Examination of a considerable number of specimens of *P. nemoralis* showed the species to be highly variable, both within and between different populations. The dimensions of the male cephalic lobe, the hairs, the form of the tibial apophyses and the palpal organs were all highly variable, and all four of these parameters were found to exist in different combinations in a range of specimens. It would have been possible to erect several more 'species' using similar criteria. Females also vary considerably in general appearance as also do their epigynes (Text Fig. 25a). Most dark females, with a highly coriaceous abdomen, tend to have a darker, well-sclerotized epigyne (and paler specimens a paler epigyne) but there were numerous exceptions. The adnexae also showed wide variation and this could often partly be seen even without dissection or clearing (as illustrated). My interpretation of Cooke's findings is that *P. nemoralis* is a highly variable species, capable of broad habitat use (see also Vol. 1, p. 32), and that the various forms described are the result of selection pressures on an inherently polytypic species at the extremes of its habitat range. Many other species show similar variability – one good example is *Lophomma punctatum* (Blackwall) (p. 78). In the case of male carapaces which have particularly large or distinctive cephalic lobes, the latter seem to provide scope for even greater variability – both real and perceived. The name *P. nemoralis* (Blackwall) has priority.

Pelecopsis mengei (Simon, 1884)

(= *Trichopterna mengei* (Simon))

Plate 181; Text Figs 23g, 24c

Length: ♀: 1.9–2.3mm; ♂: 1.8–2mm. TmI 0.82–0.88

Female may be darker or lighter than illustrated. Female carapace has the head slightly domed behind the eyes, and within the dark radiating striae are minute, circular pits (just visible on Plate 181). The female abdomen is characteristically coriaceous; ventrally there are orange-brown sclerotized areas in region of branchial opercula and encircling spinners, together with numerous paired brownish sigilla. Tibial spines rather small in female, as illustrated; in male these spines are present but very much smaller. Male abdomen with brown scutum dorsally. Male carapace with head elevated to form a large lobe (rather variable in size) carrying posterior median eyes (Text Fig. 23g); just behind posterior lateral eyes is a large depression (with a well-sclerotized circular edge) containing a smaller pit – the whole of this is sometimes obscured by exudate. Radiating lines of small pits also discernible. Epigyne and male palp (Text Fig. 24c) both a little variable, but characteristic.

Pelecopsis parallela (Wider, 1834)

Text Figs 23h, 24d

Length: ♀: 1.5–2mm; ♂: 1.25–1.6mm. TmI 0.54–0.6

Female similar to *P. mengei* in general appearance, with head slightly domed behind eyes and radiating lines of small pits on carapace. Female tibial spines just a little shorter in length than width of tibia; male tibial spines very much reduced, or absent. Male abdomen with brown scutum dorsally. Male carapace with head raised to form a shallow lobe (variable) carrying posterior median eyes (Text Fig. 23h); a shallow sulcus runs back from the region of each posterior lateral eye and contains a small pit; radiating lines of small pits clearly visible. Epigyne shows considerable variation particularly in depth of pigmentation which may, at times, obscure the structures (Text Fig. 24d). Male palp also rather variable.

Pelecopsis nemoralis (Blackwall, 1841)

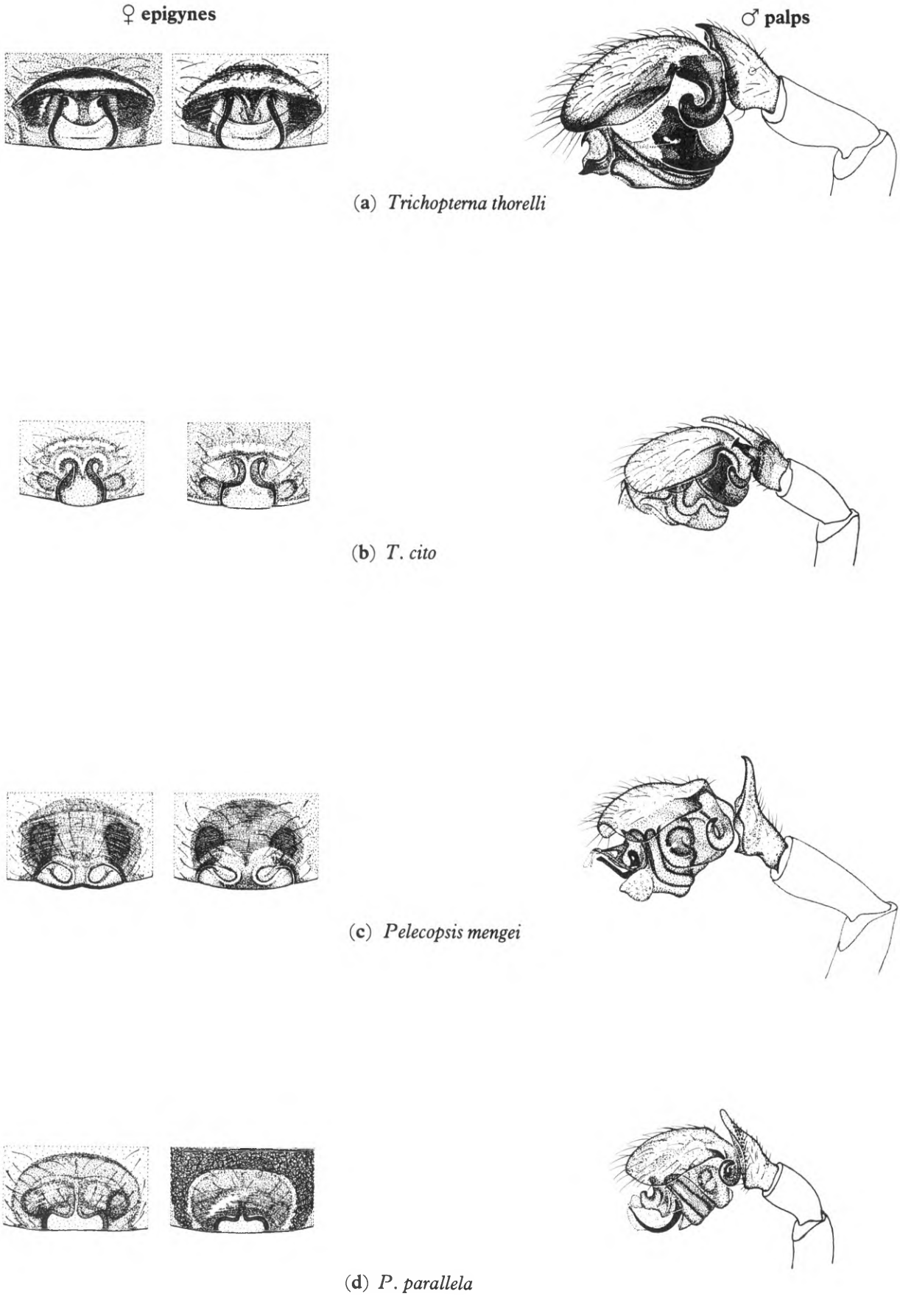
(= *P. nemoralis* (Blackwall) + *P. mediocris* (Kulczynski) + *P. locketi* Cooke)

Text Figs 23i, 25a

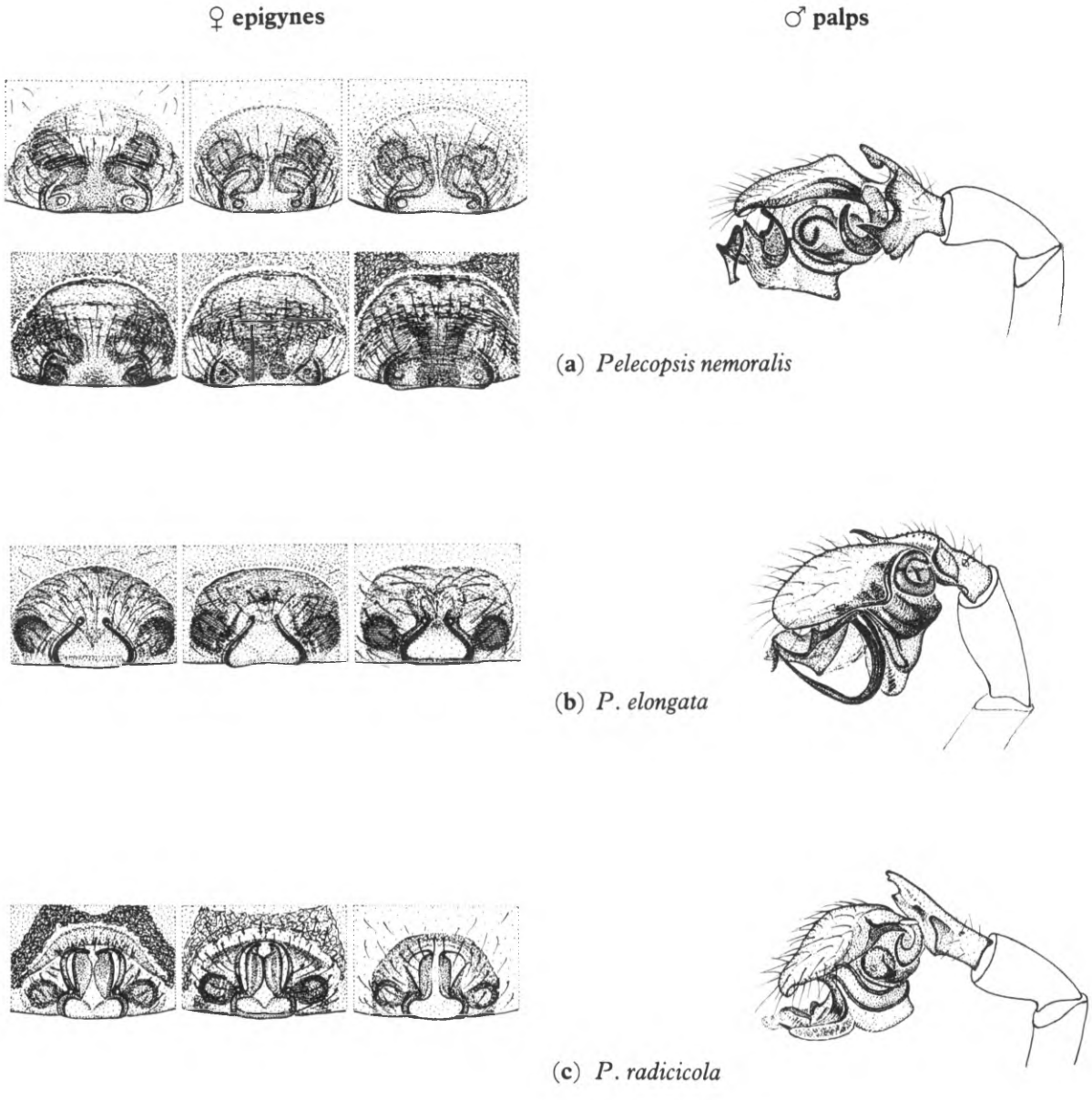
Length: ♀: 1.5–2.1mm; ♂: 1.4–1.6mm. TmI 0.55–0.65

Female similar in general appearance to *P. mengei* but extremely variable in depth of colour – e.g. abdomen may appear like any of those on Plate 183! Carapace very dark to light brown; the pits in radiating striae usually small and very difficult to see. Tibial spines absent in both sexes (apparently, minute spines are occasionally present in females, but there were none at all in the material I examined). Male abdomen with brown scutum dorsally. Male carapace with head raised to form large lobe (rather variable in dimensions) carrying posterior median eyes (Text Fig. 23i); a shallow sulcus runs back from the region of each posterior lateral eye and contains a small pit. There are usually no pits present on carapace. Epigyne extremely variable, both within and between different populations (Text Fig. 25a). Male palp also rather variable, but nevertheless characteristic.

Text Figure 24



Text Figure 25



Pelecopsis elongata (Wider, 1834)
Text Figs 23j, 25b

Length: ♀: 1.7–2.5mm; ♂: 1.4–1.7mm. TmI 0.6–0.66

Female similar in general appearance to *P. mengei*; cephalic region of carapace rather sharply elevated from thorax; pits in radiating striae clearly visible. Tibial spines short in female; minute or absent in male. Male abdomen with brown scutum dorsally. Male carapace elevated into large, highly characteristic lobe, suffused with black, carrying posterior median eyes (Text Fig. 23j); there is a deep groove between this lobe and the thoracic part of carapace. A sulcus is present in the region of each posterior lateral eye and contains a small pit; radiating lines of minute pits are usually visible on the thorax, as illustrated. Epigyne and male palp a little variable (Text Fig. 25b), but characteristic.

Pelecopsis radicicola (L. Koch, 1875)
Text Figs 25c, 27a

Length: ♀: 1.4–1.6mm; ♂: 1.3–1.4mm. TmI 0.65–0.74

Female with carapace similar to that of *P. mengei* but abdomen grey with brown dorsal scutum on its anterior two-thirds. Tibial spines very short in female; minute or absent in male. Male abdomen also with brown scutum which covers virtually the whole dorsal area. Male carapace raised into lobe which is clearly bifurcate longitudinally and carries a posterior median eye on each side (Text Fig. 27a); a shallow sulcus is present behind the lateral eyes and contains a small pit. Epigyne and male palp a little variable (Text Fig. 25c), but nevertheless characteristic.

DISTINGUISHING THE SPECIES

Females readily distinguished by their epigynes despite the

variability of the latter. The position of TmI is of additional value in separating some species, and the female of *P. radicicola* is readily distinguished by its dorsal abdominal scutum. The female of *P. nemoralis* usually lacks tibial spines. Males easily distinguished by palpal organs and palpal tibiae, despite intraspecific variation. The form of the male carapace, although somewhat variable, also allows easy identification. The cephalic lobe in *P. radicicola* is bifid longitudinally.

DISTRIBUTION

P. mengei probably has a wide, but local, distribution throughout northern England, Scotland, North Wales and Ireland, usually occurring in damp habitats; it has also been recorded from Somerset. *P. parallela* is widely but locally distributed and occurs in a variety of habitats, but especially in calcareous grassland. *P. nemoralis* is also probably widespread and occurs, in its different forms, in a wide variety of habitats (see Taxonomic Note, p. 61) but is a little less common. *P. elongata* and *P. radicicola* are rare spiders and have been recorded only from two localities in Scotland and four in southern England.

Genus *Silometopus* Simon, 1926

TmI 0.65–0.8; TmIV absent; tibial spines 1–1–1–1 (often weak in females; absent in males, or with a weak spine on tibia IV and, occasionally, tibia III).

The four British species in this genus are all very similar in general appearance and in their genitalia. Male carapace slightly elevated in some species (Text Fig. 27b–e) and also with a shallow sulcus running back from region of each posterior lateral eye; a small post-ocular pit is present in all species, but is often very small (e.g. Text Fig. 27c).

Silometopus elegans (O. P.-Cambridge, 1872)

Plate 182; Text Figs 26a, 27b

Length: ♀: 1.25–1.6mm; ♂: 1–1.3mm. TmI 0.7–0.8

Illustration is of a fairly recently moulted specimen; female abdomen often larger than illustrated and may be darker or lighter; legs often a little more orange in colour, but always paler than carapace. Male similar in general appearance, but carapace slightly elevated to form a shallow lobe carrying posterior median eyes (Text Fig. 27b); a shallow sulcus runs back from each posterior lateral eye. Tibial spines usually absent in male.

Silometopus ambiguus (O. P.-Cambridge, 1905)

Text Figs 26b, 27c

Length: ♀: 1.5–2.2mm; ♂: 1.3–1.6mm. TmI 0.68–0.8

Similar to *S. elegans* in general appearance; may be paler in colour or virtually black. Male carapace very slightly domed behind eyes and with a minute post-ocular pit (Text Fig. 27c). Tibial spines usually absent in male.

Silometopus incurvatus (O. P.-Cambridge, 1873)

Text Figs 26c, 27d

Length: ♀: 1.4–1.7mm; ♂: 1.3–1.5mm. TmI 0.68–0.78

Similar to *S. elegans* in general appearance; carapace orange-brown; legs orange. Some specimens virtually black. Male carapace slightly domed behind eyes and with a small post-ocular pit (Text Fig. 27d). Tibial spines often absent in male; sometimes small spines present on tibia IV and, occasionally, also on tibia III.

Silometopus reussi (Thorell, 1871)

Text Figs 26d, 27e

Length: ♀: 1.5–2mm; ♂: 1.3–1.6mm. TmI 0.65–0.75

Similar to *S. elegans* in general appearance. Male carapace slightly domed behind eyes (Text Fig. 27e); a shallow sulcus runs back from each posterior lateral eye and contains a small pit. Tibial spines often absent in male; small spines may be present on tibia IV and, occasionally, also on tibia III.

DISTINGUISHING THE SPECIES

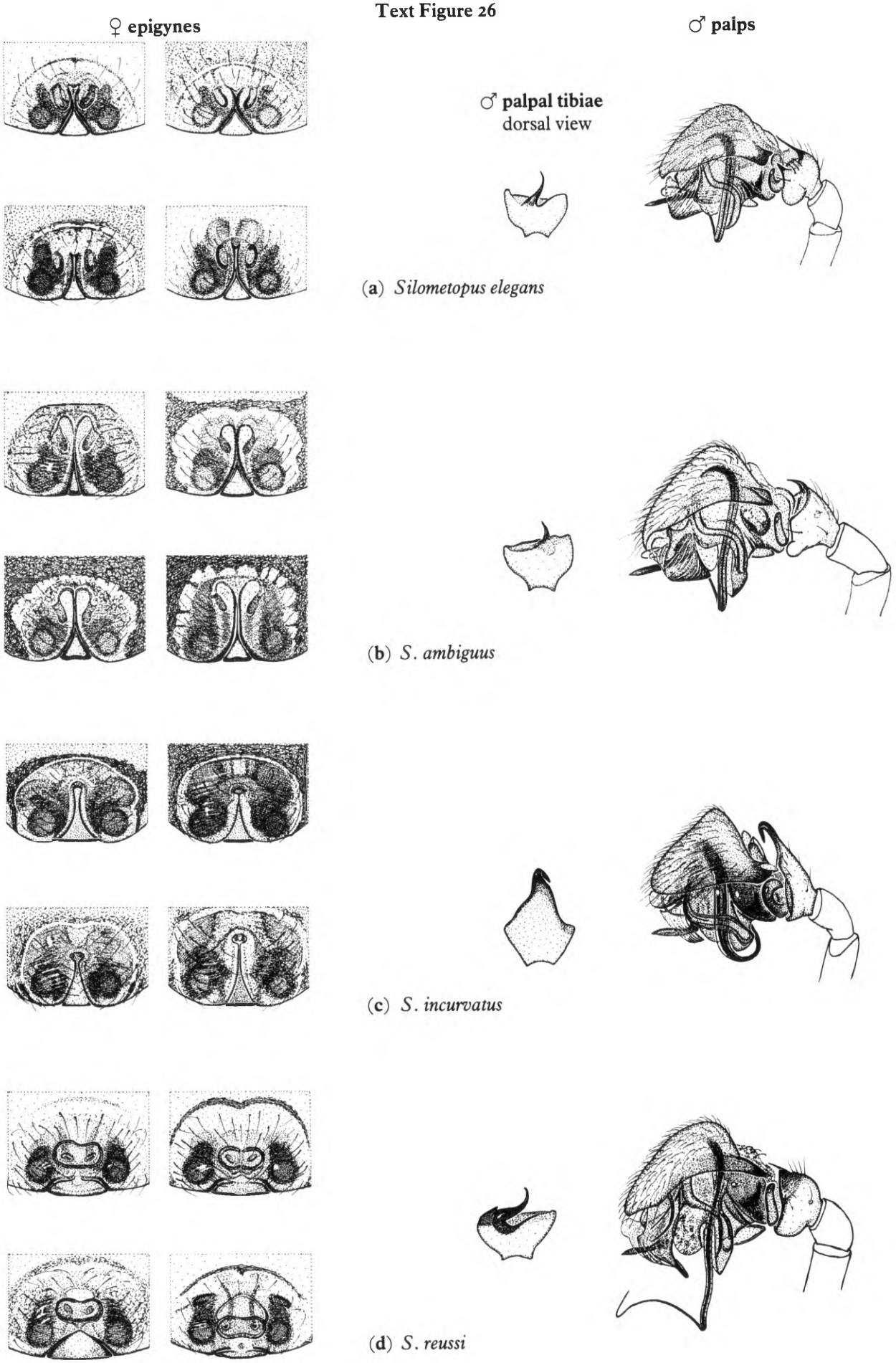
Males readily distinguished by the form of the palpal tibiae, tibial apophyses and palpal organs. In all four species the embolus is long and curves around ventrally to the mesal side, its tip finally curving around to rest near the pointed terminal apophysis (Text Figs 26a,b,c). In specimens of *all* species the embolus may be found uncoiled, and appear similar to that illustrated for *S. reussi* (Text Fig. 26d). The form of the male carapace is also useful in identification.

Females require a little extra care. The epigyne of *S. reussi* is highly characteristic, although rather variable (Text Fig. 26d). Epigynes of the other three species are also highly variable and rather similar to each other (and to those of *Saloca diceros* (p. 78), *Diplocephalus cristatus* (p. 84) and *Araeoncus humilis* (p. 90), (*q.v.*). In all three species there is a central fissure which opens out posteriorly to reveal a roughly triangular area. The adnexae are often partly visible without clearing and take the form of a pair of seminal receptacles, anterior to which are darker structures. In *S. elegans* the fissure is relatively short, especially when compared with the antero-posterior length of the adnexae. On each side of the anterior end of the fissure are oval or sausage-shaped structures, which are usually lightly sclerotized and pale orange-brown in colour. Similar structures are present in *S. ambiguus* (Text Fig. 26b), but not in *S. incurvatus* (Text Fig. 26c). In *S. ambiguus* the fissure is relatively longer and, anteriorly, curves around towards the sclerotized structures, forming fairly well-defined arches. In *S. incurvatus* the anterior end of the fissure is quite distinctly different, and the fissure usually opens out more gradually over its whole length; the triangular area, visible posteriorly, itself lacks the dark lateral margins which are usually visible in *S. elegans* and *S. ambiguus*.

DISTRIBUTION

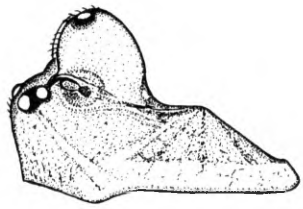
S. elegans and *S. reussi* are both widespread throughout the British Isles and are found, rather uncommonly, in grass, moss and undergrowth; *S. elegans* is commoner in the north and on high ground; there is only one record of *S. reussi* in Scotland. *S. ambiguus* is also widespread, but seems to occur only in coastal habitats such as saltmarshes, dunes and estuaries. *S. incurvatus* also occurs in coastal habitats, but so far has been recorded only from Scotland and northern England.

Text Figure 26

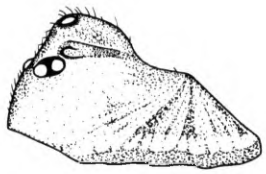


Text Figure 27

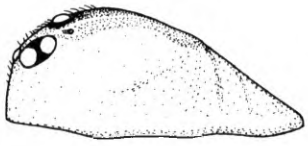
♂ **carapaces** lateral view



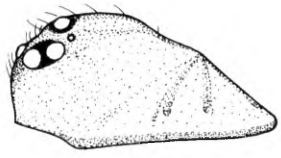
(**a**) *Pelecopsis radicicola*



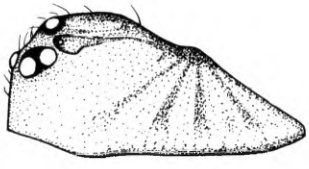
(**b**) *Silometopus elegans*



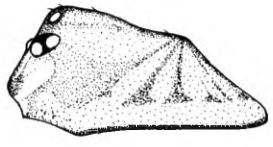
(**c**) *S. ambiguus*



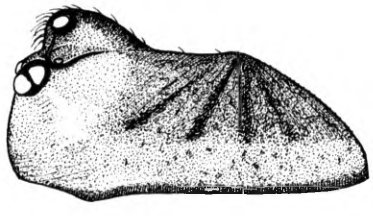
(**d**) *S. incurvatus*



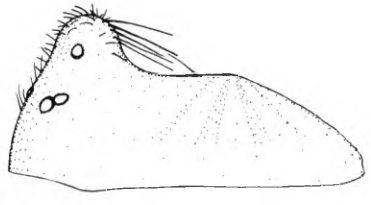
(**e**) *S. reussi*



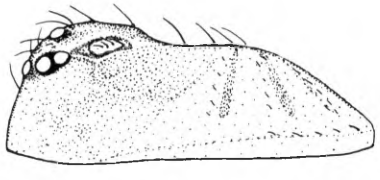
(**f**) *Mecopisthes peusi*



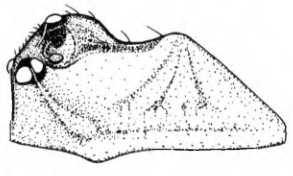
(**g**) *Cnephalocotes obscurus*



(**h**) *Acartauchenius scurrilis*



(**i**) *Evansia merens*



(**j**) *Minyriolus pusillus*

Genus *Mecopisthes* Simon, 1926

TmI 0.57–0.64; TmIV absent; tibial spines 1–1–1–1 (very small in female; minute or absent in male).

This genus contains only one British species, the male of which has the clypeus slightly projecting anteriorly, the head region slightly raised, but no lobe or post-ocular sulci.

Mecopisthes peusi Wunderlich, 1972

Plate 183b; Text Figs 27f, 28a

Length: ♀: 1.2–1.6mm; ♂: 1.2–1.4mm. TmI 0.57–0.64

Female carapace may be a little lighter or darker than illustrated; legs orange-brown, slightly lighter in colour than carapace. Male with clypeus projecting anteriorly as a slight bulge (Text Fig. 27f), and with a rather more shiny and coriaceous abdomen. Epigyne (Text Fig. 28a) rather variable; sometimes indistinct and obscured by superficial pigmentation. Male palp highly characteristic; similar to those of *Silometopus* (p. 64).

DISTRIBUTION

M. peusi is generally uncommon. In Lancashire, Merioneth and Anglesey it has occurred on dunes, whereas in the south of England (Dorset, Hampshire, Surrey, Sussex) it is sometimes abundant on dry heathland. Also recorded twice from Ireland.

Genus *Cnephalocotes* Simon, 1884

TmI 0.35–0.42; TmIV absent; tibial spines 1–1–1–1 (often rather weak in male)

This genus contains only one British species, the male of which has the head raised into a small lobe, and has very distinctive palpal organs.

Cnephalocotes obscurus (Blackwall, 1834)

Plate 184; Text Figs 27g, 28b

Length: ♀: 1.7–1.9mm; ♂: 1.5–1.8mm. TmI 0.35–0.42

The male of this spider has a highly characteristic general appearance, as illustrated. The carapace is rather rugose and has the head region raised to form a small lobe carrying the posterior median eyes (Text Fig. 27g); a sulcus runs back from each posterior lateral eye and contains a small pit. Female similar in general appearance to male, but lacks lobe on carapace and usually has a relatively larger abdomen. Sternum very dark and rugose in both sexes. Male palp has a very distinctively shaped tarsus, the dorsal longitudinal ridge of which has a series of small conical processes, each bearing a fine hair (Text Fig. 28b). The palpal embolus is long, and the other sclerites very distinctive. Very slight movement of the palpal organs, relative to the cymbium (due to minimal expansion), considerably alters the overall appearance of the palp, as illustrated. Epigyne varies slightly in shape, but very greatly in depth of colour; in many specimens, especially when fresh, the whole structure may be virtually black and the details difficult to discern.

DISTRIBUTION

C. obscurus is widespread throughout the British Isles but seems to have a rather local distribution; it is usually found in detritus, moss and other vegetation.

Genus *Acartauchenius* Simon, 1884

TmI 0.35–0.43; TmIV absent; tibial spines 1–1–1–1

This genus contains one rare British species, the male of which has the head elevated to form a lobe.

Acartauchenius scurrilis (O. P.-Cambridge, 1872)

Plate 183c; Text Figs 27h, 28c

Length: ♀: 1.7–2mm; ♂: 1.5–1.8mm. TmI 0.35–0.43

Appearance of female highly characteristic (Plate 183c); legs pale yellow-brown. Male similar, but with carapace raised in head region to form a lobe which is furnished with numerous long hairs (Text Fig. 27h). Epigyne and male palp highly characteristic (Text Fig. 28c).

DISTRIBUTION

This rare species has been recorded from a small number of sites in south and south-west England, always in association with the ant, *Tetramorium caespitum* (L.). Other European records for the species have been from the nests of *T. caespitum* and also in association with the ants, *Lasius flavus* (Fabr.) and *Formica rufa* L.

Genus *Trichoncus* Simon, 1884

TmI 0.32–0.43; TmIV absent; tibial spines 1–1–1–1

The three British species in this genus are very similar to one another in general appearance and genitalia. Males do not have the carapace elevated into a lobe; the only modification sometimes exhibited is minimal forward projection of the clypeus (Plate 185, Text Fig. 28e).

TAXONOMIC NOTE

Denis (1965) considered *Trichoncus hackmani* Millidge to be a subspecies of *T. vasconicus* Denis, differing morphologically only in the darkening of the anterior tibiae. This was noted by Locket, Millidge *et al.* (1974) who decided nevertheless to maintain *T. hackmani* as a separate species. My examination of the three British *Trichoncus* showed that the degree of darkening of the tibiae was really quite variable, and by no means reliable for distinguishing the species. However, comparison of European specimens of *T. vasconicus* with *T. hackmani* revealed small, but significant, differences in their genitalia. The lack of tibial darkening in *T. vasconicus* is rather variable; some specimens examined were known to have darkened tibiae when collected and identified, but later had lost all this pigment in alcohol. The genitalia of *T. vasconicus* seem rather intermediate between those of *T. hackmani* and *T. affinis* (Text Figs 28e,f), but, from the material examined, seem to be distinct from both of these species. With reference to the diagram, Text Fig. 28d, in *T. vasconicus* 'a' is rather longer than 'b', the tibia almost approaching the dimensions of that of *T. affinis*; the mesal tibial apophysis 'c' seems to be (in mesal view) longer, broader and to have a more spatulate tip in *T. vasconicus*; the terminal apophysis 'd' in *T. vasconicus* appears intermediate between those of *T. hackmani* and *T. affinis*. The epigyne of *T. vasconicus* shows features present in the epigynes of both *T. hackmani* and *T. affinis*. Obviously a great deal more work needs to be done, but present evidence suggests that *T. hackmani* and *T. vasconicus* are separate species. No *T. vasconicus* were found in British collections.

Trichoncus saxicola (O. P.-Cambridge, 1861)

Plate 185; Text Fig. 28d

Length: ♀: 1.6–2.1mm; ♂: 1.6–1.9mm. TmI 0.34–0.43

The male illustrated is a little pale, having fairly recently moulted; usually the legs and carapace are slightly more orange in colour. Note the darkening of the tibiae which is a little variable, being most marked on tibia I and II; sometimes barely discernible on tibia III and IV. Female similar to male in general appearance, but usually with larger abdomen.

Trichoncus hackmani Millidge, 1955

Text Fig. 28e

Length: ♀: 1.8–2.4mm; ♂: 1.8–2.1mm. TmI 0.32–0.42

Both sexes similar in general appearance to *T. saxicola*, with similar, but variable, darkening of tibiae, especially of legs I and II.

Trichoncus affinis Kulczynski, 1894

Text Fig. 28f

Length: ♀♂: 1.7–2mm; TmI 0.34–0.4

Similar in general appearance to *T. saxicola* and *T. hackmani* but usually with no darkening of the tibiae; occasional specimens may have minimal darkening of tibia I and II distally.

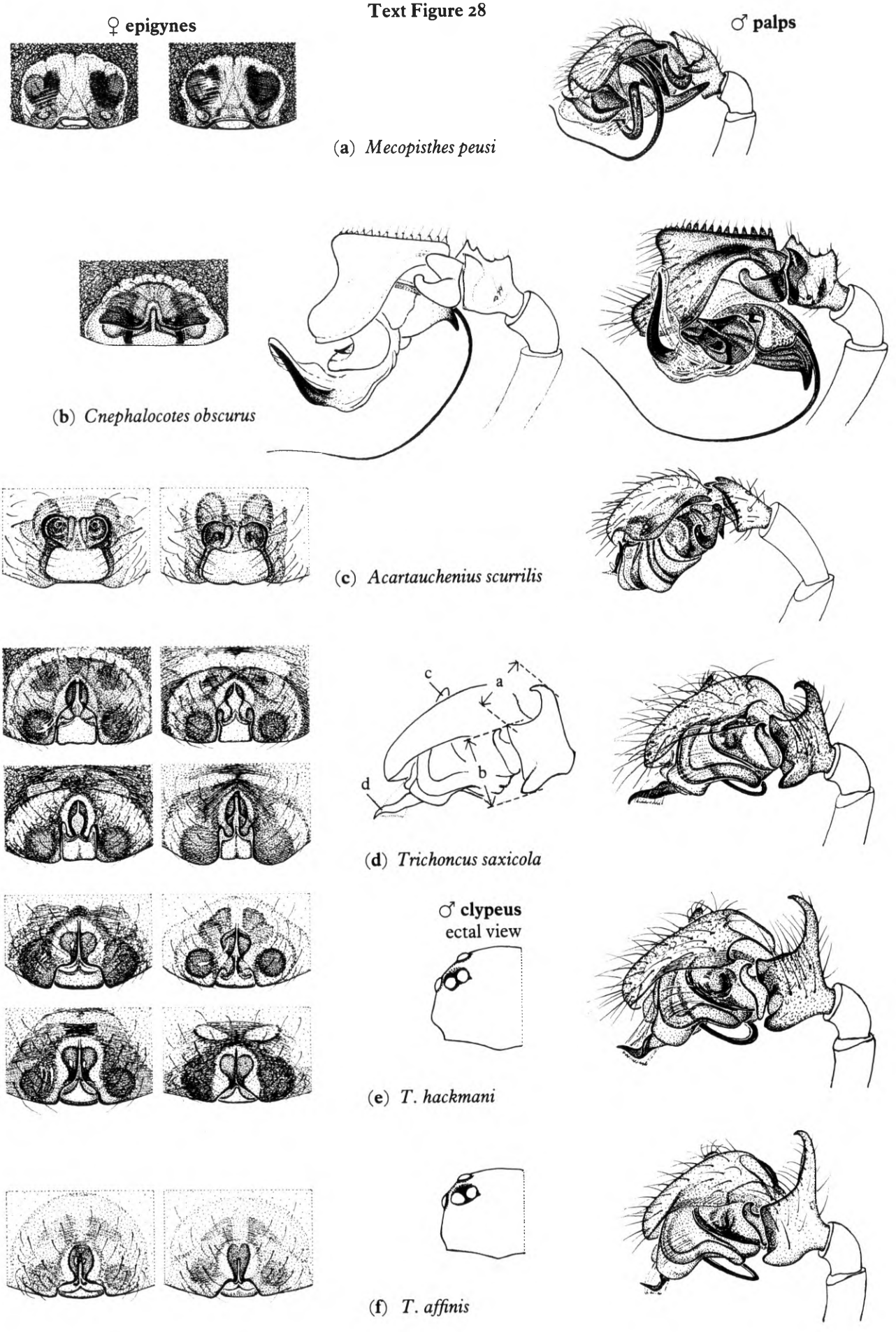
DISTINGUISHING THE SPECIES

The genitalia afford the only reliable means of separating the three species. The epigynes show considerable intraspecific variation in shape, as illustrated, and also in depth of colour; in some females of *T. saxicola* and *T. hackmani*, heavy pigmentation may make elucidation of structures difficult. Despite this, identification of females presents little difficulty. Male palps should be examined in exactly the same position as illustrated. The tibia has, as well as the hooked dorsal apophysis, a longer apophysis which curves around the mesal aspect of the cymbium and, apart from its tip, is not visible in ectal view. The illustrations are from an angle whereby the tip of this apophysis is just visible ('c' in accompanying diagram, Text Fig. 28d). Attention should be directed to the dimensions of the tibia ('a' and 'b') and the terminal apophysis ('d'). *T. saxicola* differs in having the tip of the terminal apophysis curving ventrally; the length of the terminal apophysis is also roughly equal to dimension 'a', and 'a' roughly equals, or is smaller than, 'b'. In both *T. hackmani* and *T. affinis* the terminal apophysis is more hooked, with its tip directed dorsoanteriorly. This terminal apophysis is relatively much larger in *T. hackmani* than in *T. affinis*. The dimensions of the tibia also differ; in *T. hackmani* 'a' roughly equals or is only a little greater than 'b', whereas in *T. affinis* 'a' is considerably greater than 'b'. There are several other palpal differences. The clypeal region in males of *T. hackmani* projects very slightly anteriorly (Text Fig. 28e), and this has hitherto been considered a distinguishing feature. The degree of clypeal projection in *T. hackmani* is however rather variable. Very similar projection occurs in *T. saxicola* (Plate 185), also to a varying degree. In *T. affinis* (Text Fig. 28f) there is usually little or no clypeal projection. In both sexes the leg markings, as described, are usually helpful in separating *T. saxicola/hackmani* from *T. affinis*, but they are variable and not entirely reliable on their own.

DISTRIBUTION

All three British species of *Trichoncus* are rare. *T. saxicola* has been recorded from southern counties of England, and from eastern Ireland, usually in moss and grass. *T. hackmani* and *T. affinis* have been recorded only from the south and south-east coast of England, usually on shingle and in tidal litter.

Text Figure 28



Genus *Ceratinopsis* Emerton, 1882

TmI 0.36–0.6; TmIV absent; tibial spines 1–1–1–1

The two British species in this genus are similar in general appearance. Males do not have the carapace elevated into a lobe.

Ceratinopsis romana (O. P.-Cambridge, 1872)

Text Fig. 29a

Length: ♀: 1.7–2.1mm; ♂: 1.5–1.9mm. TmI 0.36–0.42

Female similar to *C. stativa* (Plate 183d) in general appearance; legs a rather paler orange-brown than carapace. Male similar; a number of long, stout hairs present on cephalic region of carapace, directed forwards.

Ceratinopsis stativa (Simon, 1881)

Plate 183d; Text Fig. 29b

Length: ♀: 1.8–2.5mm; ♂: 1.8–2mm. TmI 0.5–0.6

Female as illustrated; legs orange-brown, paler than carapace. Male similar; a number of long, stout hairs present on cephalic region of carapace, directed forwards.

DISTINGUISHING THE SPECIES

These two species are easily distinguished by their genitalia. Epigynes a little variable (Text Figs 29a,b). Male palps differ in palpal organs, paracymbia and tibial apophyses. The position of TmI also differs in the two species.

DISTRIBUTION

Both species are rather rare. *C. romana* occurs on sandhills and has been recorded from the coast of England and Wales, but not from Scotland or Ireland. *C. stativa* occurs in grassland and sphagnum; has been recorded from England, Wales and Ireland, but more frequently in southern England, usually on calcareous grassland.

Genus *Evansia* O. P.-Cambridge, 1900

TmI 0.52–0.58; TmIV absent; tibial spines 1–1–1–1

The single British species in this genus in myrmecophilous. The male carapace is very slightly elevated (Text Fig. 27i) and has a shallow post-ocular sulcus.

TAXONOMIC NOTE

Evansia merens O. P.-Cambridge almost certainly belongs in the genus *Walckenaeria* Blackwall, despite the tibial chaetotaxy and the absence of TmIV. Comparison of the genitalia, particularly the male palps, strongly supports this view (*cf.* Text Figs 7b and 29c). As the species has already been illustrated in Vol. 3 under the name *E. merens* (Plate 190a), formally transferring it here would be confusing. In any case, considerable rearrangement of genera is likely in the future.

Evansia merens O. P.-Cambridge, 1900

Plate 190a; Text Figs 27i, 29c

Length: ♀: 2.5–2.8mm; ♂: 2–2.5mm. TmI 0.52–0.58

Female as illustrated; legs yellow-brown like carapace, with coxae and trochanters a little paler. Male similar, but cephalic region of carapace very slightly raised; a shallow sulcus is present behind posterior lateral eyes and contains two or three hairs (Text Fig. 27i). The sulcus varies somewhat in shape and is often ill-defined with very pale margins. Epigyne highly characteristic (Text Fig. 29c) as also is male palp. Genitalia very similar to those of *Walckenaeria* and *Moebelia* (e.g. Text Figs 7b, 12a).

DISTRIBUTION

E. merens occurs in the nests of ants, often under stones and in fallen or rotting wood; occasionally found running in the vicinity of ants. The ants with which this spider has been found associated include the species, *Lasius niger* (L.), *L. fuliginosus* (Latreille), *Formica fusca* L. and *F. sanguinea* Latreille. *E. merens* seems to be commoner in the north; it has been recorded from Ireland, Wales, Scotland and northern and south-western England.

Genus *Tiso* Simon, 1884

TmI 0.5–0.59; TmIV absent; tibial spines 1–1–1–1

The two British species in this genus are similar to one another in both general appearance and genitalia. Males do not have the head raised into a lobe, but the carapace is sometimes very slightly domed behind the eyes.

Tiso vagans (Blackwall, 1834)

Plate 186; Text Fig. 29d

Length: ♀: 1.7–2.2mm; ♂: 1.5–2mm. TmI 0.51–0.59

Male similar in general appearance to female illustrated; male carapace slightly domed behind eyes but lacking lobes or sulci.

Tiso aestivus (L. Koch, 1872)

Text Fig. 29e

Length: ♀: 1.5–1.9mm; ♂: 1.5–1.6mm. TmI 0.5–0.59

Similar in general appearance to *T. vagans*, but often with dark markings just anterior to fovea (e.g. as in *Troxochrus scabriculus*, Plate 187). Male carapace less domed behind eyes than in *T. vagans*.

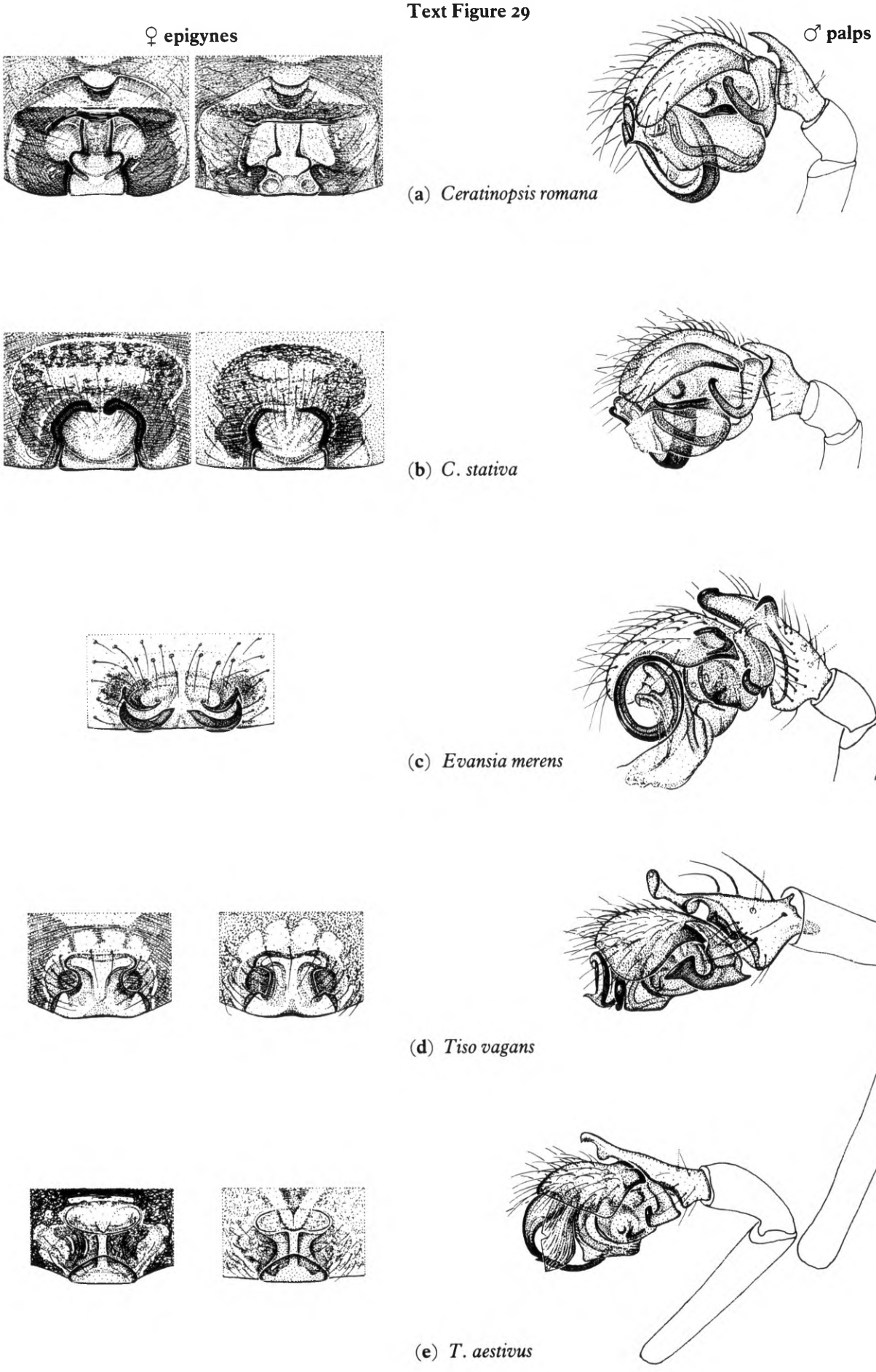
DISTINGUISHING THE SPECIES

Epigynes of both species a little variable in shape, and in depth of colour, but nevertheless characteristic (Text Figs 29d,e). Male palp of *T. vagans* has a rather more elongated patella and femur. The palps also differ considerably in their tibiae, tibial apophyses, paracymbia and palpal organs.

DISTRIBUTION

T. vagans is a common spider, widely distributed throughout the British Isles, and usually occurs in moss, grass and detritus at ground level. *T. aestivus* occurs at high altitudes and has been recorded from a few localities (usually over 3000ft) in Snowdonia, Lake District and Scottish Highlands.

Text Figure 29



Genus *Troxochrus* Simon, 1884

TmI 0.45–0.55; TmIV absent; tibial spines 1–1–1–1

There is one British species in this genus, the male of which occurs in two distinct forms (see Taxonomic Note, below). Male carapace is raised anteriorly; a sulcus extends back from behind each posterior lateral eye and contains a small pit (Text Figs 31a,b).

TAXONOMIC NOTE

Although initially described as two species, it has long been considered that *Troxochrus cirrifrons* (O. P.-Cambridge, 1871) was possibly a dimorphic male of *T. scabriculus* (Westring, 1851) – e.g. by Locket & Millidge (1953, p. 265). Wiehle (1960, p. 465) considered the male form as being a subspecies – *Troxochrus scabriculus cirrifrons* (O. P.-Cambridge). The two forms are frequently found mixed together, although '*T. cirrifrons*' is appreciably less common. They differ only in the form of the carapace (Text Figs 31a,b). There are no significant differences in the male palps of these two forms, and accompanying females exhibit no significant differences in general appearance or genitalia. The situation is similar to that found in *Oedothorax gibbosus/tuberosus* (p. 57) and *Diplocephalus connatus/jacksoni* (p. 86), and the issue can be resolved completely only by breeding experiments. *T. cirrifrons* is here regarded as a dimorphic male form of *T. scabriculus* and referred to as *T. scabriculus* f. *cirrifrons* (O. P.-Cambridge).

Troxochrus scabriculus (Westring, 1851)

Plate 187; Text Figs 30a, 31a

Length: ♀♂: 1.7–2mm. TmI 0.45–0.55

Female as illustrated (Plate 187); darker markings on carapace a little variable and occasionally absent. Male similar in general appearance, but with carapace raised anteriorly (Text Fig. 31a); a sulcus runs back from behind each posterior lateral eye and contains a small pit. The degree and shape of carapace elevation is a little variable, as illustrated. Epigyne a little variable (Text Fig. 30a); sometimes deeply pigmented and less well-defined. Male palp shows a little variation but is nevertheless characteristic.

Troxochrus scabriculus f. *cirrifrons* (O. P.-Cambridge, 1871)

Text Fig. 31b

Length: ♂: 1.7–2mm. TmI 0.45–0.55

This form, which occurs only in the male, is recognised by the carapace (Text Fig. 31b), which has a cephalic lobe of slightly different size and shape from that of the typical form. It is further distinguished by the long bristles present lateral to each posterior median eye. Male palp indistinguishable from that of typical form (Text Fig. 30a).

DISTRIBUTION

T. scabriculus has a widespread distribution throughout the British Isles; it often occurs in fairly dry habitats, especially on sand dunes, usually at ground level. *T. scabriculus* f. *cirrifrons* has a similar distribution, sometimes occurring together with the typical form, but is rather less common.

Genus *Minyriolus* Simon, 1884

TmI 0.43–0.53; TmIV absent; tibial spines 1–1–1–1

This genus contains only one British species, the male of which has the head elevated into a small lobe (Text Fig. 27j).

Minyriolus pusillus (Wider, 1834)

Plate 188; Text Figs 27j, 30b

Length: ♀: 1.1–1.35mm; ♂: 1.1–1.25mm. TmI 0.43–0.53

Female as illustrated; carapace a little variable in colour and may be darker or paler in some specimens. Male similar, but with head elevated to form a small lobe carrying posterior median eyes (Text Fig. 27j); a broad sulcus runs back from each posterior lateral eye and contains a small pit. Epigyne rather variable (Text Fig. 30b) and sometimes ill-defined; details may be obscured in some specimens by dark pigmentation and in others by extremely weak sclerotization; often reddish in colour. Male palp characteristic, although a little variable in both tibial apophysis and palpal organs; the coiled embolus is very broad in its proximal (ventral) part, a feature which is more evident if the palp is viewed ventrally.

DISTRIBUTION

M. pusillus is widespread throughout the British Isles and fairly common. It occurs in a variety of habitats both at ground level (grass, moss, roots, leaf-litter) and on low vegetation and bushes.

Genus *Tapinocyba* Simon, 1884

TmI 0.44–0.58; TmIV absent; tibial spines 1–1–1–1

The four British species in this genus are small spiders, similar to one another in general appearance, and usually rather pale in colour. The carapace of males is not raised to form a lobe, but a sulcus runs back from each posterior lateral eye and contains a small pit (Text Figs 31c–f). Viewed from above, the sulci appear as a pair of fine lines. A number of forward-directed hairs present in midline of male carapace.

Tapinocyba praecox (O. P.-Cambridge, 1873)

Text Figs 30c, 31c

Length: ♀: 1.2–1.8mm; ♂: 1.1–1.3mm. TmI 0.45–0.55

Female similar in general appearance to *T. pallens* (Plate 189). Male similar, but carapace with relatively long post-ocular sulci (Text Fig. 31c). Epigyne and male palp relatively smaller than those of the other British members of this genus.

Tapinocyba pallens (O. P.-Cambridge, 1872)

Plate 189; Text Figs 30d, 31d

Length: ♀♂: 1.5–1.7mm. TmI 0.45–0.55

Male similar in general appearance to female illustrated, but carapace with relatively long post-ocular sulci. Viewed from the side (Text Fig. 31d), the carapace is slightly protuberant and angular between the median eyes, and extends down the clypeus in virtually a straight line (sometimes even slightly concave anteriorly – *cf. T. insecta*).

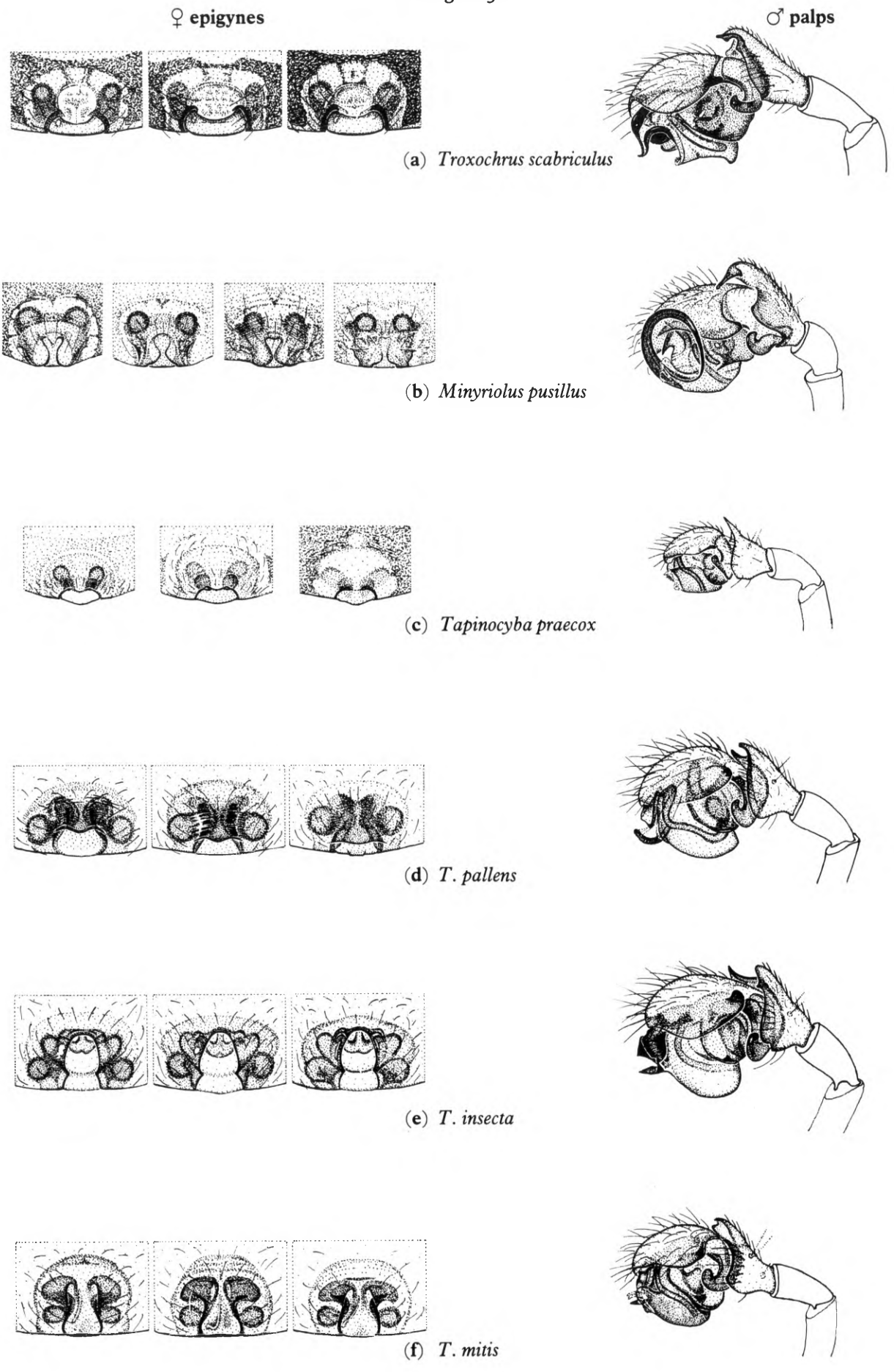
Tapinocyba insecta (L. Koch, 1869)

Text Figs 30e, 31e

Length: ♀♂: 1.4–1.7mm. TmI 0.51–0.58

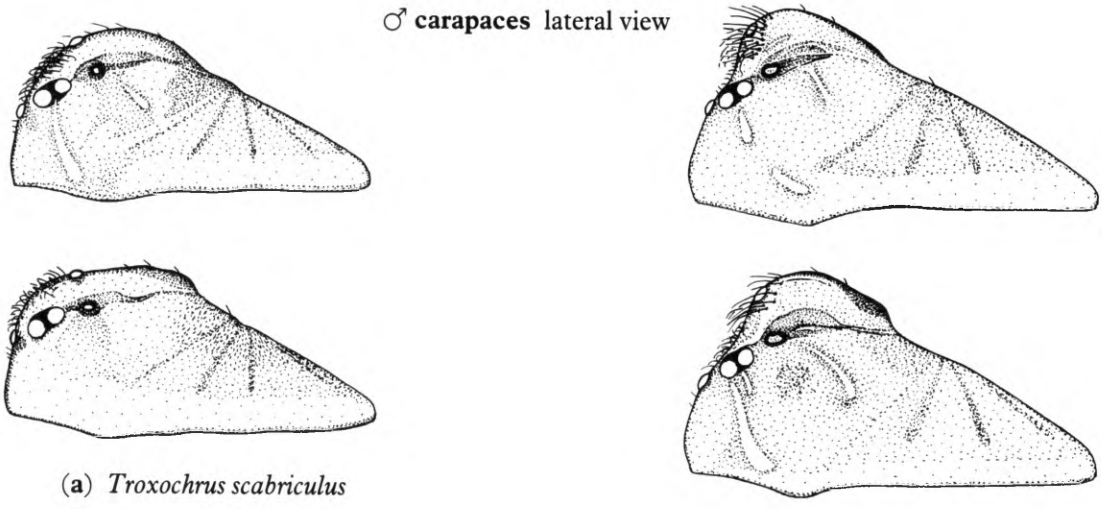
Female similar in general appearance to *T. pallens*. Male with slightly shorter post-ocular sulci than in *T. pallens*, but often a dark line of pigment runs backwards from the end of each sulcus (Text Fig. 31e); carapace clearly convex anteriorly when viewed from the side (*cf. T. pallens*).

Text Figure 30



Text Figure 31

♂ **carapaces** lateral view



(**a**) *Troxochrus scabriculus*

(**b**) *T. scabriculus* f. *cirrifrons*

(**c**) *Tapinocyba praecox*

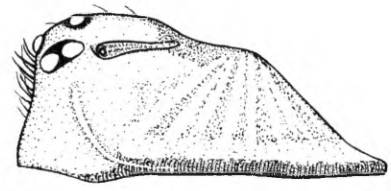
(**d**) *T. pallens*

(**e**) *T. insecta*

(**f**) *T. mitis*

(**g**) *Tapinocyboides pygmaeus*

(**h**) *Microctenonyx subitaneus*



(**i**) *Satilatlas britteni*

Tapinocyba mitis (O. P.-Cambridge, 1882)

Text Figs 30f, 31f

Length: ♀♂: 1.3–1.5mm. TmI 0.44–0.52

Female similar in general appearance to *T. pallens*. Male carapace with relatively shorter post-ocular sulci than in the other British species.

DISTINGUISHING THE SPECIES

Females readily identified by epigynes, even though these do show some variation (Text Figs 30c–f). Males distinguished by their palps; tibial apophyses characteristic enough, despite slight variation. Palpal organs do show considerable intraspecific variation, but are nevertheless characteristic. Male carapaces show some variation, but are a useful additional guide to identification (Text Figs 31c–f).

DISTRIBUTION

T. praecox, *T. pallens* and *T. insecta* seem to be fairly widespread throughout the British Isles and occur in grass, moss and leaf-litter in a variety of habitats. The species seem to have a rather local distribution, but may then occur abundantly; *T. pallens* is rare in the south and *T. insecta* has been recorded only twice in Scotland. *T. mitis* is rare and has been recorded from only a few localities in southern England, usually on dry heathland or in pine litter.

Genus *Tapinocyboides* Wiehle, 1960

TmI 0.42–0.5; TmIV absent; tibial spines 1–1–1–1

The single British species in this genus is similar in general appearance to the species of *Tapinocyba* (p. 72), in which genus it was once included.

Tapinocyboides pygmaeus (Menge, 1869)

Text Figs 31g, 32a

Length: ♀♂: 1.1–1.4mm. TmI 0.42–0.5

Female similar in general appearance to *Tapinocyba pallens* (Plate 189), but usually with some black markings in foveal region and along the radiating striae. Male similar; carapace with a short sulcus running back from each posterior lateral eye, containing a small pit (Text Fig. 31g). Epigyne a little variable, but highly characteristic (Text Fig. 32a); the lightly sclerotized Y-shaped mark is usually distinctive, as are the outlines of the adnexae. Male palp also highly characteristic.

DISTRIBUTION

T. pygmaeus is rare and has been recorded from only four localities, from Scotland to southern England, in calcareous grassland.

Genus *Microctenonyx* Dahl, 1886

TmI 0.4–0.48; TmIV absent; tibial spines 1–1–1–1

The single British species in this genus is similar in general appearance to the species of *Tapinocyba* (above) except that it has rather larger eyes. Male carapace has a sulcus running back from each posterior lateral eye (Text Fig. 31h).

TAXONOMIC NOTE

Microctenonyx subitaneus was formerly placed in the genus *Aulacocyba* Simon, 1926. The latter was synonymized with *Microctenonyx* Dahl, 1886 by Prószyński & Staręga (1971) and this was later accepted by Brignoli (1983) and Merrett, Locket *et al.* (1985).

Microctenonyx subitaneus (O. P.-Cambridge, 1875)

(= *Aulacocyba subitanea* (O. P.-Cambridge))

Plate 190b; Text Figs 31h, 32b

Length: ♀: 1.3–1.9mm; ♂: 1.2–1.4mm. TmI 0.4–0.48

Female usually has a rather smaller, oval abdomen than the gravid specimen illustrated; legs orange-brown, slightly paler than carapace. Male similar but carapace with post-ocular sulci as illustrated (Text Fig. 31h). Epigyne a little variable but nevertheless characteristic (Text Fig. 32b), as also is male palp.

DISTRIBUTION

M. subitaneus is widespread throughout England, but there are few records from Wales and Scotland, and none from Ireland. It is rather uncommon, usually occurring amongst hay and straw.

Genus *Satilatlas* Keyserling, 1886

TmI 0.61–0.66; TmIV absent; tibial spines 1–1–1–1 (smaller in male)

The single British species in this genus has the tibia and metatarsus of legs I and II furnished with two rows of stout, ventrolateral spines similar to those of *Maso sundevalli* (Plate 176). Male carapace has the head region elevated (Text Fig. 31i); a sulcus runs back from behind each posterior lateral eye and contains a small pit.

TAXONOMIC NOTE

Satilatlas britteni was formerly placed in the genus *Perimones* Jackson, 1932. The latter was synonymized with *Satilatlas* Keyserling, 1886, by Millidge (1981).

Satilatlas britteni (Jackson, 1913)

(= *Perimones britteni* (Jackson))

Plate 190c; Text Figs 31i, 32c

Length: ♀: 1.7–2.2mm; ♂: 1.6–1.9mm. TmI 0.61–0.66

Female as illustrated; legs orange-brown with tips of leg segments often suffused with black; tibia and metatarsus I and II with two rows of ventrolateral spines. Male similar to female; ventrolateral spines present as in female but, in addition, femur I and II also have short ventral spines. Male carapace slightly elevated and with post-ocular sulci as illustrated (Text Fig. 31i); a number of fairly strong hairs project from the clypeus. Epigyne a little variable, as illustrated (Text Fig. 32c), but highly characteristic. Male palp also readily identifiable; the tibia has a short dorsal apophysis, the tip of which bifurcates, forming two short hooks (Text Fig. 32c).

DISTRIBUTION

S. britteni is rare and usually occurs in marshy habitats; it has been recorded from a small number of localities, sometimes abundantly, in the north and south of England, North Wales and Scotland.

Genus *Thyreosthenius* Simon, 1884

TmI 0.56–0.7; TmIV absent; tibial spines 1–1–1–1 (short on legs I and II of males)

There are two British species in this genus, the females of which are very similar to one another in general appearance and genitalia, but differ in eye-size. Males have the head raised to form a lobe, bifid longitudinally, which is quite different in the two species.

Thyreosthenius parasiticus (Westring, 1851)

Plate 191; Text Figs 32d, 38a

Length: ♀♂: 1.5–1.7mm. TmI 0.56–0.64

Posterior eyes of female (Plate 191; Text Fig. 32d) are relatively larger and closer together than in *T. biovatus*. Male similar in general coloration to female, but head raised to form a shallow, flat-topped lobe which is bifid longitudinally (Text Fig. 38a); in lateral view, the posterior median eyes are visible on the top of the lobe. A sulcus runs back from behind each posterior lateral eye and contains a small pit.

Thyreosthenius biovatus (O. P.-Cambridge, 1875)

Text Figs 32e, 38b

Length: ♀: 1.75–2.1mm; ♂: 1.6–1.9mm. TmI 0.61–0.7

Female closely similar to *T. parasiticus* but has posterior eyes smaller and further apart (Text Fig. 32e). Male has head raised to form a large lobe, bifid longitudinally (Text Fig. 38b); the posterior median eyes are not visible in lateral view, being hidden in the midline groove. A broad sulcus runs back from each posterior lateral eye and contains a pit, the diameter of which is about the same as that of the eyes.

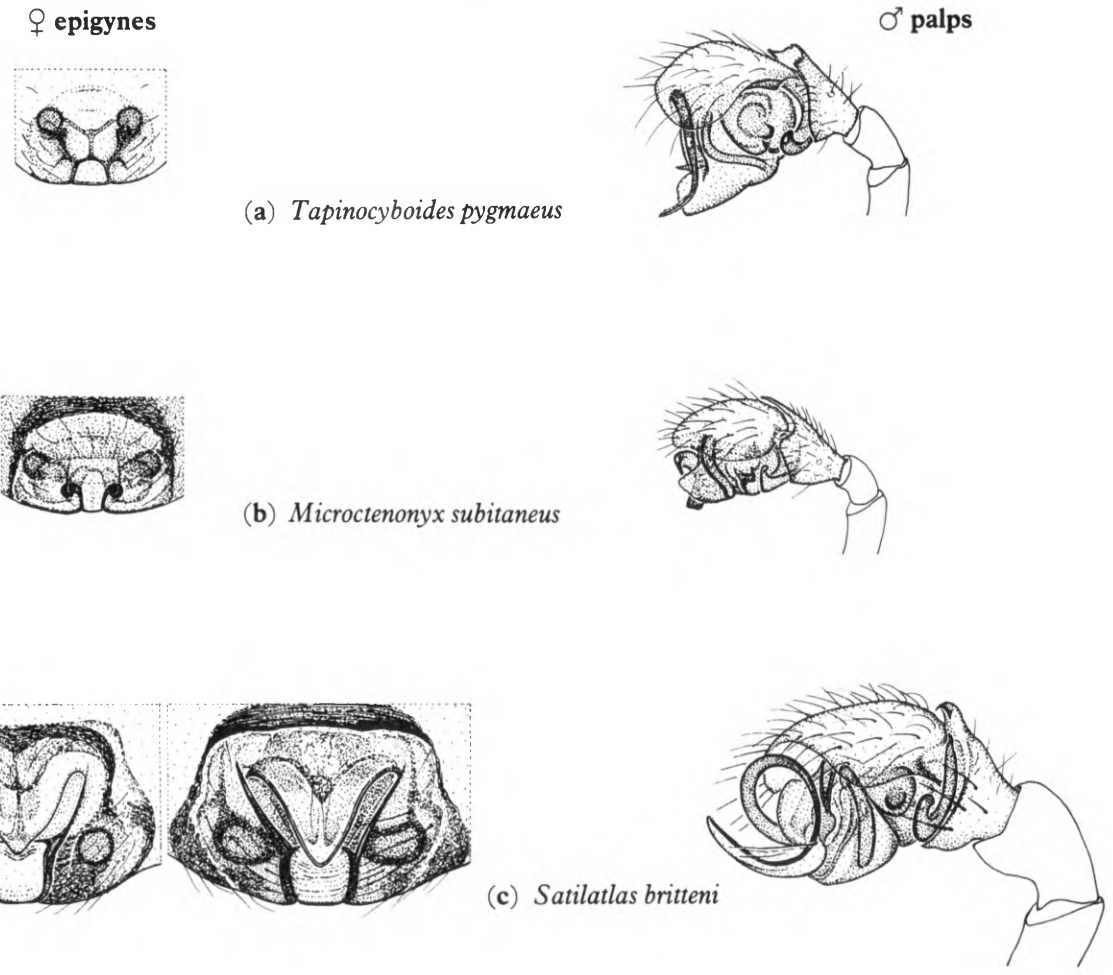
DISTINGUISHING THE SPECIES

Females distinguishable most readily by their eyes (Text Figs 32d,e) and usually also by overall size. Epigynes very closely similar and highly variable in both species, as illustrated, but there are a number of slight, significant differences and the epigyne of *T. biovatus* is usually slightly larger. Males distinguished readily by the form of the carapace, but the lobe in *T. biovatus* can vary quite considerably in size, and its shape may occasionally approach that of *E. acuminata* (Text Fig. 16a). Male palps very closely similar and rather variable in both species, but there are a number of significant differences in the palpal organs and palpal tibiae.

DISTRIBUTION

Both species are probably widespread throughout the British Isles, but *T. biovatus* does not appear to have been recorded from Ireland. An interesting parallel can be drawn between *T. parasiticus/biovatus* and the two British species of *Tetrilus* (Agelenidae; Vol. 1, p. 166). Reduction of the eyes is common in other subterranean or cavernicolous spiders (e.g. some *Porrhomma* species (p. 114) and *Pseudomaro* (p. 112)). The larger-eyed *Thyreosthenius parasiticus* occurs in a wide variety of habitats underground, e.g. caves, cellars, mines, culverts and also in buildings, under the bark of trees, in dead or rotting timber, in birds' nests, occasionally in leaf-litter and in holes made by wood-boring insects. The small-eyed *T. biovatus* is, however, myrmecophilous; although it is usually found in the nests of ants, on occasions it is found in other situations.

Text Figure 32



Genus *Monocephalus* Smith, 1906

TmI 0.59–0.7; TmIV absent; tibial spines 1–1–1–1 (very short, or absent, on tibia I and II of males)

The two British species in this genus are very similar in general appearance and genitalia. Males have the head slightly raised to form a lobe carrying the posterior median eyes (Text Figs 33c,d, 38c,d).

Monocephalus fuscipes (Blackwall, 1836)

Plate 192; Text Figs 33a,c, 38c

Length: ♀: 1.7–2.2mm; ♂: 1.7–2.1mm. TmI 0.59–0.66

Male similar in general appearance to female illustrated, but has cephalic region of carapace raised to form a lobe (Text Figs 33c, 38c); a broad post-ocular sulcus is present and contains a small pit. Spines on tibia I and II of male reduced to short stumps, or absent entirely.

Monocephalus castaneipes (Simon, 1884)

Text Figs 33b,d, 38d

Length: ♀: 1.75–2.2mm; ♂: 1.7–2.1mm. TmI 0.64–0.7

Both sexes very similar in general appearance to *M. fuscipes*. Spines on tibia I and II of male usually absent entirely.

DISTINGUISHING THE SPECIES

Epigyne of *M. fuscipes* rather variable (Text Fig. 33a) but nevertheless easily distinguished from that of *M. castaneipes*. Males distinguishable by palpal organs (Text Figs 33a,b); often there is a whitish exudate adherent to, and partly obscuring, the distal palpal structures. Palpal tibiae show slight differences when viewed dorsally (Text Figs 33c,d), but there is also considerable intraspecific variation. Comparing the overall length of palpal tibia with the minimum width of cephalic lobe (Text Figs 33c,d) is a reliable means of separating males; tibia length roughly equals lobe width in *M. castaneipes*, but is considerably greater than lobe width in *M. fuscipes*. There is a little intraspecific variation in the width of the cephalic lobe and also in the shape of male carapace viewed from the side (Text Figs 38c,d).

DISTRIBUTION

Both species are widespread throughout the British Isles. *M. fuscipes* is common and often occurs abundantly in deciduous woodland leaf-litter, pine needles of coniferous woods and amongst moss. *M. castaneipes* is much less common, but sometimes locally abundant; it also occurs amongst moss in woodland habitats, as well as under stones, logs and amongst trees on higher, more exposed ground; in the south, nearly always amongst moss on branches and trunks of trees above ground level.

Genus *Lophomma* Menge, 1867

TmI 0.29–0.39; TmIV absent; tibial spines 2–2–1–1

The single British species in this genus has the carapace furnished with numerous well-defined pits around the margins and radiating from the fovea (Plate 193; Text Fig. 38e). Male carapace has the head slightly elevated and furnished with a few long hairs; a sulcus runs back from behind each posterior lateral eye and contains a small pit.

Lophomma punctatum (Blackwall, 1841)

Plate 193; Text Figs 33e, 38e

Length: ♀: 1.9–2.6mm; ♂: 1.8–2.3mm. TmI 0.29–0.39

Female as illustrated; the markedly pitted carapace is highly characteristic, but the colour varies from orange-brown to virtually black; abdomen also varies in depth of colour and may be paler or black. Male similar in general appearance but carapace raised in head region (Text Fig. 38e); a narrow post-ocular sulcus is present and contains a small pit; shape of male carapace rather variable. Epigyne rather variable (Text Fig. 33e), but characteristic. Male palp varies somewhat in the shape of the tibial apophyses and the structures at its tip, but is nevertheless easily recognised. *L. punctatum* shows a degree of intraspecific variation which, in some ways, is similar to that found in *Pelecopsis nemoralis* (p. 61).

DISTRIBUTION

L. punctatum is widely distributed throughout the British Isles but is not very common. It usually occurs in moss and grass in wet habitats.

Genus *Saloca* Simon, 1926

TmI 0.35–0.4; TmIV absent; tibial spines 2–2–1–1

This genus contains one British species, the male of which has the head slightly elevated and furnished anteriorly with a pair of horn-like tufts of hooked bristles (Text Fig. 38f).

Saloca diceros (O. P.-Cambridge, 1871)

Plate 194b; Text Figs 33f, 38f

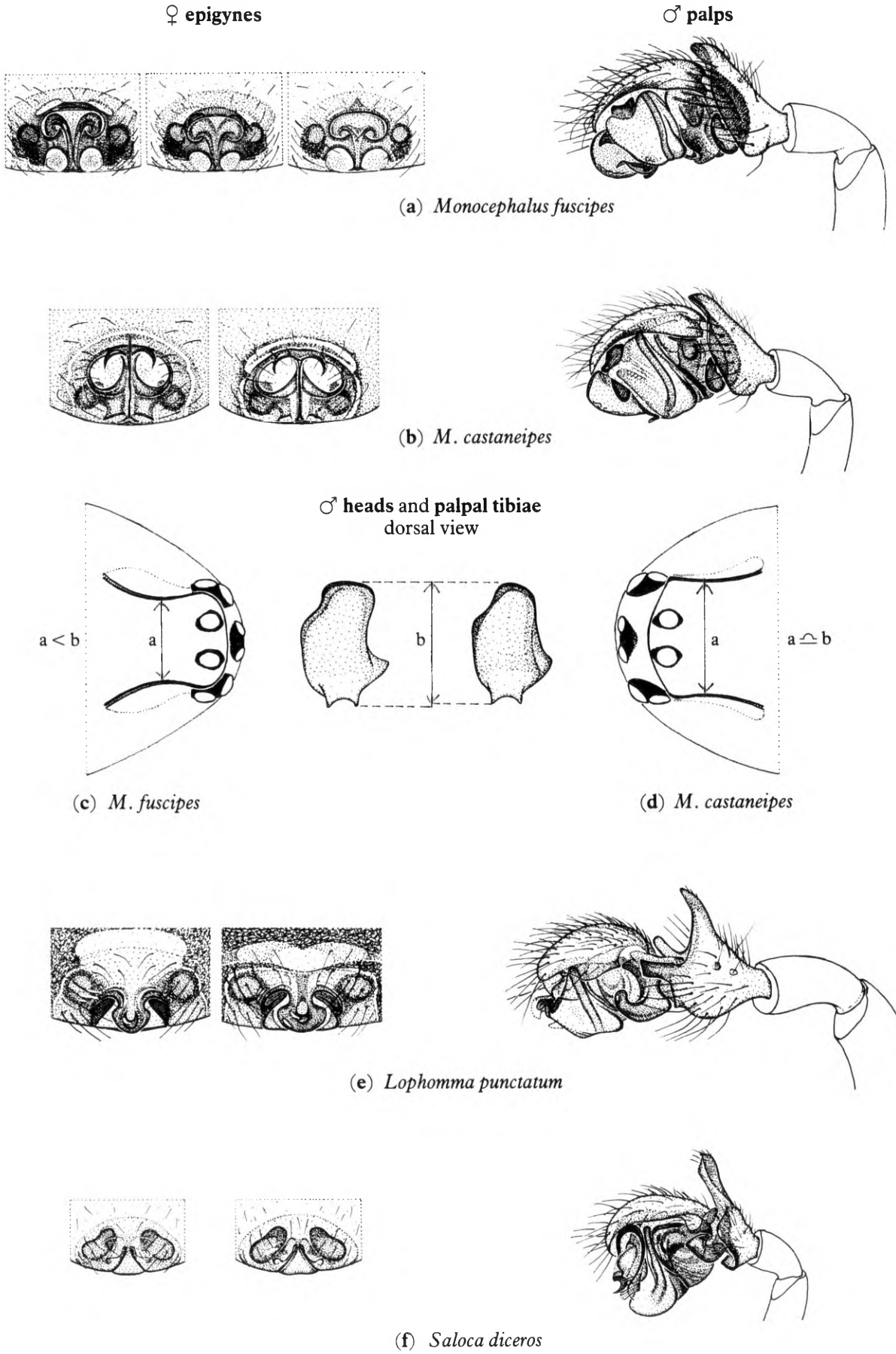
Length: ♀♂: 1–1.3mm. TmI 0.35–0.4

Female sometimes paler than illustrated; legs paler than carapace. Male carapace usually a little darker orange-brown; head elevated slightly and furnished with a pair of horn-like tufts of hooked bristles and a post-ocular sulcus (Text Fig. 38f). Epigyne fairly distinctive (Text Fig. 33f), despite slight resemblance to that of *Silometopus elegans* (Text Fig. 26a). Male palpal organs distinctive as also is tibial apophysis.

DISTRIBUTION

S. diceros is rare, but is probably sparsely distributed throughout England and Wales. Also recorded from S. W. Ireland. It occurs in damp habitats, amongst moss and leaf-litter in woods, and in the ground litter of fens and bogs.

Text Figure 33



Genus *Gongylidiellum* Simon, 1884

TmI 0.32–0.42; TmIV absent; tibial spines 2–2–1–1

The three British species in this genus are closely similar in general appearance; males are similar to females and do not have the head elevated or otherwise modified. The branchial opercula of males are furnished with stridulating ridges; a corresponding tooth-like process is present on each coxa IV.

Gongylidiellum vivum (O. P.-Cambridge, 1875)
Text Fig. 34a

Length: ♀: 1.5–1.9mm; ♂: 1.2–1.5mm. TmI 0.32–0.38

Similar in general appearance to *G. latebricola* (Plate 195).

Gongylidiellum murcidum Simon, 1884
Text Fig. 34b

Length: ♀: 1.3–1.7mm; ♂: 1.2–1.5mm. TmI 0.32–0.38

Similar in general appearance to *G. latebricola*.

Gongylidiellum latebricola (O. P.-Cambridge, 1871)
Plate 195; Text Fig. 34c

Length: ♀: 1.3–1.9mm; ♂: 1.3–1.6mm. TmI 0.33–0.4

Male very similar in general appearance to female illustrated.

DISTINGUISHING THE SPECIES

The genitalia afford the only reliable means of distinguishing the three species. Epigynes highly variable in all three species but most specimens should be readily identifiable from at least one of the illustrations (Text Figs 34a–c). Male palps also show considerable variation, but are distinguishable by the form of the structures at the tip of the palpal organs, by the paracymbia, and by the palpal tibiae viewed either ectally or dorsally.

DISTRIBUTION

All three species are probably widespread throughout the British Isles. *G. vivum* is a common species, usually being found in moss, grass and leaf-litter in rather damp habitats. *G. latebricola* occurs in similar habitats, but is less common. *G. murcidum* is a rare species, recorded from a few localities in southern England and East Anglia, two localities in Scotland and one in Ireland; all records are from moss and litter in wet habitats.

Genus *Micrargus* Dahl, 1886

TmI 0.3–0.42; TmIV absent; tibial spines 2–2–1–1 (smaller in males)

This genus includes four British species which are very similar to one another in general appearance. Males have the head elevated very slightly behind the eyes; a sulcus is present behind each posterior lateral eye and contains a small pit (Text Figs 38g–j).

Micrargus herbigradus (Blackwall, 1854)
Plate 196; Text Figs 34d, 38g

Length: ♀: 1.5–1.9mm; ♂: 1.5–1.7mm. TmI 0.3–0.4

Male similar in general appearance to female illustrated, but carapace slightly raised in head region and with post-ocular sulci (Text Fig. 38g).

Micrargus apertus (O. P.-Cambridge, 1870)
Text Figs 34e, 38h

Length: ♀: 1.7–2.2mm; ♂: 1.6–1.9mm. TmI 0.3–0.4

Very similar in general appearance to *M. herbigradus*.

Micrargus subaequalis (Westring, 1851)
Text Figs 35a, 38i

Length: ♀: 1.6–2mm; ♂: 1.5–1.8mm. TmI 0.3–0.4

Very similar in general appearance to *M. herbigradus*.

Micrargus laudatus (O. P.-Cambridge, 1881)
Text Figs 35b, 38j

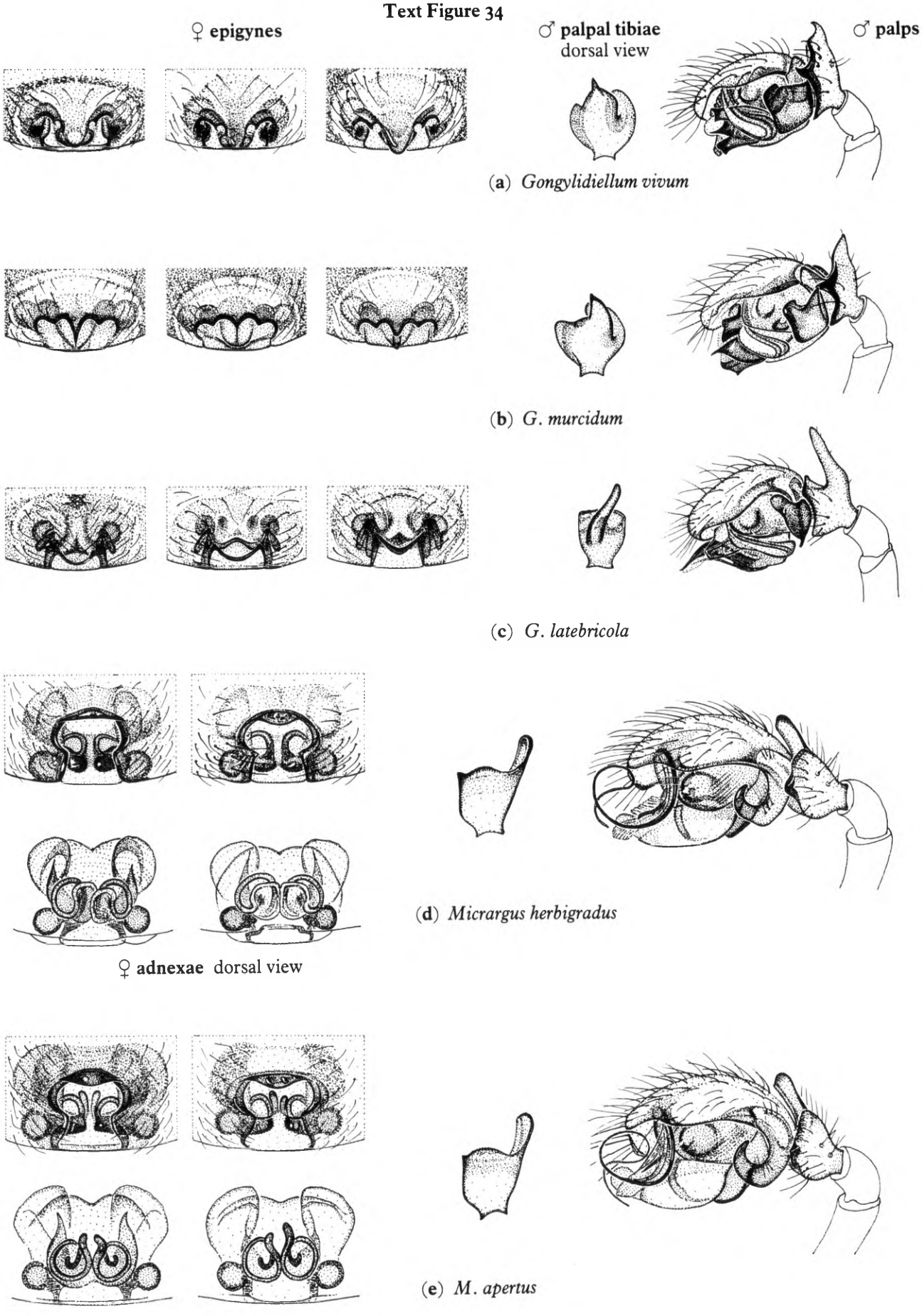
Length: ♀♂: 1.6–2mm. TmI 0.32–0.42

Very similar in general appearance to *M. herbigradus*.

DISTINGUISHING THE SPECIES

The genitalia afford the only means of distinguishing the species; male carapaces, although illustrated for completeness, are rather variable and not reliable for identification. The species fall into two groups: *M. herbigradus/apertus* and *M. subaequalis/laudatus*. The epigynes of *M. herbigradus/apertus* (Text Figs 34d,e) are very similar and attention should be directed to the form of the ducts visible inside the cavity. In both species a pair of roughly semicircular ducts are present, but in *M. apertus* an additional pair of ducts is usually clearly visible between these. If the epigyne is detached and the adnexae viewed dorsally (Text Figs 34d,e), the differences are even more obvious, but this procedure is not normally necessary. The male palps of *M. herbigradus/apertus* (Text Figs 34d,e) are very similar in general appearance and, although there are slight differences in the shape of the palpal tibiae and paracymbia, attention should be directed to the small process and associated membranes lying within the coiled embolus, as seen from the side. In *M. herbigradus* (Text Fig. 34d) this process is lightly sclerotized, and is slightly truncated at its tip; above the process is a transparent membrane directed anterodorsally. In *M. apertus* (Text Fig. 34e) the process is usually black and comes to a fine point at its tip; the transparent membrane, visible above the process, appears continuous with the longer membrane directed anteroventrally, beyond the tip of the process. The epigynes of *M. subaequalis* and *M. laudatus* are very similar, and rather variable, but can be easily distinguished by consideration of the form of the anterior margin and the relative widths of

Text Figure 34



the opening anteriorly, and the central epigynal plate posteriorly (Text Figs 35a,b). The male palps are most readily distinguished by their paracymbia; that of *M. subaequalis* is elongate and produced posteroventrally.

DISTRIBUTION

M. apertus was described as separate from *M. herbigradus* only comparatively recently (Millidge, 1975), and details of their relative ecology and distribution will take time to emerge. On the basis of recent records, it seems likely that both species are widespread throughout the British Isles, occurring in grass, moss and leaf-litter, often in woodland sites. *M. subaequalis* is less common but widely distributed, and often occurs in grassland as well as detritus. *M. laudatus* is rather rare and has been recorded from the south of England, the Midlands and North Wales, in a variety of habitats, but most frequently on heathland.

Genus *Notioscopus* Simon, 1884

TmI 0.56–0.65; TmIV absent; tibial spines 2–2–1–1 (small, but all present in males)

This genus contains only one British species, the male of which has a highly characteristic carapace (Plate 200a; Text Fig. 39a).

Notioscopus sarcinatus (O. P.-Cambridge, 1872)

Plate 200a; Text Figs 35c, 39a

Length: ♀: 1.9–2.3mm; ♂: 1.7–2mm. TmI 0.56–0.65

Female similar to male in general appearance and coloration, but carapace not elevated and lacking conical process. Male carapace highly characteristic (Plate 200a; Text Fig. 39a); a conical or finger-like process extends anteriorly from just in front of the fovea and rests upon the head, which is elevated slightly behind the eyes. The shape of both the carapace and the conical process is quite variable but nevertheless very distinctive. Epigyne and male palp highly characteristic (Text Fig. 35c).

DISTRIBUTION

N. sarcinatus is rather rare, usually occurring in wet habitats. It is probably thinly distributed throughout the British Isles, but has so far been recorded only from England and Scotland.

Genus *Glyphesis* Simon, 1926

TmI 0.4–0.5; TmIV absent; tibial spines 2–2–1–1 (occasionally 2–2–2–1; very difficult to see in both sexes)

The two British species in this genus are very small spiders. Males have the head very slightly raised, the clypeus projecting a little and, in *G. cottonae*, there are post-ocular sulci.

Glyphesis cottonae (La Touche, 1945)

Text Figs 35d, 39b

Length: ♀: 1–1.2mm; ♂: 1–1.1mm. TmI 0.44–0.5

Similar in general appearance to *G. servulus* (Plate 200b); legs yellow-brown, occasionally suffused with black. Male carapace with post-ocular sulcus containing a small pit (Text Fig. 39b).

Glyphesis servulus (Simon, 1881)

Plate 200b; Text Figs 35e, 39c

Length: ♀♂: 1–1.2mm. TmI 0.4–0.5

Female as illustrated; legs yellow-brown. Male similar but carapace with clypeus projecting somewhat (Text Fig. 39c); a very shallow post-ocular sulcus is just discernible.

DISTINGUISHING THE SPECIES

Females easily distinguished by epigynes despite the latter being rather variable, as illustrated (Text Figs 35d,e). Males distinguished by carapaces (Text Figs 39b,c), palpal organs, paracymbia and palpal tibiae (Text Figs 35d,e). The dorsal tibial apophysis in *G. servulus* has five long hairs running along its length and continuing across the cymbium.

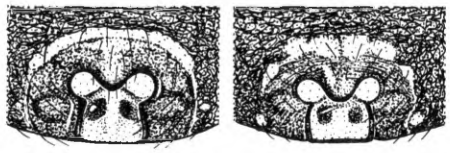
DISTRIBUTION

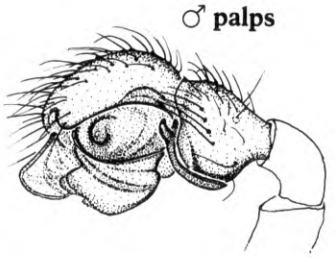
Both of these generally rare species occur in wet habitats, where they may, however, be locally abundant. *G. cottonae* has been recorded from sphagnum bogs in the south of England and in Cheshire and Cumberland. *G. servulus* has been recorded from two fens in East Anglia and from a wet woodland site in Dorset.

Text Figure 35

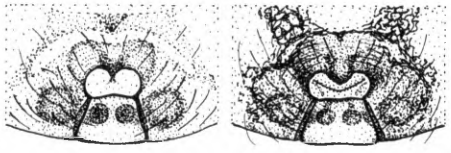
♀ epigynes

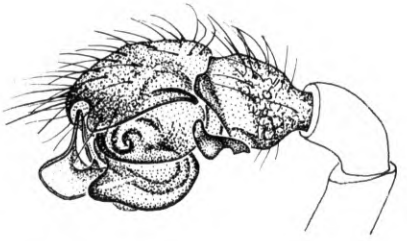
♂ palps



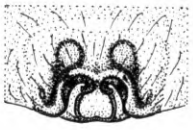


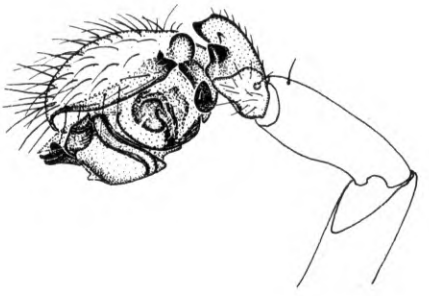
(**a**) *Micrargus subaequalis*



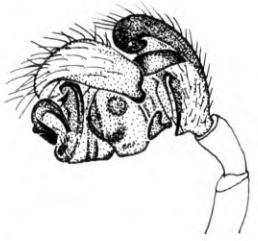


(**b**) *M. laudatus*

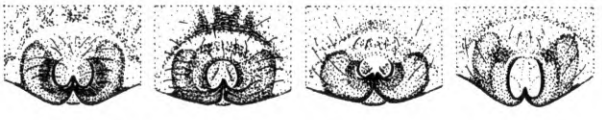




(**c**) *Notioscopus sarcinatus*



(**d**) *Glyphesis cottonae*



(**e**) *G. servulus*

Genus *Erigonella* Dahl, 1901

TmI 0.38–0.5; TmIV absent; tibial spines 2–2–1–1

There are two British species in this genus, the males of which have the carapace elevated into a shallow lobe (Text Figs 39d,e). In *E. hiemalis*, a shallow sulcus runs back from behind each posterior lateral eye and contains a small pit. The genus is very close to *Savignya* – see Taxonomic Note (below). The sternum is rugose in both species.

Erigonella hiemalis (Blackwall, 1841)

Plate 197; Text Figs 36a, 39d

Length: ♀: 1.6–1.8mm; ♂: 1.4–1.6mm. TmI 0.45–0.5

Carapace usually dark brown, as illustrated, but fades to a paler brown (e.g. like that of *M. herbigradus*, Plate 196) on preservation. Male similar but carapace raised in head region (Text Fig. 39d); a sulcus runs back from each posterior lateral eye and contains a small pit.

Erigonella ignobilis (O. P.-Cambridge, 1871)

Text Figs 36b, 39e

Length: ♀: 1.3–1.6mm; ♂: 1.2–1.5mm. TmI 0.38–0.45

Similar in general appearance to *E. hiemalis*; carapace red-brown to almost black; legs brown. Male carapace with head slightly raised (Text Fig. 39e) but no post-ocular sulci.

DISTINGUISHING THE SPECIES

E. hiemalis is usually, but not always, larger than *E. ignobilis*. Epigynes variable but distinctly different in shape and size in the two species; care is needed in distinguishing them from other species in which the epigyne has a longitudinal median fissure (see p. 86). Other species with median epigynal fissure do not have a rugose sternum (except *Dicymbium*). Males distinguished by carapaces and by palps, which differ in size, palpal organs, paracymbia and tibiae (viewed ectally or dorsally).

DISTRIBUTION

E. hiemalis is fairly common and is widespread throughout the British Isles, occurring in grass, moss and leaf-litter often in woodland sites. *E. ignobilis* is much rarer, usually occurring in damp habitats. It is probably widespread throughout England, Wales and Ireland but has only once been recorded from Scotland.

Genus *Savignya* Blackwall, 1833

TmI 0.47–0.53; TmIV absent; tibial spines 2–2–1–1 (weak in males)

There is only one British species at present included in this genus, the male of which has the carapace raised anteriorly into a snout-like projection (Text Fig. 39f).

TAXONOMIC NOTE

The genera *Savignya*, *Diplocephalus*, *Erigonella*, *Araeoncus*, *Dicymbium*, *Saloca* and *Glyphesis* are very closely related and, with the exception of *Saloca* and *Glyphesis*, should almost certainly be combined into one genus, the name *Savignya* having priority. Such enlargement of the genus would have distinct advantages in conveying relationships, and various 'species groups' could still be recognised informally (see Vol. 1, p. 31). For the present, and to avoid too many separate changes, it is probably best to defer such action until more work has been done on related genera from other parts of the world. It could, for instance, be argued that, although correct, the formal merging of the genera *Walckenaeria*, *Wideria*, *Trachynella*, *Prosopotheca*, *Cornicularia* and *Tigellinus* (Taxonomic Note, p. 26) was a little premature, since the genera *Evansia* and *Moebelia* were excluded and will necessitate yet another change.

Savignya frontata (Blackwall, 1833)

Plate 198; Text Figs 36c, 39f

Length: ♀♂: 1.5–1.9mm. TmI 0.47–0.53

Male similar to female in coloration, but with carapace elongated and with a snout-like projection anteriorly which carries the anterior median eyes and a tuft of hairs (Text Fig. 39f). Epigyne is similar to many others with a longitudinal fissure, but is easily distinguished by the pair of dark, shiny swellings posteriorly. *Diplocephalus picinus* (Text Fig. 37c) is the only other British species which resembles it. Male palp and palpal tibia highly characteristic (Text Fig. 38c).

DISTRIBUTION

S. frontata is very common, occurring in a wide variety of situations (grassland, leaf-litter, moss, bushes, low herbage) throughout the British Isles.

Genus *Diplocephalus* Bertkau, 1883

TmI 0.36–0.54; TmIV absent; tibial spines 2–2–1–1 (small in males, occasionally 0–0–1–1, or absent)

There are six British species at present included in this genus. Male carapace elevated into a lobe (or lobes), with post-ocular sulci sometimes present (Text Figs 39g–l, 41a). The male of one species, *Diplocephalus connatus* Bertkau, occurs in two distinct forms (see Taxonomic Note, below). The genus *Diplocephalus* is very close to *Savignya* (see Taxonomic Note, above).

TAXONOMIC NOTE

Although initially described as two distinct species, it has long been suspected that *Diplocephalus jacksoni* O. P.-Cambridge was a dimorphic male of *D. connatus* Bertkau (= *D. adjacens* O. P.-Cambridge) – e.g. Locket & Millidge, 1953, p. 295. The two forms occur together and have identical palpal organs and tibial apophyses. Females taken with males of '*D. jacksoni*' do not differ significantly from *D. connatus*. The male carapaces of both *D. connatus* and *D. connatus* f. *jacksoni* are both rather variable but, in the small number of specimens available, I did not see any intermediate states. The situation is similar to that found in *Oedothorax gibbosus/tuberosus* (see Taxonomic Note, p. 57), and *Troxochrus scabriculus/cirrifrons* (see Taxonomic Note, p. 72). The male form *D. jacksoni* is not therefore considered a distinct species and is here referred to as *D. connatus* f. *jacksoni*.

Diplocephalus cristatus (Blackwall, 1833)

Text Figs 36d, 39g

Length: ♀: 1.8–2.5mm; ♂: 1.7–2.2mm. TmI 0.44–0.54

Female similar to *Savignya frontata* and *Diplocephalus latifrons* (Plates 198, 199) except that posterior row of eyes is straight, and the eyes are larger and closer together. Male carapace raised into two lobes, carrying the anterior and posterior median eyes, and divided by a transverse groove (Text Fig. 39g).

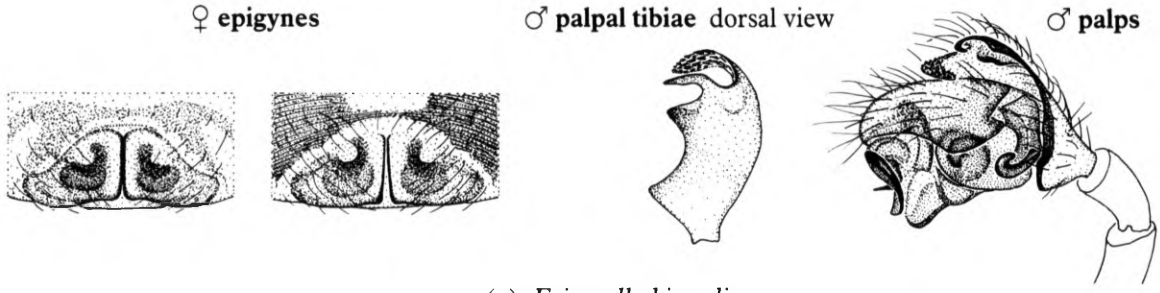
Diplocephalus permixtus (O. P.-Cambridge, 1871)

Text Figs 36e, 39h

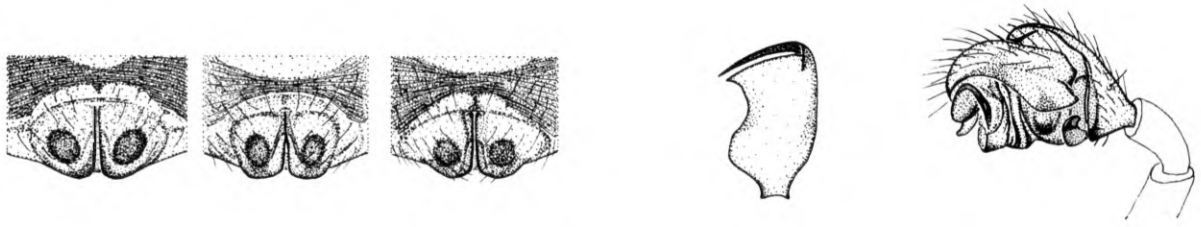
Length: ♀♂: 1.5–1.9mm. TmI 0.44–0.52

Female similar to *D. latifrons*, but posterior row of eyes

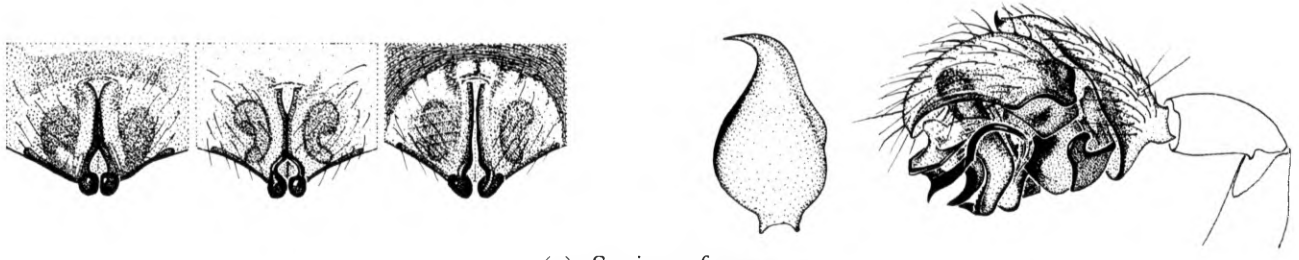
Text Figure 36



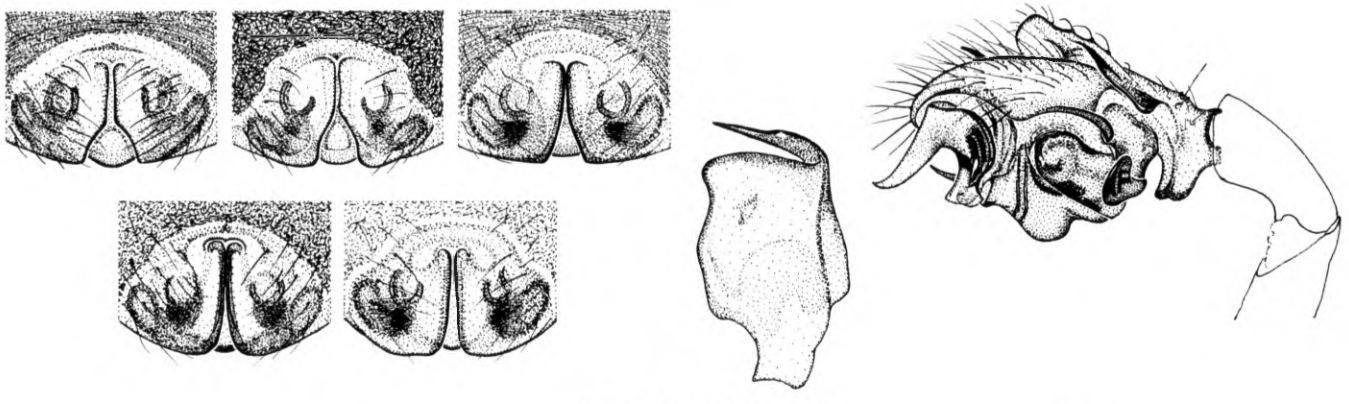
(**a**) *Erigonella hiemalis*



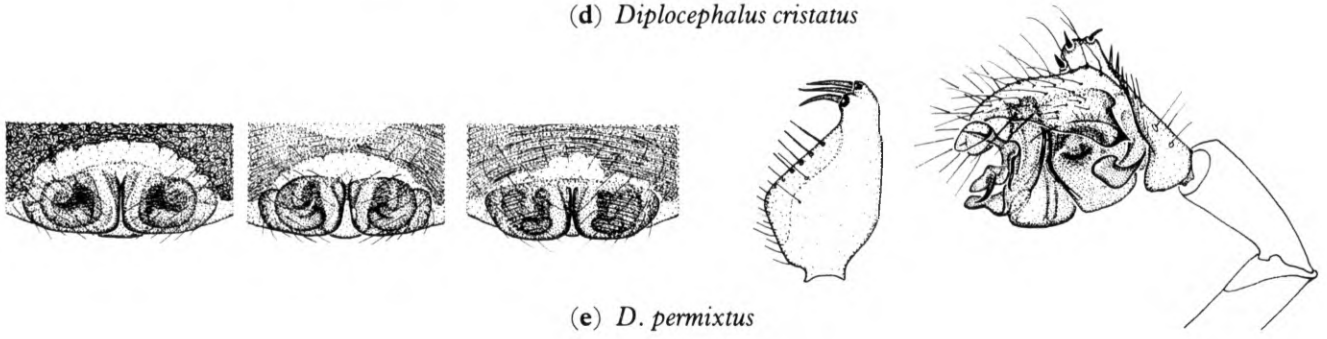
(**b**) *E. ignobilis*



(**c**) *Savignya frontata*



(**d**) *Diplocephalus cristatus*



(**e**) *D. permixtus*

practically straight, with eyes a little closer together. Male carapace raised into two lobes, carrying anterior and posterior median eyes, and divided by a transverse groove (Text Fig. 39h).

Diplocephalus latifrons (O. P.-Cambridge, 1863)
Plate 199; Text Figs 37a, 39i
Length: ♀♂: 1.5–2mm. TmI 0.36–0.48
Female as illustrated. Male carapace raised into large lobe, carrying posterior median eyes, and with a smaller projection above anterior median eyes (Text Fig. 39i); a sulcus runs back from each posterior lateral eye and contains a small pit.

Diplocephalus connatus Bertkau, 1889
Text Figs 37b, 39k
Length: ♀♂: 1.5–1.9mm. TmI 0.46–0.5
Female similar to *D. latifrons*, with posterior row of eyes similarly procurved. Male carapace raised into two distinct, projecting lobes, the hairy tips of which are in contact with one another (Text Fig. 39k); the anterior and posterior eyes are at the base of each lobe.

Diplocephalus connatus f. *jacksoni* O. P.-Cambridge, 1903
Text Fig. 39l
Length: ♂: 1.5–1.9mm. TmI 0.46–0.5
This form, which occurs only in the male, is recognized solely by the carapace, which is raised into a large lobe carrying the posterior median eyes (Text Fig. 39l); two smaller, hairy projections are present – on the front of this lobe, and above the anterior median eyes – and vary somewhat in size. A sulcus runs back from behind each posterior lateral eye and contains a small pit.

Diplocephalus picinus (Blackwall, 1841)
Text Figs 37c, 39j
Length: ♀: 1.5–1.9mm; ♂: 1.3–1.8mm. TmI 0.4–0.48
Female similar to *D. latifrons*, with posterior row of eyes similarly procurved. Male carapace raised into lobe carrying posterior median eyes (Text Fig. 39j); a sulcus runs back from behind each posterior lateral eye and contains a small pit.

Diplocephalus protuberans (O. P.-Cambridge, 1875)
Text Figs 37d, 41a
Length: ♀: 2–2.5mm; ♂: 1.9–2.25mm. TmI 0.48–0.52
Female similar to *D. latifrons* (Plate 199), with posterior row of eyes similarly procurved, but with posterior median eyes relatively larger and slightly less than one diameter apart. Male carapace raised into lobe carrying posterior median eyes (Text Fig. 41a); a broad sulcus runs back from behind each posterior lateral eye and contains a small pit.

DISTINGUISHING THE SPECIES

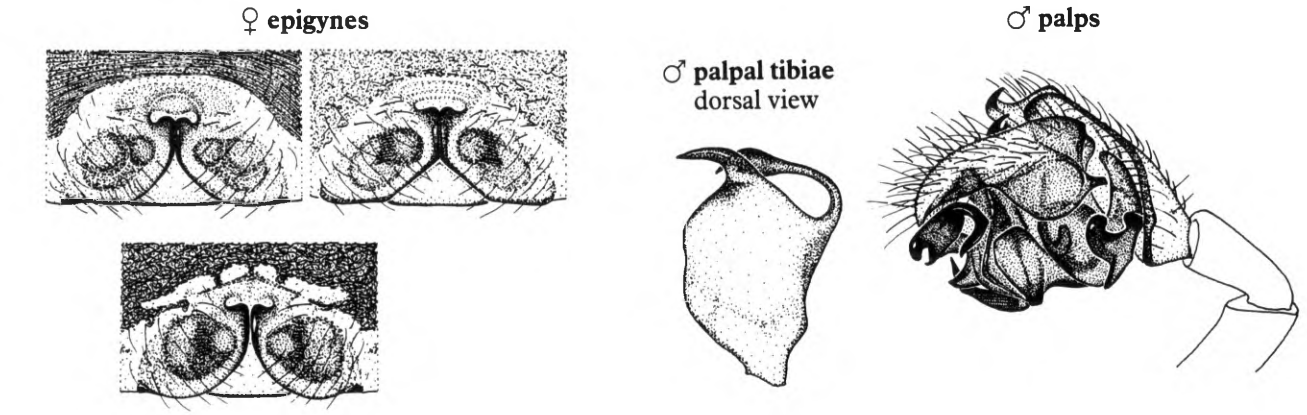
Males readily distinguished by the form of the carapace, palpal organs and the palpal tibiae, viewed ectally and dorsally. Females require a little more care as the epigynes are rather variable, as illustrated, and similar to one another, and also to epigynes of species in other genera. As well as the shape of the superficial structures, the adnexae are often just visible and are helpful in diagnosis. Overall size is also important. The epigyne of *D. cristatus* (Text Fig. 36d) is similar to that of *D. latifrons* (Text Fig. 37a), but the latter has the anterior end of the fissure more deeply sclerotized, and the posterior end opening out more widely. *D. protuberans* (Text Fig. 37d) is also similar to these two species, but the fissure is generally narrower, and scarcely opens out posteriorly. *D. permixtus* has a rather smaller epigyne which is distinctly broader than long (Text Fig. 36e); it could be confused with that of *Erigonella ignobilis* (Text Fig. 36b), but the latter has distinctly different adnexae, which are usually visible through the cuticle, is usually a smaller spider, and has a rugose sternum; the epigyne of *Araeoncus humilis* (Text Fig. 40a) is also very similar to that of *D. permixtus*. *D. connatus* (Text Fig. 37b) also has a smaller epigyne, but the plates on each side of the fissure are distinctly rounded, and only meet at one small point. *D. picinus* has a fairly distinctive epigyne (Text Fig. 37c) but this could perhaps be confused with that of *Savignya frontata* (Text Fig. 36c).

Species, in other genera, which have rather similar epigynes and could give rise to confusion, include *Araeoncus* (p. 90), *Erigonella* (p. 84), *Savignya* (p. 84), *Dicymbium* (p. 38), *Latithorax* (p. 102), *Silometopus* (p. 64) and *Saloca* (p. 78). In these cases, the size of spider, its overall appearance, position of TmI, tibial spines and presence or absence of TmIV, are all important, as well as the shape and size of the epigyne and the adnexae, if visible.

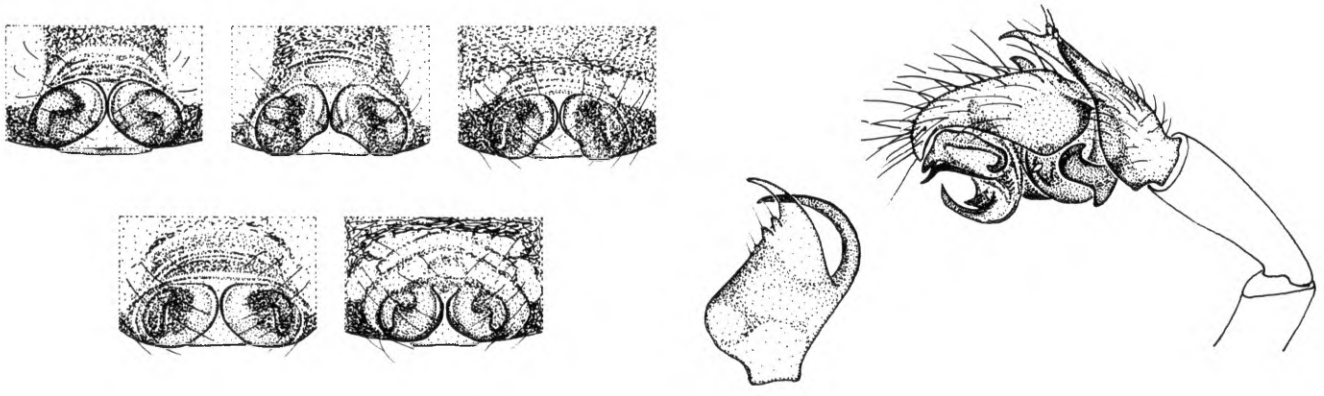
DISTRIBUTION

D. cristatus, *D. permixtus*, *D. latifrons* and *D. picinus* are all widespread throughout the British Isles, occurring commonly in moss, grass and leaf-litter. *D. protuberans* is rare, recorded only from the north of England, North Wales and Scotland. *D. connatus* has been recorded only from two localities in Northumberland, where it occurs, together with the form *jacksoni*, on river banks.

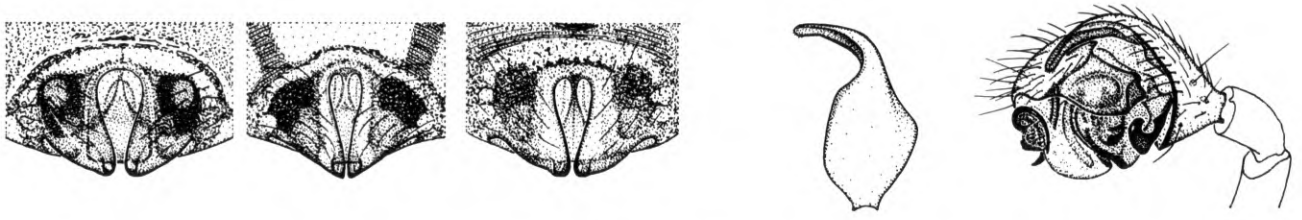
Text Figure 37



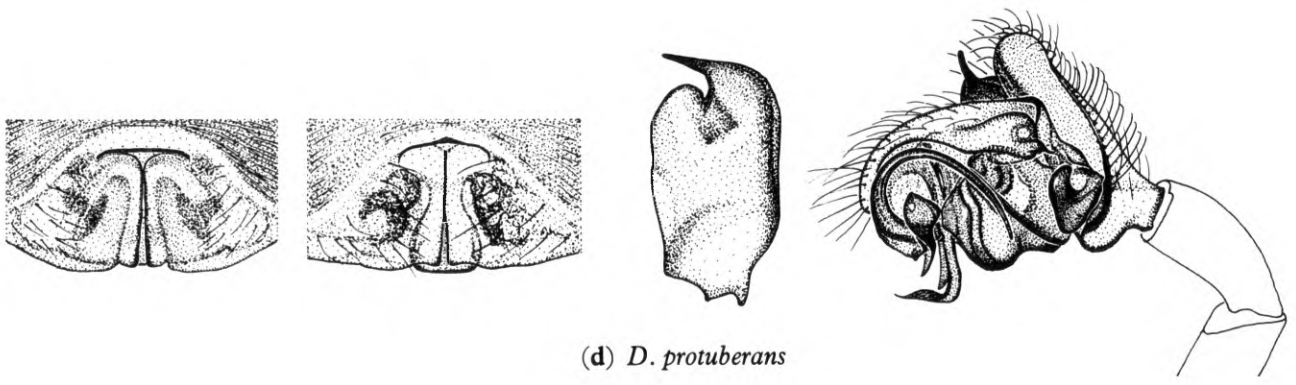
(**a**) *Diplocephalus latifrons*



(**b**) *D. connatus*



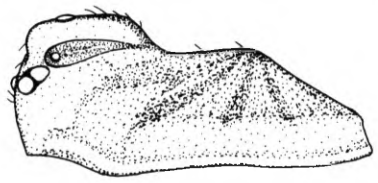
(**c**) *D. picinus*



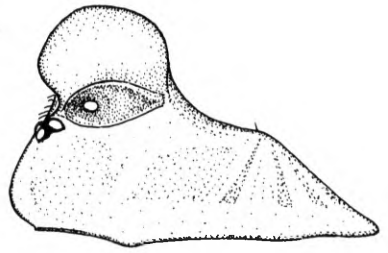
(**d**) *D. protuberans*

Text Figure 38

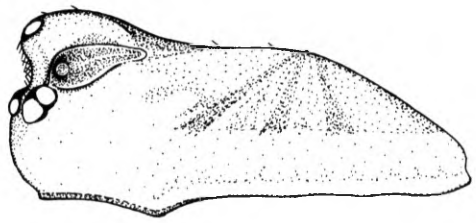
♂ **carapaces** lateral view



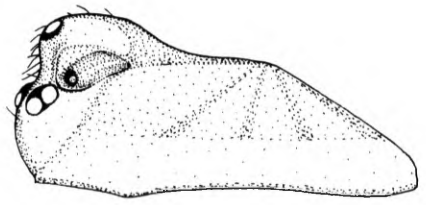
(**a**) *Thyreosthenius parasiticus*



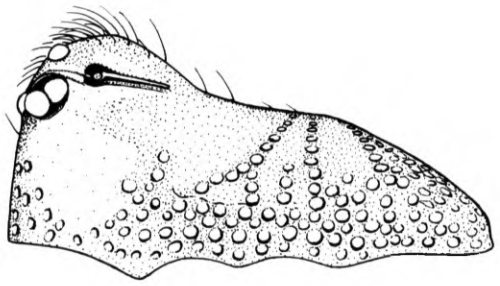
(**b**) *T. biovatus*



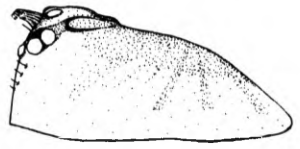
(**c**) *Monocephalus fuscipes*



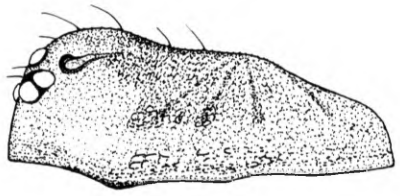
(**d**) *M. castaneipes*



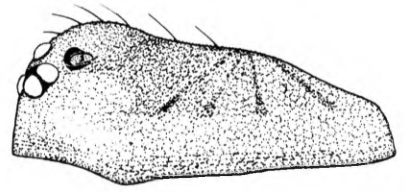
(**e**) *Lophomma punctatum*



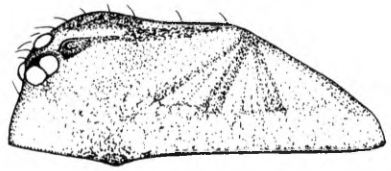
(**f**) *Saloca diceros*



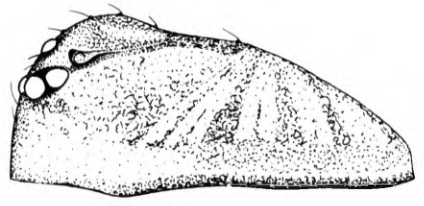
(**g**) *Micrargus herbigradus*



(**h**) *M. apertus*



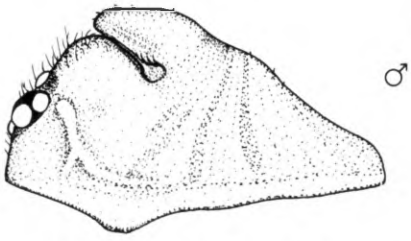
(**i**) *M. subaequalis*



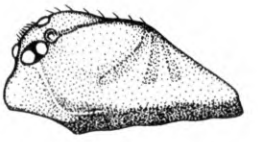
(**j**) *M. laudatus*

Text Figure 39

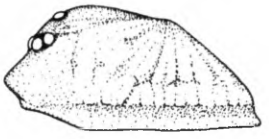
♂ **carapaces** lateral view



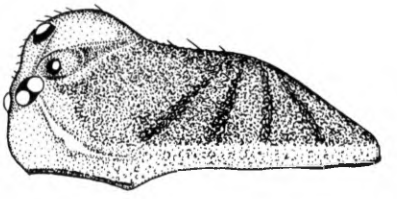
(**a**) *Notioscopus sarcinatus*



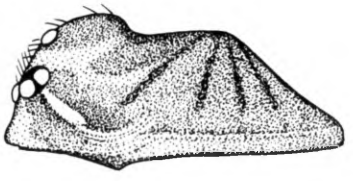
(**b**) *Glyphesis cottonae*



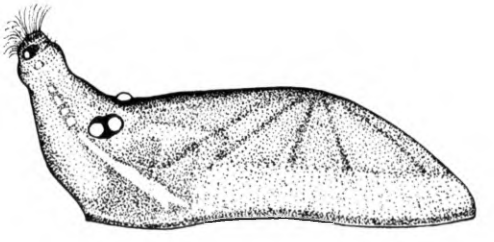
(**c**) *G. servulus*



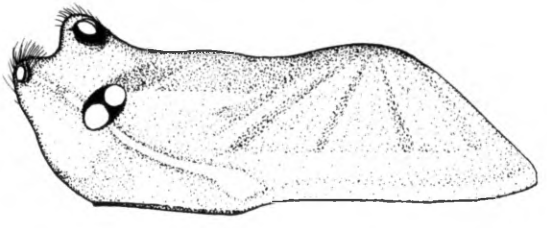
(**d**) *Erigonella hiemalis*



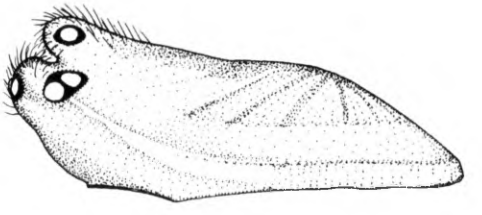
(**e**) *E. ignobilis*



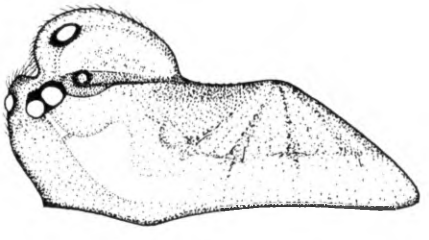
(**f**) *Savignya frontata*



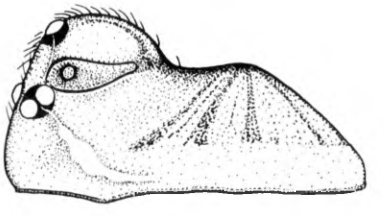
(**g**) *Diplocephalus cristatus*



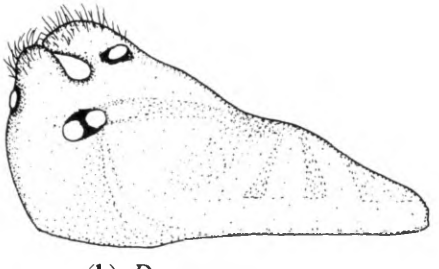
(**h**) *D. permixtus*



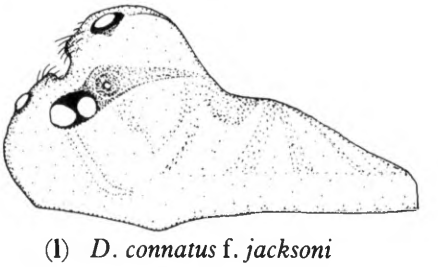
(**i**) *D. latifrons*



(**j**) *D. picinus*



(**k**) *D. connatus*



(**l**) *D. connatus* f. *jacksoni*

Genus *Araeoncus* Simon, 1884

TmI 0.38–0.48; TmIV absent; tibial spines 2–2–1–1 (minute in males; occasionally 1–1–1–1)

There are two British species in this genus, the males of which have the head slightly domed, but not forming a distinct lobe (Text Figs 41b,c). The epigynes of females have a central fissure and are similar in general appearance to those of *Silometopus*, *Erigonella* and *Diplocephalus* (*q.v.*).

Araeoncus humilis (Blackwall, 1841)

Plate 200c; Text Figs 40a, 41b

Length: ♀: 1.4–1.8mm; ♂: 1.4–1.6mm. TmI 0.38–0.48

Female as illustrated; legs yellow-brown. Male similar, but with head region of carapace a little domed (Text Fig. 41b); tibia I slightly curved and furnished with numerous short, hooked bristles; tibial spines rather small on legs I and II.

Araeoncus crassiceps (Westring, 1861)

Text Figs 40b, 41c

Length: ♀: 1.5–2mm; ♂: 1.4–1.7mm. TmI 0.4–0.48

Female very similar to *A. humilis* in general appearance. Male with head region of carapace domed, and raised a little more than that of *A. humilis* (Text Fig. 41c); tibia I not curved, and lacking hooked bristles (*cf. A. humilis*); tibial spines very short and insignificant.

DISTINGUISHING THE SPECIES

Males readily distinguished by their palpal organs, palpal tibiae and carapaces. Females present a little more difficulty, especially as the epigyne of *A. humilis* is rather variable (Text Fig. 40a). Epigyne of *A. crassiceps* differs quite distinctly from that of *A. humilis*, but the latter could be confused with the epigynes of *Silometopus*, *Erigonella*, and *Diplocephalus* (see *Diplocephalus*: Distinguishing the Species, p. 86).

DISTRIBUTION

Both species are widespread throughout the British Isles. *A. humilis* is fairly common, usually occurring in moss, grass, litter and sometimes coastal seaweed litter. *A. crassiceps* is rather rarer and occurs in similar, often damper habitats.

Genus *Panamomops* Simon, 1884

TmI 0.35–0.45; TmIV absent, tibial spines 2–2–1–1

This genus contains only one British species, the male of which has a highly characteristic carapace (Text Fig. 41d).

Panamomops sulcifrons (Wider, 1834)

Plate 200d; Text Figs 40c, 41d

Length: ♀: 1.2–1.5mm; ♂: 1.2–1.4mm. TmI 0.35–0.45

Female as illustrated; dark markings on carapace sometimes less distinct; legs yellow-brown. Male carapace with clypeus projecting anteriorly and with a small horn on each side, projecting anteriorly from a swelling above each lateral eye (Text Fig. 41d). There is considerable variation in the overall shape of the male carapace, and also in the pair of horns, but the appearance is nevertheless unmistakable. Epigyne characteristic, although rather variable, as illustrated (Text Fig. 40c), and sometimes ill-defined. Male palp highly characteristic.

DISTRIBUTION

P. sulcifrons appears to have a widespread but local distribution throughout England, but has not been recorded from the rest of the British Isles. Most frequent on calcareous grassland.

Genus *Lessertia* Smith, 1908

TmI 0.3–0.4; TmIV absent; tibial spines 2–2–2–1

This genus contains only one British species, the male of which does not have the carapace modified or raised into a lobe.

Lessertia dentichelis (Simon, 1884)

Plate 201a; Text Fig. 40d

Length: ♀♂: 2.6–3.5mm. TmI 0.3–0.4

Female as illustrated; note the rather long hairs on pale abdomen. Hairs and spines on legs also rather long; legs similar in colour to carapace. Male similar in general appearance; each chelicera bears a number of long hairs, each arising from a warty base, and a large tooth-like process anterodistally. Epigyne highly characteristic; the adnexae may be more or less visible than illustrated (Text Fig. 40d). Male palp rather variable but nevertheless characteristic.

DISTRIBUTION

L. dentichelis is probably widespread throughout the British Isles, but appears to have a rather local distribution. Whilst it has been recorded from a large part of England, there are few records from Ireland, Wales and Scotland. It occurs in a variety of habitats including caves and sewers, as well as on vegetation and sandhills.

Genus *Scotinotylus* Simon, 1884

TmI 0.45–0.55; TmIV absent; tibial spines 2–2–2–1

This genus contains only one British species, the male of which has the carapace slightly domed behind the posterior eyes, but no definite lobe or other modification.

Scotinotylus evansi (O. P.-Cambridge, 1894)

Plate 201b; Text Fig. 40e

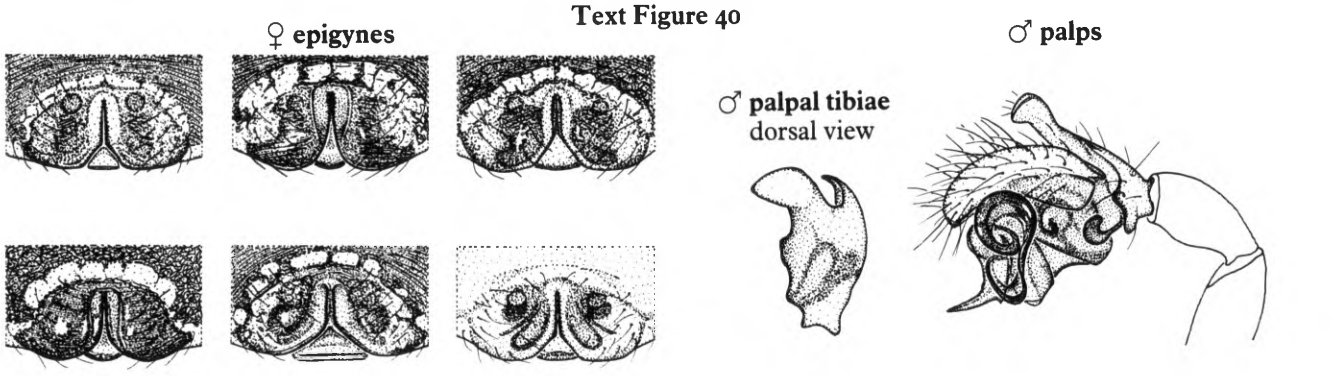
Length: ♀: 1.8–2.3mm; ♂: 1.75–2mm. TmI 0.45–0.55

Female as illustrated; legs orange-brown, similar to carapace. Male similar, but with carapace slightly domed behind posterior eyes. Epigyne a little variable (Text Fig. 40e), but both this and male palp are highly characteristic.

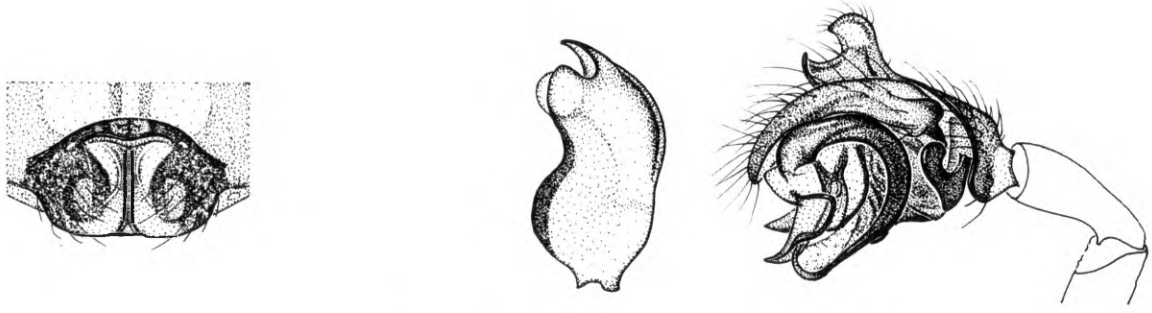
DISTRIBUTION

S. evansi has been recorded only from Scotland and northern England. It occurs, sometimes abundantly, in grass, moss and other vegetation, as well as under logs and stones.

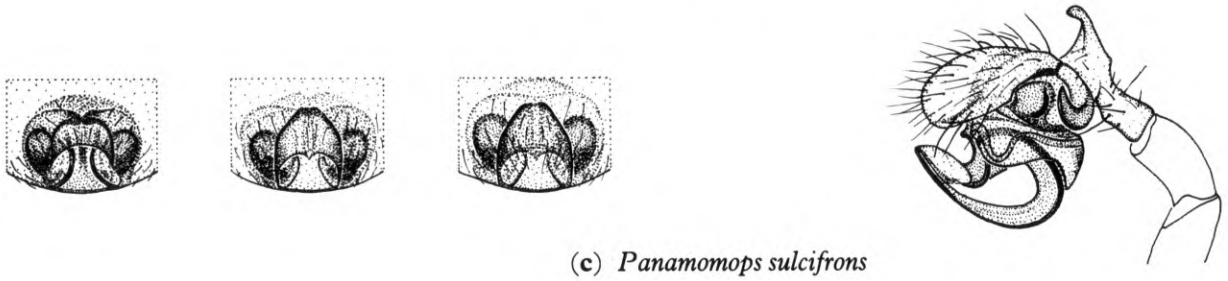
Text Figure 40



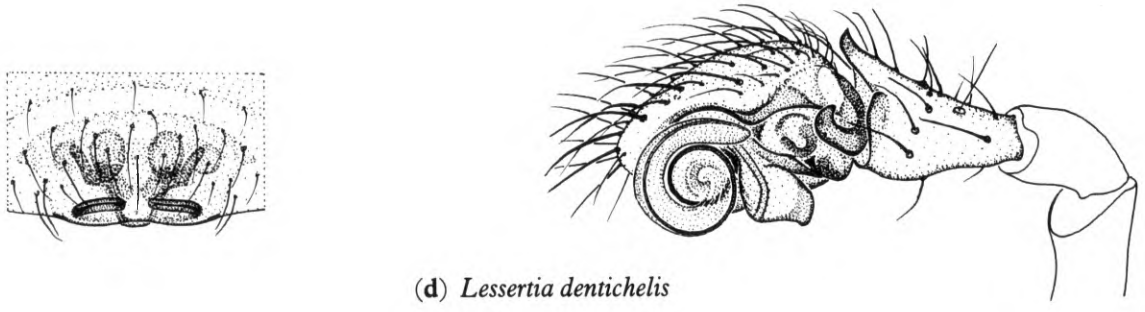
(**a**) *Araeoncus humilis*



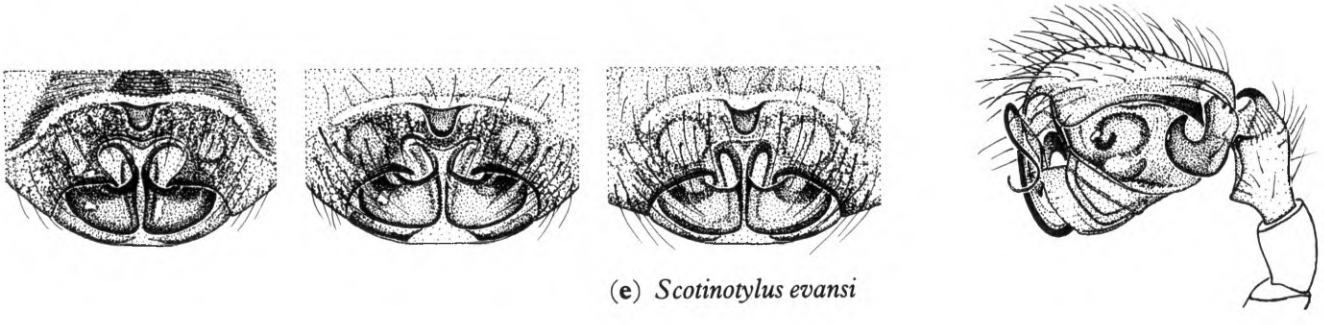
(**b**) *A. crassiceps*



(**c**) *Panamomops sulcifrons*



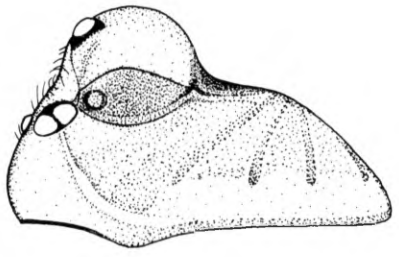
(**d**) *Lessertia dentichelis*



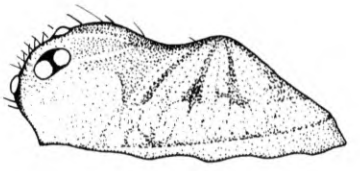
(**e**) *Scotinotylus evansi*

Text Figure 41

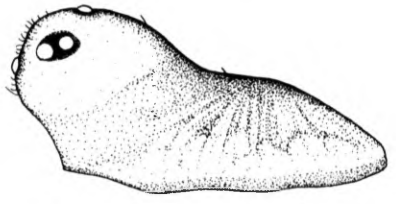
♂ **carapaces** lateral view



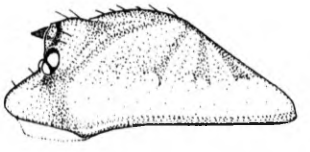
(**a**) *Diplocephalus protuberans*



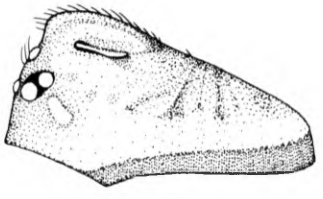
(**b**) *Araeoncus humilis*



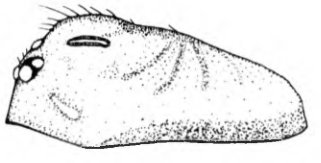
(**c**) *A. crassiceps*



(**d**) *Panamomops sulcifrons*



(**e**) *Typhochrestus digitatus*



(**f**) *T. simoni*

Genus *Typhochrestus* Simon, 1884

TmI 0.4–0.5; TmIV absent; tibial spines 2–2–2–1 (minute in males, especially on legs I and II)

There are two British species in this genus, the males of which have the head raised into a shallow lobe, with a sulcus on each side (Text Figs 41e,f).

Typhochrestus digitatus (O. P.-Cambridge, 1872)

Plate 201c; Text Figs 41e, 42a

Length: ♀: 1.3–1.8mm; ♂: 1.3–1.7mm. TmI 0.4–0.48

Female as illustrated; abdomen often larger; legs yellow-brown, similar to carapace. Male similar in general appearance but with head region of carapace raised (Text Fig. 41e); a sulcus is present on each side.

Typhochrestus simoni de Lessert, 1907

Text Figs 41f, 42b

Length: ♀: 1.5–2mm; ♂: 1.3–1.5mm. TmI 0.4–0.5

Female very similar in general appearance to *T. digitatus*; male carapace raised in head region (Text Fig. 41f); a sulcus is present on each side.

DISTINGUISHING THE SPECIES

Epigynes similar and variable in both species (Text Figs 42a,b). In *T. digitatus* there is a semicircular arch anteriorly, behind which protrudes a blunt, fairly pale, tongue-like process. In *T. simoni* the anterior border curves around, from each side to the midline, forming a dark, bluntly pointed process. Males easily distinguished by palpal organs, palpal tibiae (viewed ectally and dorsally) and by their carapaces.

DISTRIBUTION

T. digitatus has a widespread, but rather local, distribution throughout the British Isles, and occurs in a wide variety of habitats. *T. simoni* is very rare, and so far has been recorded only from grassland in North Wales (Snowdonia at 1500–2000ft) and from chalk grassland in the south of England.

Genus *Milleriana* Denis, 1966

TmI 0.36–0.44; TmIV absent; tibial spines 2–2–2–1

This genus contains only one British species, the male of which does not have the carapace raised into a lobe.

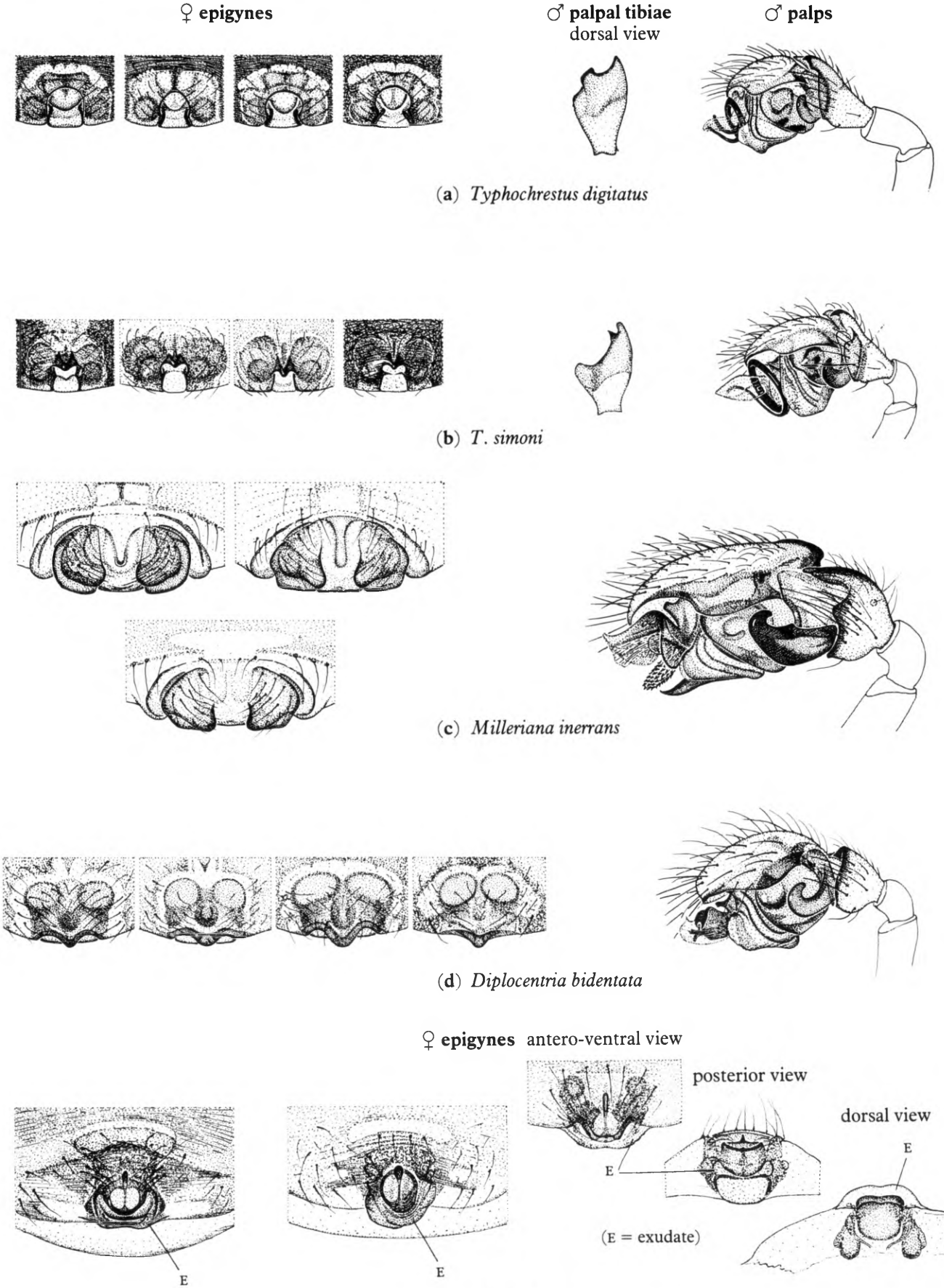
Milleriana inerrans (O. P.-Cambridge, 1884)

Plate 202a; Text Fig. 42c

Length: ♀: 2–2.5mm; ♂: 1.4–2mm. TmI 0.36–0.44

Male similar in general appearance to female illustrated; legs similar in colour to carapace. Epigyne rather variable

Text Figure 42



but characteristic (Text Fig. 42c); the central area is usually whitish and contrasts with the orange-brown sclerotized plates on each side. Male palp highly characteristic (Text Fig. 42c).

DISTRIBUTION

M. inerrans is probably widespread throughout England, Wales and Scotland, but has apparently not been recorded from Ireland. It is rather uncommon, occurring in a variety of situations, including moss and grass, in both wet and drier habitats, in open and wooded areas inland, and on coastal sand dunes. A frequent aeronaut which often colonizes newly created habitats, e.g. burnt heathland, arable land.

Genus *Diplocentria* Hull, 1911

TmI 0.5–0.58; TmIV absent; tibial spines 2–2–2–1

This genus contains only one British species, the male of which does not have the carapace raised into a lobe.

Diplocentria bidentata (Emerton, 1882)

Plate 202b; Text Fig. 42d

Length: ♀: 1.8–2.2mm; ♂: 1.7–1.9mm. TmI 0.5–0.58

Male similar in general appearance to female illustrated; legs similar in colour to carapace. Epigyne characteristic but rather variable, as illustrated (Text Fig. 42d). Male palp also a little variable, but nevertheless characteristic.

DISTRIBUTION

D. bidentata occurs in litter, moss and grass in a variety of habitats, but has a rather local distribution. It has been recorded from Wales, Ireland, Scotland and northern England, but not from central or southern England.

Genus *Erigone* Audouin, 1826

TmI 0.35–0.57; TmIV absent (occasionally *present* in *E. longipalpis*); tibial spines 2–2–2–1

The eleven British species at present included in this genus, are all very closely similar in general appearance. Males have the carapace slightly raised in the head region, but not into a definite lobe. Margins of male carapace furnished with distinct teeth (Plate 203); the latter are much smaller, or absent, in females (Plate 202c). The chelicerae, particularly in males, often have warty or tooth-like processes anteriorly. *Erigone vagans* Audouin is not congeneric with the other British species included in *Erigone* and has rather different genitalia. The nomenclatural and taxonomic problems have still to be resolved (see Taxonomic Note, below). The remaining British species of *Erigone* have closely similar epigynes and male palps, which also exhibit considerable intraspecific variation.

TAXONOMIC NOTE

Erigone vagans Audouin, is the type species of the genus *Erigone* but, as shown by Millidge (1984), is not congeneric with the large number of other species which have been placed in this genus. In order to conserve the name *Erigone* for the majority of species included in the genus, an application has been made to the International Commission on Zoological Nomenclature to use its plenary powers to substitute *Erigone longipalpis* (Sundevall, 1830) as the type species of *Erigone*, and to sanction the use of *vagans* as the type species of a new genus (Millidge, 1985). According to Article 80(a) of the International Code of Zoological Nomenclature (3rd Edition) 'When a case is under consideration by the Commission, existing usage is to be maintained until the ruling of the Commission is published by the Commission'.

Erigone vagans Audouin, 1826

Text Figs 42e, 45a

Length: ♀: 2–3.2mm; ♂: 1.7–2.8mm. TmI 0.4–0.48

Female similar in general appearance to *E. arctica* (Plate 202c) and male to *E. dentipalpis* (Plate 203).

Erigone dentipalpis (Wider, 1834)

Plate 203; Text Figs 43a, 45b

Length: ♀: 1.8–2.6mm; ♂: 1.9–2.5mm. TmI 0.4–0.5

Male as illustrated; female similar to *E. arctica*.

Erigone promiscua (O. P.-Cambridge, 1872)

Text Figs 43b, 45c

Length: ♀: 1.8–2.6mm; ♂: 1.8–2.5mm. TmI 0.4–0.5

General appearance similar to female *E. arctica* and male *E. dentipalpis*, as illustrated.

Erigone atra (Blackwall, 1841)

Text Figs 43c, 46a

Length: ♀: 1.8–2.8mm; ♂: 1.9–2.5mm. TmI 0.39–0.49

General appearance similar to female *E. arctica* and male *E. dentipalpis*.

Erigone arctica (White, 1852)

Plate 202c; Text Figs 43d, 46b

Length: ♀: 2.6–3.6mm; ♂: 2.5–3.2mm. TmI 0.47–0.57

Female as illustrated; male similar in general appearance to *E. dentipalpis*.

Erigone longipalpis (Sundevall, 1830)
Text Figs 43e, 47a
Length: ♀♂: 2.4–3.5mm. TmI 0.45–0.55; TmIV occasionally present on one or both legs.
General appearance similar to female *E. arctica* and male *E. dentipalpis*.

Erigone tirolensis L. Koch, 1872
Text Figs 44a, 47b
Length: ♀: 2.2–2.8mm; ♂: 2.1–2.6mm. TmI 0.4–0.5
General appearance similar to female *E. arctica* and male *E. dentipalpis*.

Erigone capra Simon, 1884
Text Figs 44b, 47c
Length: ♀: 1.9–2.5mm; ♂: 1.8–2.8mm. TmI 0.4–0.47
General appearance similar to female *E. arctica* and male *E. dentipalpis*.

Erigone welchi Jackson, 1911
Text Figs 44c, 48a
Length: ♀♂: 2–2.5mm. TmI 0.4–0.48
General appearance similar to female *E. arctica* and male *E. dentipalpis*.

Erigone psychrophila Thorell, 1871
Text Figs 44d, 48b
Length: ♀: 2–3.1mm; ♂: 2–3mm. TmI 0.4–0.5
General appearance similar to female *E. arctica* and male *E. dentipalpis*.

Erigone aletris Crosby & Bishop, 1928
Text Figs 44e, 48c
Length: ♀: 2.1–2.2mm; ♂: 1.7–2.1mm. TmI 0.35–0.45
General appearance similar to female *E. arctica* and male *E. dentipalpis*.

DISTINGUISHING THE SPECIES

All the species show considerable variation in both the epigynes and male palps. The latter show considerable intraspecific variation in the length of the palpal femur and patella which may, in some cases, be attributable to allometric growth. The ventral process on the palpal patella can vary very considerably in both shape and size. The palpal tibiae are less variable, but even here there may be variation, especially in the size of the small ventral tooth, when present. Reliable identification of males must therefore be based on a combination of features; the most important of these are the form of the palpal organs together with the palpal tibiae, viewed ectally and dorsally.

Females also require considerable care in identification. The epigyne of *E. vagans* (Text Fig. 42e) is quite different from those of the other species and is quite distinctive, despite usually being partly obscured by a translucent 'exudate' (E in Text Fig. 42e). Whether this dried secretion emanates from the female, or is applied by the male after copulation, is unclear. The epigynes of all the other *Erigone* species take the form of a broad, hollowed-out scape which carries the ducts from the genital openings (near its tip) around each side to the spermathecae. There is very considerable intraspecific variation in the form of the scape viewed ventrally, but if the structure is lifted up with a needle (or completely or partially detached) and viewed dorsally, the structures are much better defined and show less variation. In the midline, near the spermathecae, is a plate which, for instance, is much wider in *E. promiscua* (Text Fig. 43b) than in the other species. From each side of this plate, the dorsal surface of the scape curves around to its tip, carrying the ducts. The size of the spermathecae is sometimes useful (e.g. compare *E. longipalpis* (Text Fig. 43e) with *E. welchi* (Text Fig. 44c)). The degree of separation of the spermathecae is not completely reliable (e.g. compare the extreme left and right of the *E. promiscua* epigynes (Text Fig. 43b), or those of *E. capra* (Text Fig. 44b)). The scape is hollowed out dorsally, and the shape and relative size of this opening, together with the vaguely defined outlines of any structures within the cavity, are all helpful in identification. Finally, the overall size of the epigyne may be of limited use in the case of *E. aletris* (Text Fig. 44e). Identification of females must therefore be based on a combination of features – i.e. the epigyne viewed ventrally (shape and thickness of posterior margin; disposition and thickness of creases), and dorsally (shape and relative sizes of central plate, spermathecae, lateral and posterior margins of scape, and the hollowed-out cavity).

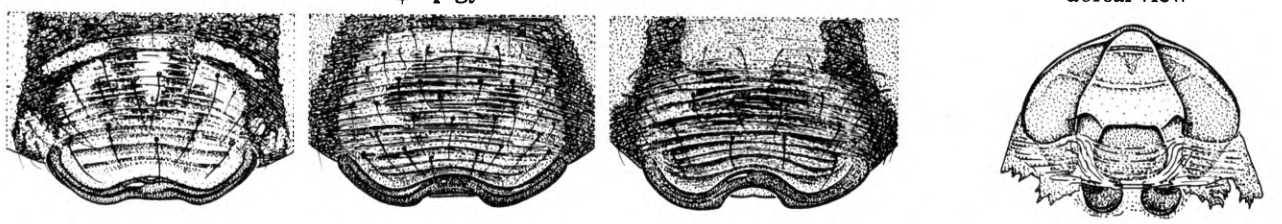
DISTRIBUTION

E. dentipalpis and *E. atra* are both widespread throughout the British Isles, and occur very commonly in a wide variety of situations and as aeronauts. *E. promiscua* is also widespread throughout the British Isles in a variety of situations; it appears to be less common, but may have been under-recorded since females were mixed with, and misidentified as, *E. dentipalpis* in some collections examined. *E. longipalpis* is rather less common but is widely distributed, usually occurring in wet habitats. *E. arctica* is widespread throughout the British Isles, but usually in coastal habitats – sea shore and estuaries; sometimes also inland on the shores of large lakes, or sewage beds. *E. vagans* is uncommon but fairly widespread throughout England, mainly in wet grassy habitats or sewage filter-beds. *E. capra* is rare; recorded from northern England, Scotland, Wales and Ireland, where it has been found in wet habitats, in local abundance. *E. tirolensis* has been recorded only from sites in the Scottish Highlands, around 3–4000ft. *E. welchi* is rare, recorded from nine localities, mainly wet habitats, scattered throughout the British Isles. *E. psychrophila* is also rare and has so far been recorded only from five localities in Scotland and one in northern England, all above 2,500ft. *E. aletris*, only recently described from Britain (Snazell, 1980), has been recorded from two sites in Scotland.

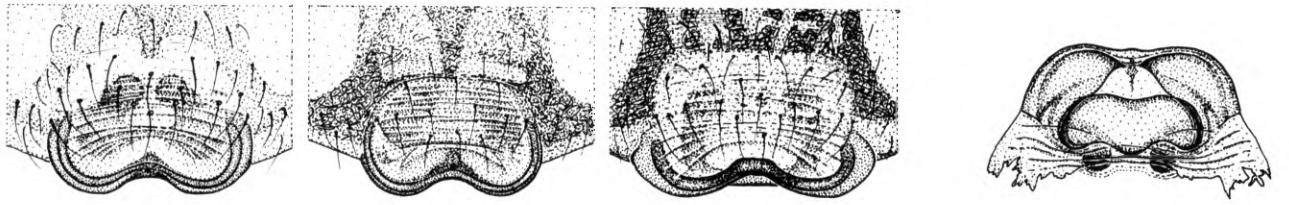
Text Figure 43

♀ epigynes

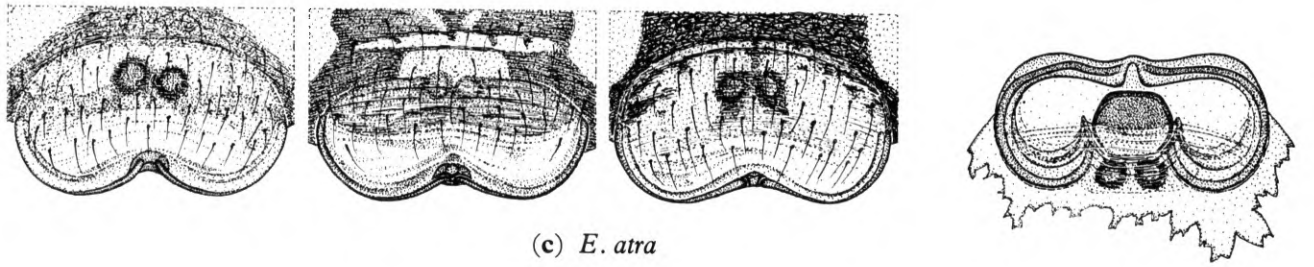
dorsal view



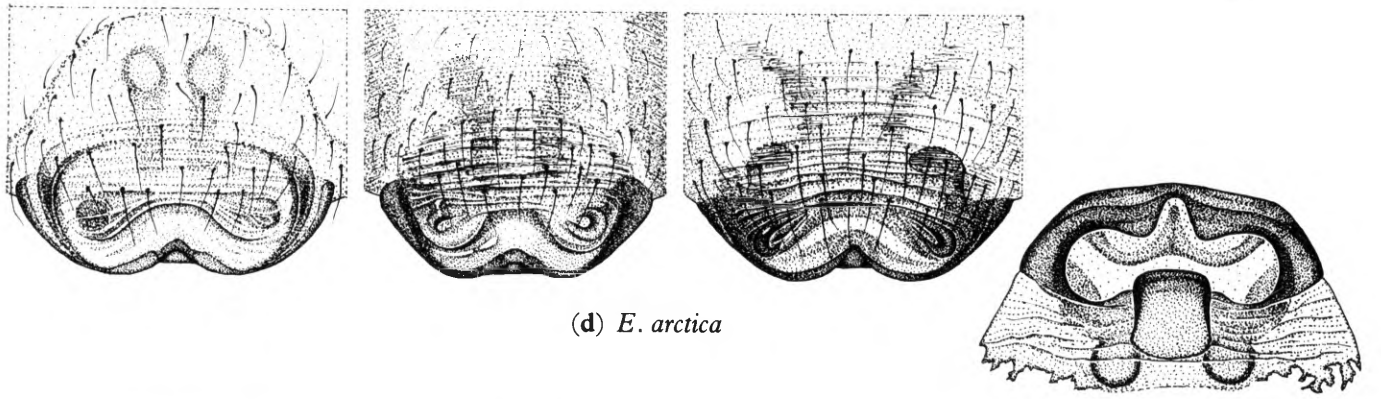
(**a**) *Erigone dentipalpis*



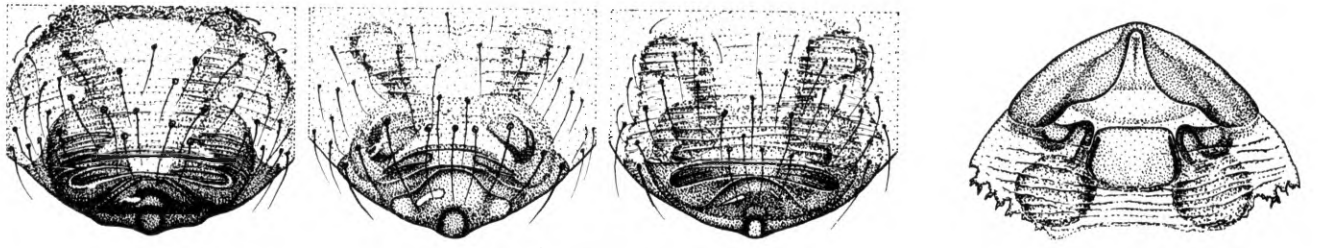
(**b**) *E. promiscua*



(**c**) *E. atra*



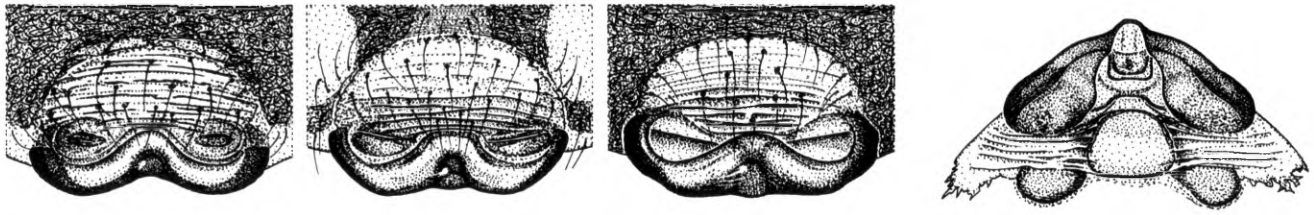
(**d**) *E. arctica*



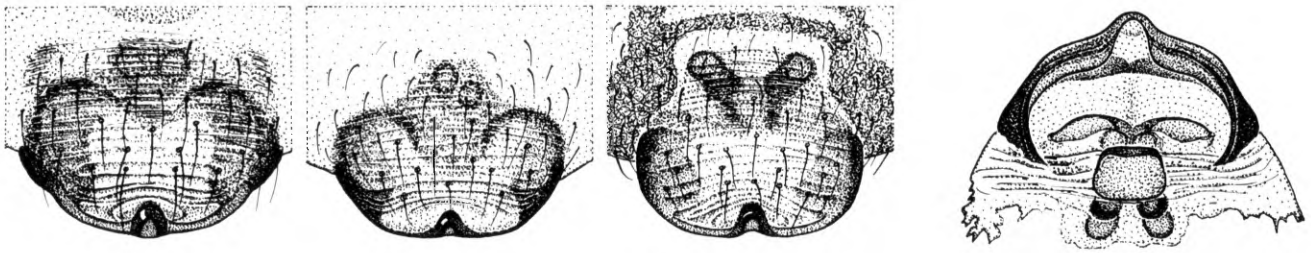
(**e**) *E. longipalpis*

Text Figure 44

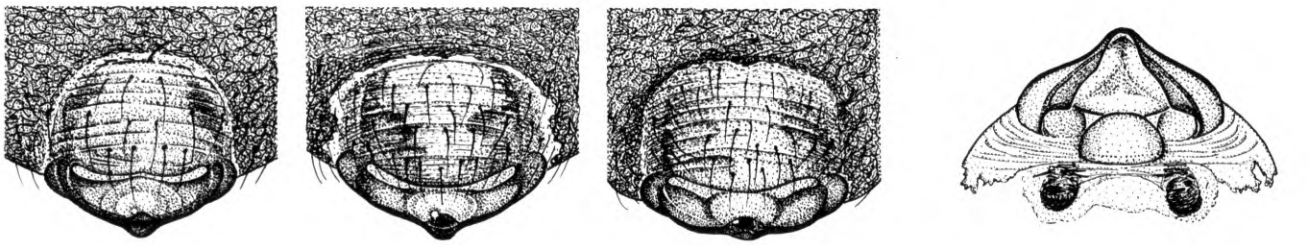
♀ **epigynes** dorsal view



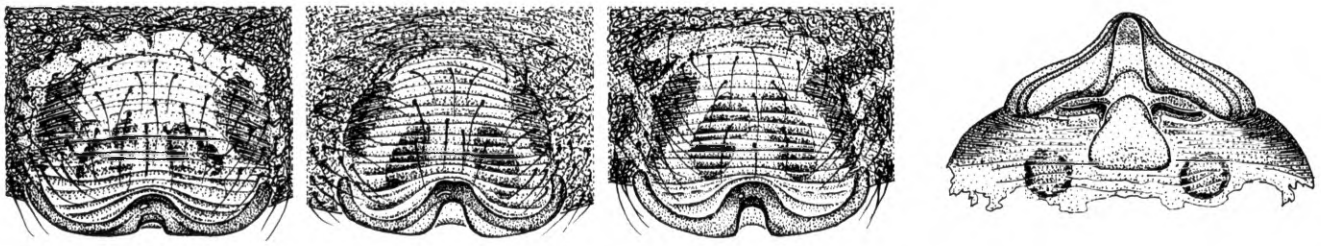
(**a**) *Erigone tirolensis*



(**b**) *E. capra*



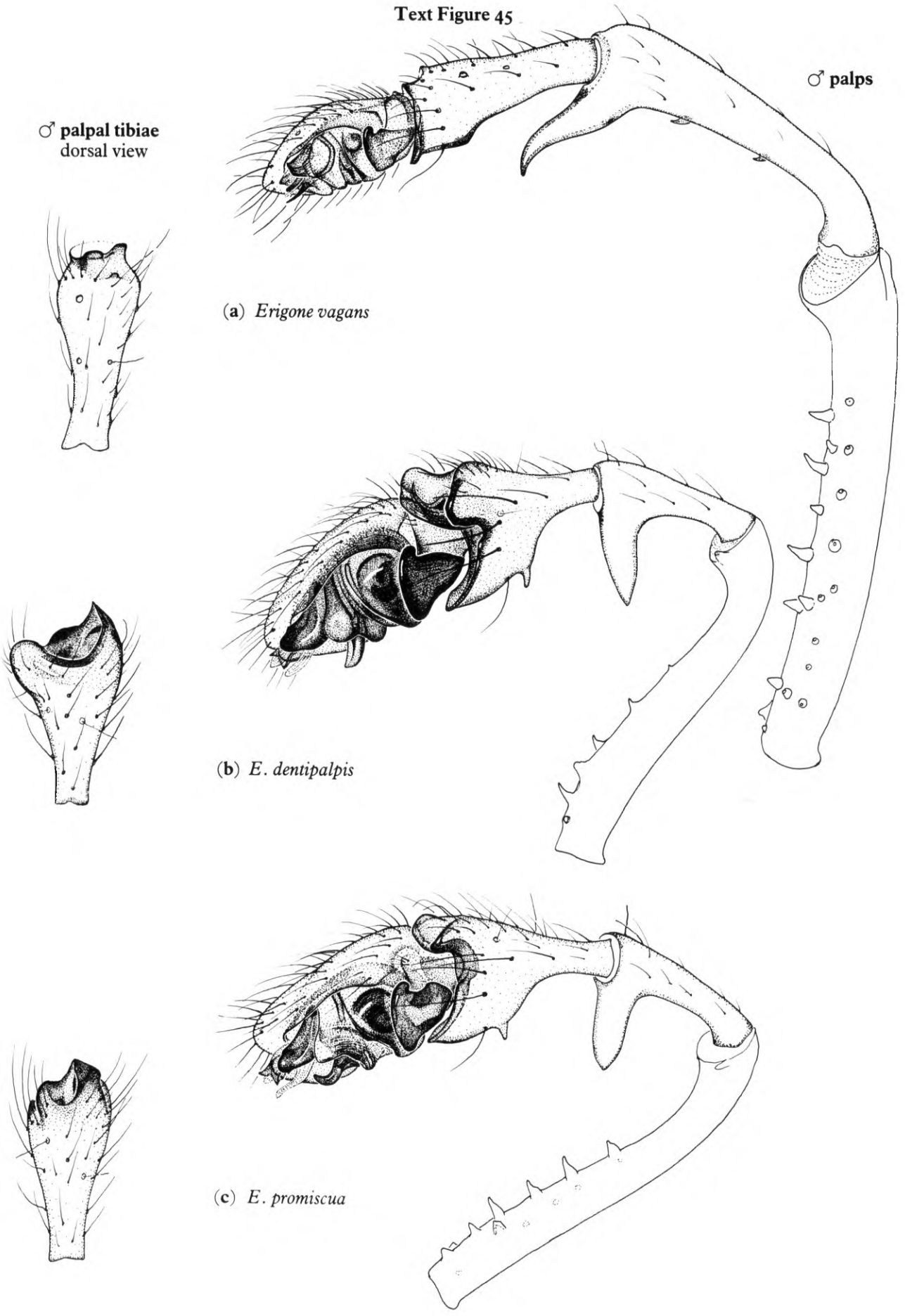
(**c**) *E. welchi*



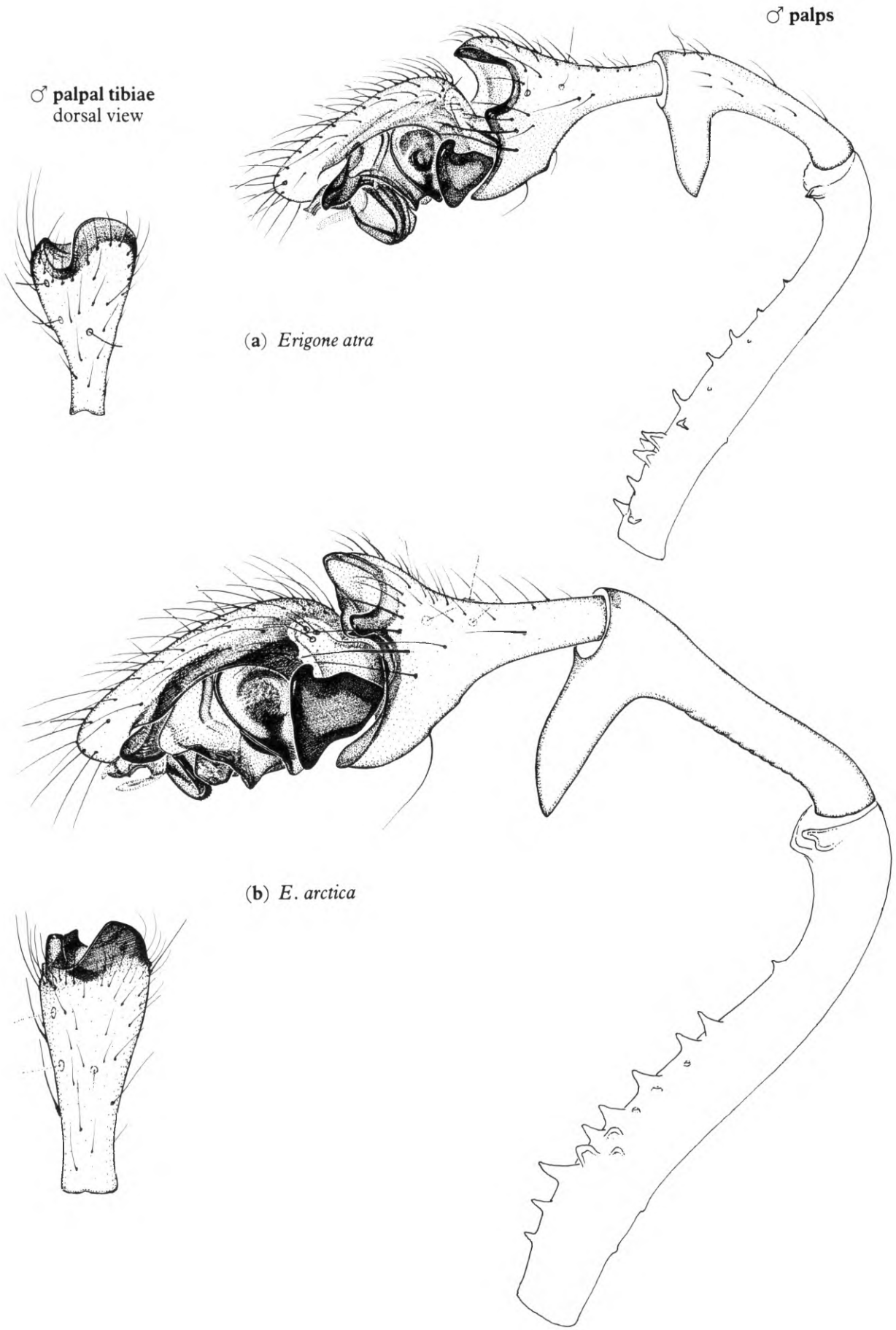
(**d**) *E. psychrophila*

(**e**) *E. aletris*

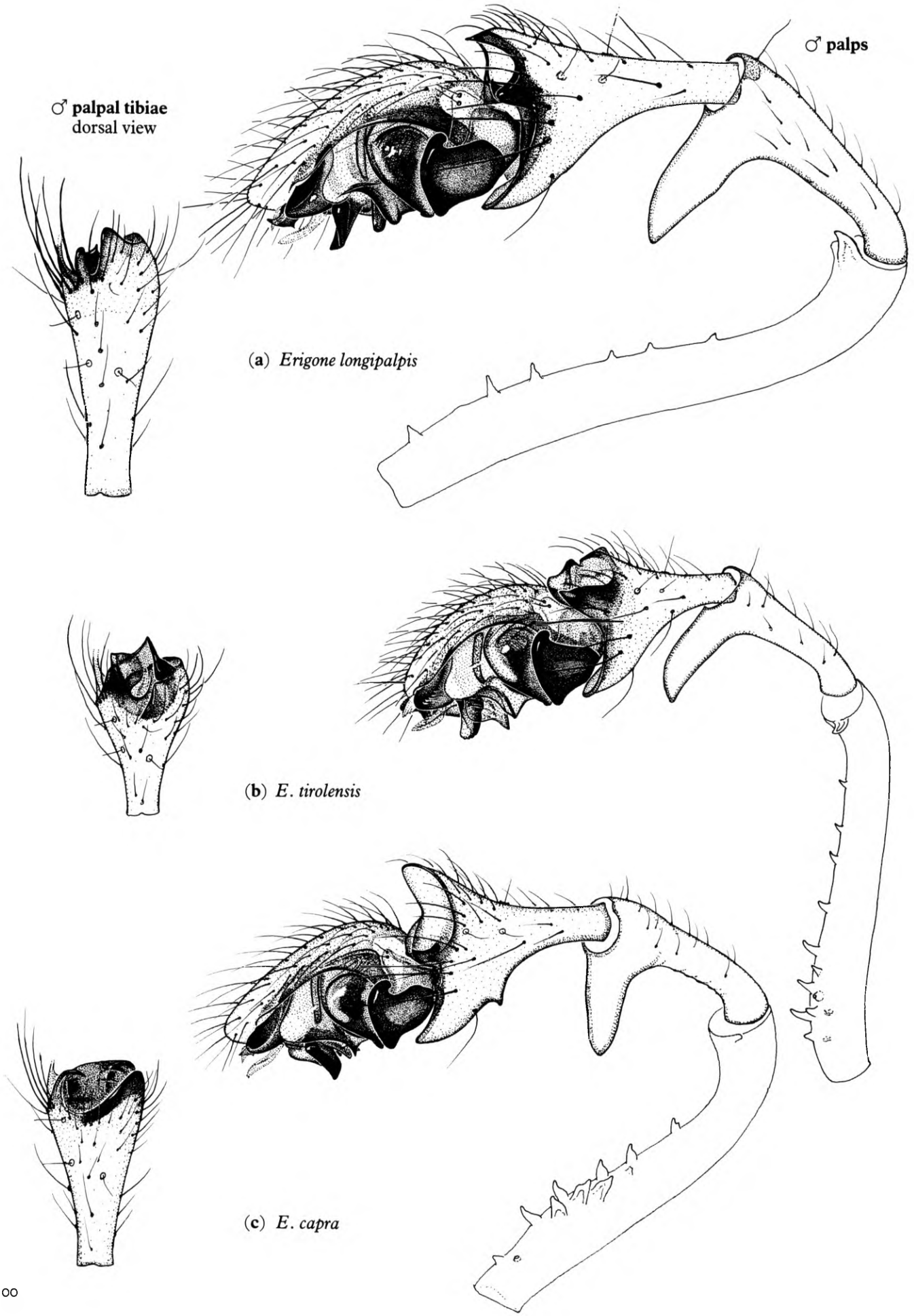
Text Figure 45



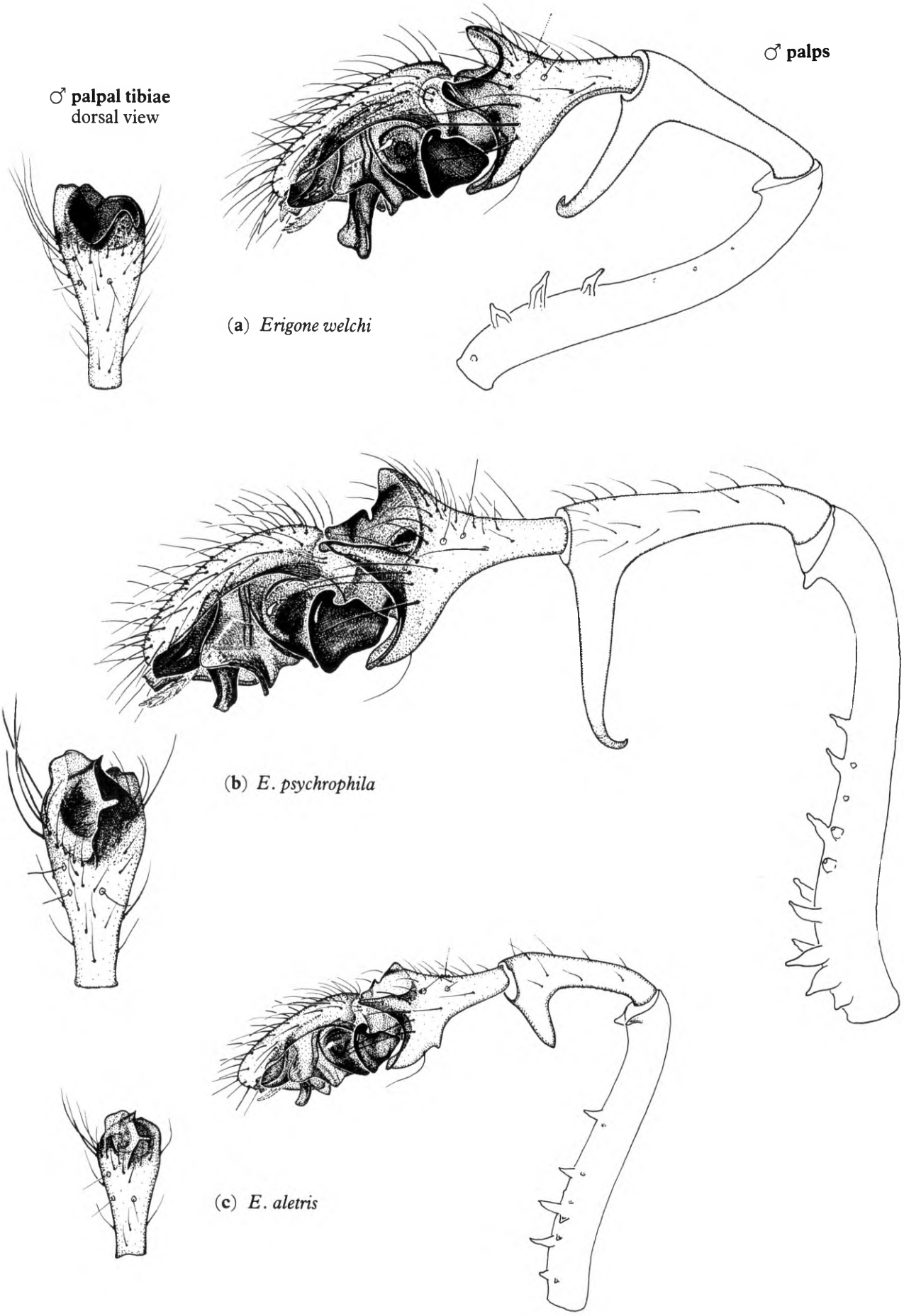
Text Figure 46



Text Figure 47



Text Figure 48



Genus *Rhaebothorax* Simon, 1926

TmI 0.45–0.77; TmIV absent; tibial spines 2–2–2–1 (occasionally 2–2–2–2 or 2–2–2–0)

There are two rare British species in this genus. The male of one species has stridulating ridges on the branchial opercula; these are absent in the male of the other species which, however, has the carapace slightly domed behind the eyes.

Rhaebothorax morulus (O. P.-Cambridge, 1873)

Plate 202d; Text Fig. 49a

Length: ♀: 1.6–2mm; ♂: 1.6–1.9mm. TmI 0.68–0.77

Male similar to female illustrated, but with a number of short, curved hairs in eye region; stridulating ridges present on branchial opercula, with an opposing tooth on each coxa IV. Female has much reduced stridulating ridges.

Rhaebothorax paetulus (O. P.-Cambridge, 1875)

Text Fig. 49b

Length: ♀: 2–2.1mm; ♂: 1.9–2mm. TmI 0.45–0.5

Similar to *R. morulus* in general appearance. Branchial opercula lack stridulating ridges. Male carapace domed behind the eyes.

DISTINGUISHING THE SPECIES

These two species are easily distinguished by their epigynes, male palpal organs and palpal tibiae, as well as by the position of TmI.

DISTRIBUTION

Both species are rare spiders. *R. morulus* has been recorded from Wales, northern England, northern Ireland and Scotland, in ground vegetation and under stones on fairly high ground. *R. paetulus* has so far been found only in two Scottish localities, under stones at over 3000ft altitude.

Genus *Latithorax* Holm, 1943

TmI 0.57–0.64; TmIV absent; tibial spines 2–2–2–1

There is only one British species in this genus, the male of which has stridulating ridges on the branchial opercula, and an opposing tooth on each coxa IV; this stridulating apparatus is much reduced in female. Male carapace is not modified.

TAXONOMIC NOTE

This species was previously included in the genus *Eboria* Falconer, 1910. According to Millidge (1977), *Latithorax*, Holm 1943, was incorrectly synonymized with *Eboria* by Locket & Millidge (1953).

Latithorax faustus (O. P.-Cambridge, 1900)

(= *Eboria fausta* (O. P.-Cambridge))

Plate 205a; Text Fig. 49c

Length: ♀: 1.5–1.9mm; ♂: 1.5–1.8mm. TmI 0.57–0.64

Male similar to female illustrated, but with a number of strong hairs in ocular region. Epigyne rather variable (Text Fig. 49c), but characteristic, as also is male palp and its tibia viewed dorsally.

DISTRIBUTION

This rare species has been recorded from a number of counties in Wales, northern England, Scotland and Ireland, in moss and grass on fairly high ground.

Genus *Semljicola* Strand, 1906

TmI 0.5–0.6; TmIV absent; tibial spines 2–2–2–1

There is one British species in this genus, the male of which has stridulating ridges on the branchial opercula and an opposing tooth on each coxa IV; male carapace unmodified.

TAXONOMIC NOTE

This species was previously included in the genus *Eboria* Falconer, 1910, which was synonymized with *Semljicola* Strand, 1906 by Holm (1973).

Semljicola caliginosa (Falconer, 1910)

(= *Eboria caliginosa* Falconer)

Text Fig. 49d

Length: ♀♂: 1.6–2mm; TmI 0.5–0.6

Similar in general appearance to *Latithorax faustus* (Plate 205a). Epigyne, male palp and palpal tibia characteristic (Text Fig. 49d).

DISTRIBUTION

This rare spider has been recorded from only a few sites in northern England and Scotland; mainly in wet habitats on high ground.

Genus *Donacochara* Simon, 1884

TmI 0.85–0.9; TmIV present; tibial spines 2–2–2–2

The single British species in this genus has a highly characteristic appearance (Plate 205b). The male carapace is unmodified.

NOTE. The name of this species was incorrectly spelt in Vol. **3**: Plate 205b and Index.

Donacochara speciosa (Thorell, 1875)

Plate 205b; Text Fig. 49e

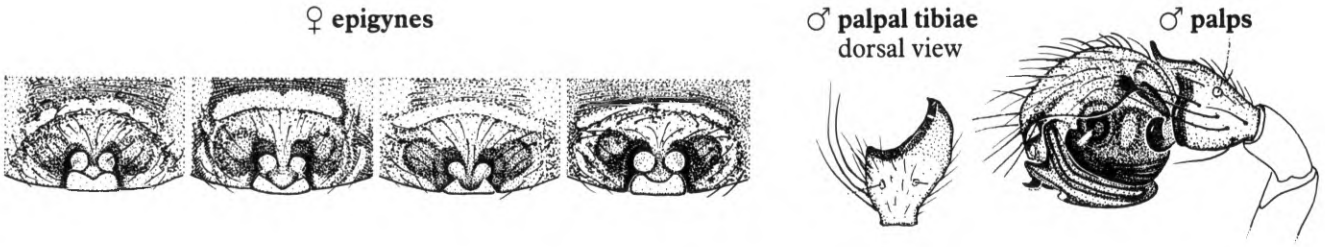
Length: ♀♂: 3.5–5mm. TmI 0.85–0.9

Female as illustrated; abdominal pattern characteristic and present in both sexes. Granulations present on chelicerae anteriorly. Epigyne and male palp characteristic, but bearing a superficial resemblance to those of *Tmeticus affinis* (p. 44) (Text Fig. 12e).

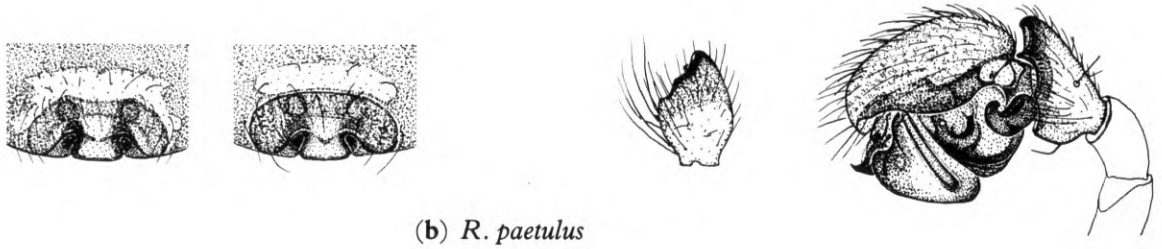
DISTRIBUTION

D. speciosa is a rare spider recorded from about a dozen localities in the south and east of England and Ireland, in very damp habitats, including sewage filter-beds.

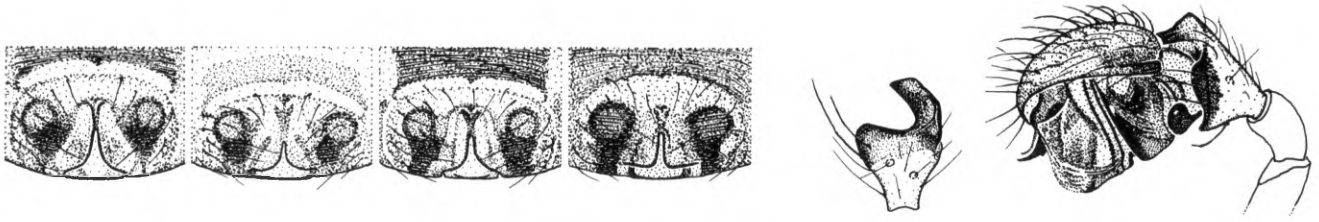
Text Figure 49



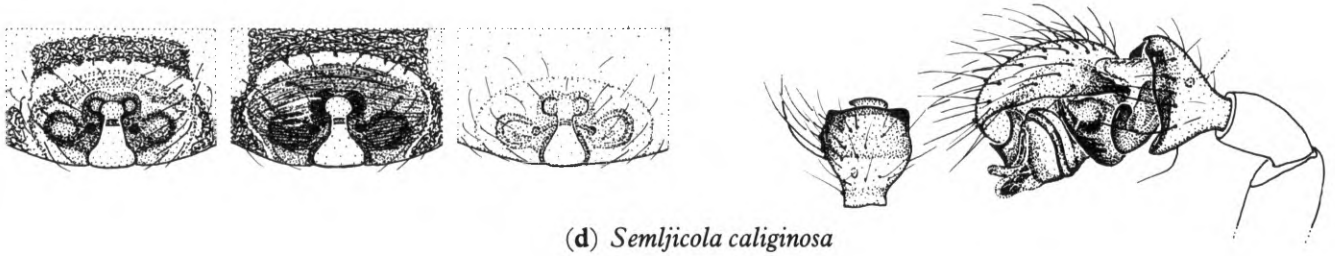
(**a**) *Rhaebothorax morulus*



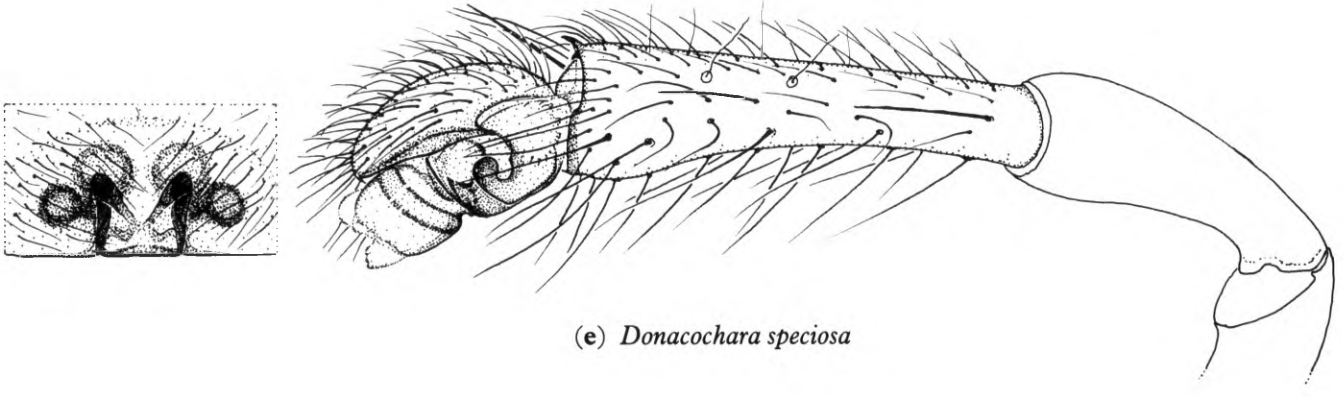
(**b**) *R. paetulus*



(**c**) *Latithorax faustus*



(**d**) *Semljicola caliginosa*



(**e**) *Donacochara speciosa*

Genus *Leptorhoptrum* Kulczynski, 1894

TmI 0.5–0.56; TmIV present; tibial spines 2–2–2–2, and with an additional prolateral spine on tibia I.

The single British species is of similar appearance in both sexes.

Leptorhoptrum robustum (Westring, 1851)

Plate 204; Text Fig. 50a

Length: ♀: 3–4.8mm; ♂: 3–4.2mm. TmI 0.5–0.56

Female similar to male illustrated, but usually with a larger abdomen. Epigyne with a projecting sclerotized ridge (Text Fig. 50a). Male palp relatively small but characteristic.

DISTRIBUTION

L. robustum is fairly common and widely distributed throughout the British Isles, but always in wet habitats – meadows, marshes and sewage filter-beds.

Genus *Drepanotylus* Holm, 1945

TmI 0.5–0.6; TmIV absent; tibial spines 2–2–2–2, and with an additional prolateral spine on tibia I.

The single British species appears similar in both sexes, with the carapace slightly domed behind the eyes.

Drepanotylus uncatus (O. P.-Cambridge, 1873)

Plate 205c; Text Fig. 50b

Length: ♀: 2.5–3.2mm; ♂: 2.5–3mm. TmIV 0.5–0.6

Male similar to female illustrated. Legs orange-brown. Epigyne and male palp characteristic (Text Fig. 50b).

DISTRIBUTION

D. uncatus has a wide but local distribution throughout the British Isles, and usually occurs in wet habitats.

Genus *Leptothrix* Menge, 1869

TmI 0.83–0.87; TmIV present; tibial spines 2–2–2–2

The single British species is of similar general appearance in both sexes, but the male has a conical protuberance in front of the posterior eyes which bears a tuft of hairs (Text Fig. 50d).

TAXONOMIC NOTE

This species was previously included in the genus *Phaulothrix* Bertkau, 1885, before it was synonymized with *Leptothrix* by Prószyński & Staręga (1971).

Leptothrix hardyi (Blackwall, 1850)

(= *Phaulothrix hardyi* (Blackwall))

Plate 205d; Text Figs 50c,d

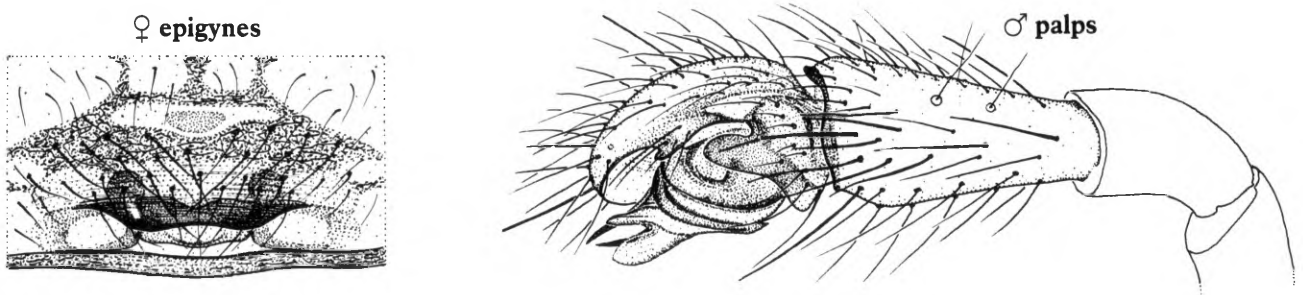
Length: ♀: 3–4.8mm; ♂: 2–3.8mm. TmI 0.83–0.87

Female as illustrated; male similar but with conical protuberance, in ocular region, which is furnished with hairs (Text Fig. 50d). Legs yellow-orange, often with darker annulations distally. In both sexes, femur and tibia I are often considerably thicker than in the other legs, especially in large specimens. Epigyne with a projecting lip which is quite light in colour (Text Fig. 50c); fairly characteristic if viewed ventrally or from behind. Male palp characteristic.

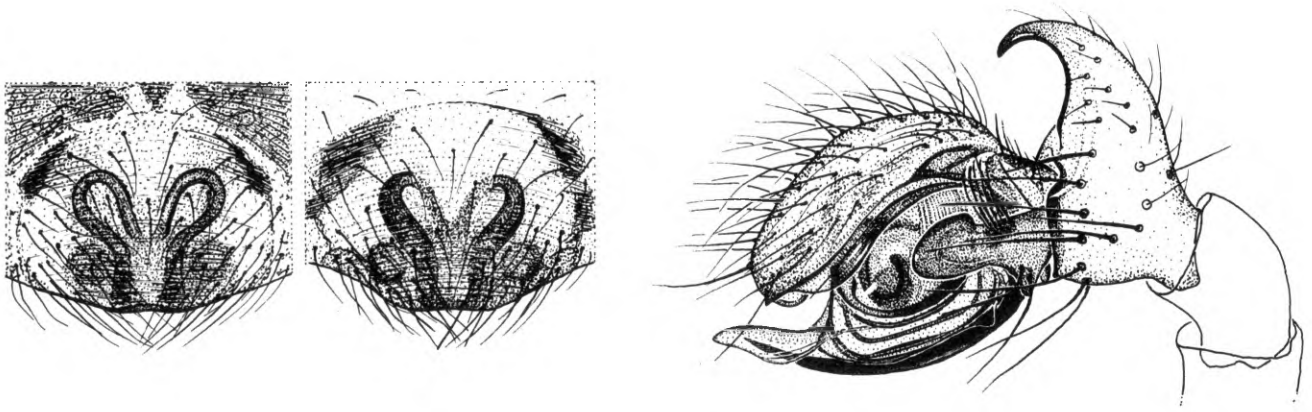
DISTRIBUTION

L. hardyi is rather uncommon but widespread throughout England, Wales and Scotland; there are few records from Ireland. It occurs in a variety of situations, including wet habitats, moorland and heathland.

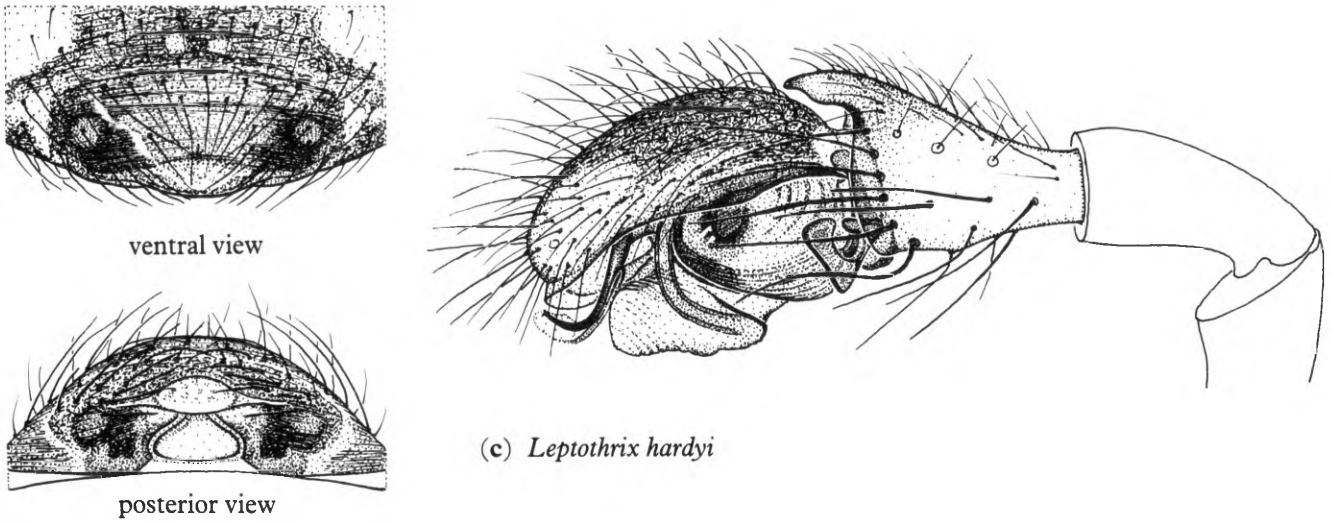
Text Figure 50



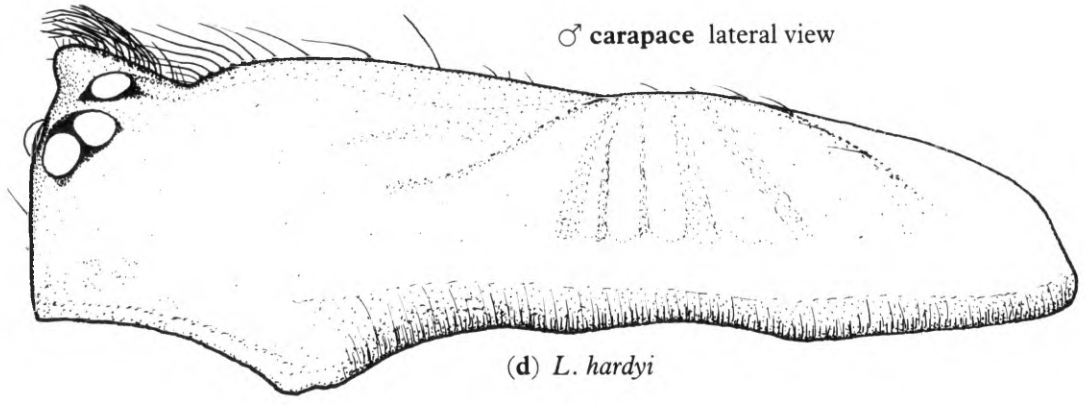
(**a**) *Leptorhoptrum robustum*



(**b**) *Drepanotylus uncatus*

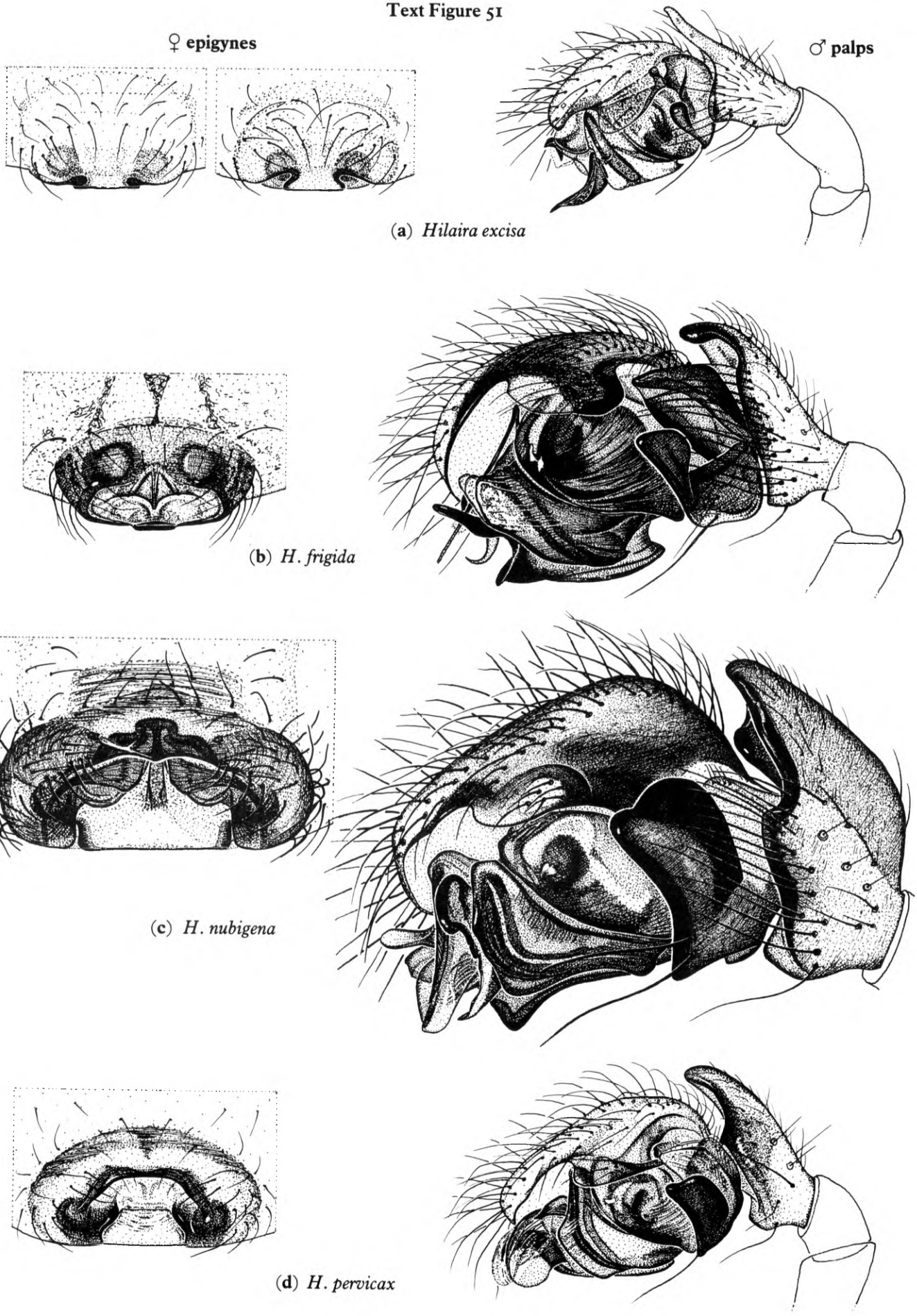


(**c**) *Leptothrix hardyi*



(**d**) *L. hardyi*

Text Figure 51



Genus *Hilaira* Simon, 1884

TmI 0.55–0.77; TmIV present; tibial spines 2–2–2–2 (all thin in males), and with an additional prolateral spine on tibia I.

There are four British species in this genus, all of which are similar in general appearance. The carapace is slightly domed behind the eyes in females, but much more elevated in males (Text Figs 52a–d).

Hilaira excisa (O. P.-Cambridge, 1870)

Plate 206; Text Figs 51a, 52a

Length: ♀: 2.5–3.9mm; ♂: 2.25–2.6mm. TmI 0.55–0.62

The female illustrated has a rather large abdomen; the whitish reticulations are sometimes present in all species of *Hilaira* and sometimes totally absent. Male similar in general appearance, but with carapace raised behind eyes, and furnished with fairly stout hairs (Text Fig. 52a).

Hilaira frigida (Thorell, 1872)

Text Figs 51b, 52c

Length: ♀: 3–4mm; ♂: 2.7–3.3mm. TmI 0.6–0.7

Similar in general appearance to *H. excisa*. Male carapace smoothly domed behind eyes, and furnished with fairly stout hairs (Text Fig. 52c).

Hilaira nubigena Hull, 1911

Text Figs 51c, 52d

Length: ♀: 3.5–5.3mm; ♂: 3–4.2mm. TmI 0.65–0.77

Similar in general appearance to *H. excisa*. Male carapace raised sharply behind eyes (Text Fig. 52d), and bearing a considerable number of stout hairs. Male also has metatarsus I swollen in its proximal two-thirds, and furnished with a group of stout spines in the middle third of its length.

Hilaira pervicax Hull, 1908

Text Figs 51d, 52b

Length: ♀: 2.7–3.3mm; ♂: 2.5–3mm. TmI 0.65–0.75

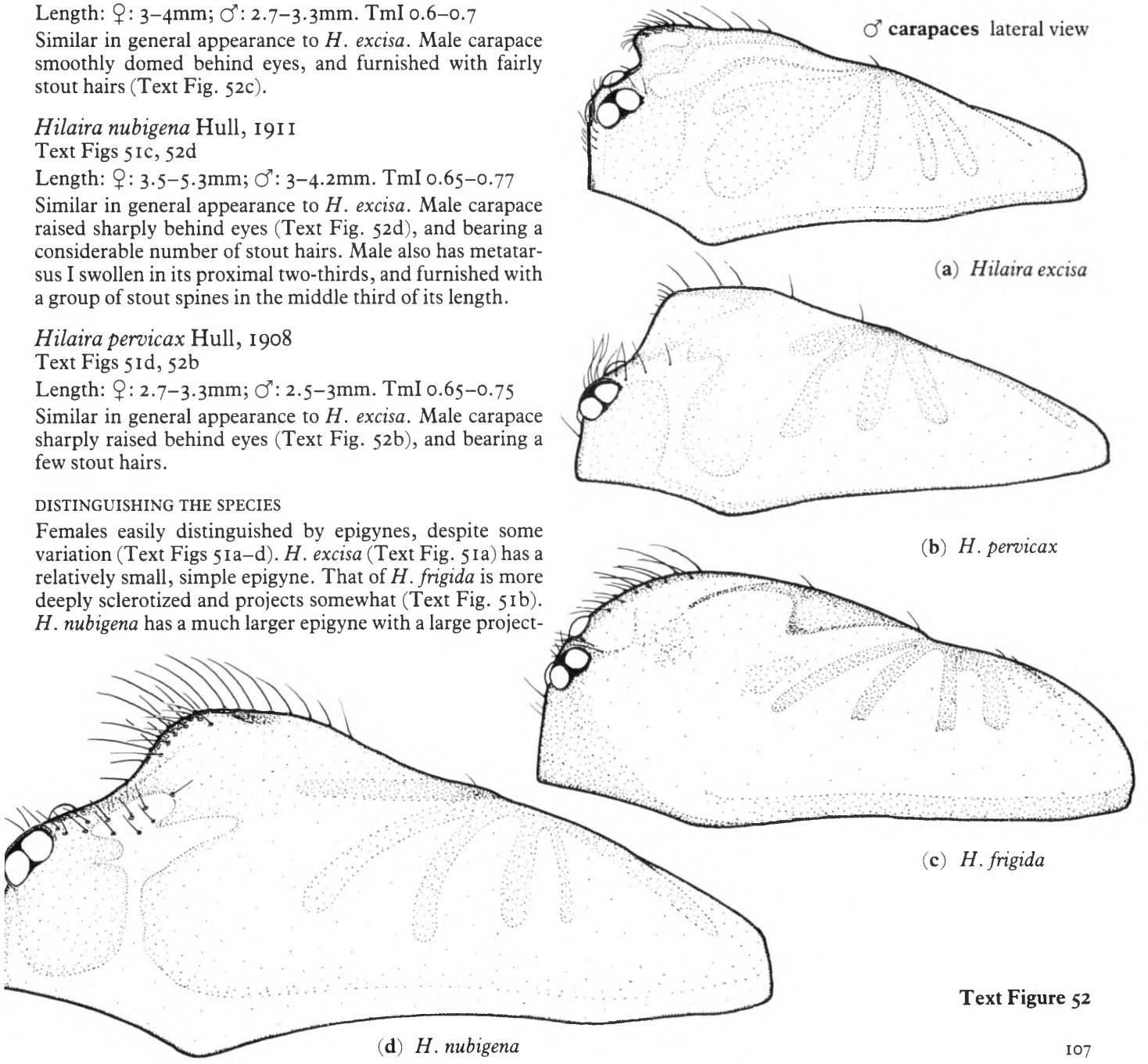
Similar in general appearance to *H. excisa*. Male carapace sharply raised behind eyes (Text Fig. 52b), and bearing a few stout hairs.

DISTINGUISHING THE SPECIES

Females easily distinguished by epigynes, despite some variation (Text Figs 51a–d). *H. excisa* (Text Fig. 51a) has a relatively small, simple epigyne. That of *H. frigida* is more deeply sclerotized and projects somewhat (Text Fig. 51b). *H. nubigena* has a much larger epigyne with a large projecting hood anteriorly (Text Fig. 51c). A much smaller, less projecting hood is also present in *H. pervicax* (Text Fig. 51d). Males easily distinguished by carapaces (Text Figs 52a–d) and male palps (Text Figs 51a–d), which differ considerably in both size and structure.

DISTRIBUTION

H. excisa is uncommon, but probably widespread throughout the British Isles; there are few records from the Midlands, East Anglia and Ireland. It is rare in the south, except on high ground, and occurs in damp habitats amongst moss and grass, often on moorland. *H. frigida* is even less common, being found, sometimes abundantly, on high mountains in Scotland, Wales, northern England and southern Ireland. *H. nubigena* and *H. pervicax* are rare species, recorded from only a few localities in northern England, Scotland and (*H. pervicax* only) North Wales, mainly from moss in damp habitats on fairly high ground.



Text Figure 52

Genus *Halorates* Hull, 1911

TmI 0.4–0.7; TmIV *absent* in *H. distinctus* and *H. holmgreni*, but present in *H. reprobus*; tibial spines 2–2–2–1 in *H. distinctus* and *H. holmgreni*, but 2–2–2–2 in *H. reprobus*.

There are three British species now included in this genus. Males are similar in general appearance to females, with no modification of the carapace.

TAXONOMIC NOTE

The genus *Collinsia* O. P.-Cambridge, 1913 was synonymized with *Halorates* by Millidge (1977). The species *H. distinctus* and *H. holmgreni* were formerly included in *Collinsia*.

Halorates reprobus (O. P.-Cambridge, 1879)

Plate 207a; Text Fig. 53a

Length: ♀: 2.5–4mm; ♂: 2.5–3mm. TmI 0.6–0.7

Female as illustrated; legs yellow-brown in colour. Male similar to female, but with a conical tubercle on each chelicera, anterodistally, as in *Ostearius melanopygius* (Plate 207b).

Halorates distinctus (Simon, 1884)

(= *Collinsia distincta* (Simon))

Text Fig. 53b

Length: ♀: 1.9–2.3mm; ♂: 1.9–2.1mm. TmI 0.4–0.47

Very similar in general appearance to *H. reprobus*.

Halorates holmgreni (Thorell, 1871)

(= *Collinsia holmgreni* (Thorell))

Plate 201d; Text Fig. 53c

Length: ♀: 2–2.5mm; ♂: 1.9–2.1mm. TmI 0.56–0.63

Female as illustrated; this species is usually darker than the other two members of the genus. Male similar in general appearance.

DISTINGUISHING THE SPECIES

Epigynes and male palps show a little variation, but are nevertheless quite distinctive. *H. reprobus* is further distinguished by its tibial spines and the presence of TmIV. *H. distinctus* and *H. holmgreni* can also be separated by the position of TmI.

DISTRIBUTION

H. reprobus is uncommon but widely distributed around the British Isles, but only in coastal habitats – seashore and salt flats. *H. distinctus* is a rare species, but is also widespread throughout England and Wales and has been recorded from Scotland, but not from Ireland; it mainly occurs in moss in damp habitats. *H. holmgreni* has been recorded only from a few high altitude localities in Scotland.

Genus *Carorita* Duffey & Merrett, 1963

TmI 0.3–0.35; TmIV absent; tibial spines 2–2–1–1, and with an additional prolateral spine on tibia I.

There are two British species in this genus, both small spiders, the males of which do not have the carapace raised to form a lobe.

Carorita limnaea (Crosby & Bishop, 1927)

Text Fig. 53d

Length: ♀♂: 1.1–1.3mm; TmI 0.3–0.35

Very similar in general appearance to *Maro minutus* (Plate 219a), but with eyes slightly further forward and anteriors overhanging clypeus.

Carorita paludosa Duffey, 1971

Text Fig. 53e

Length: ♀: 1.4–1.6mm; ♂: 1.35–1.5mm. TmI 0.3–0.33

Similar in general appearance to *Maro minutus*, but with eyes further forward, anteriors considerably overhanging the clypeus.

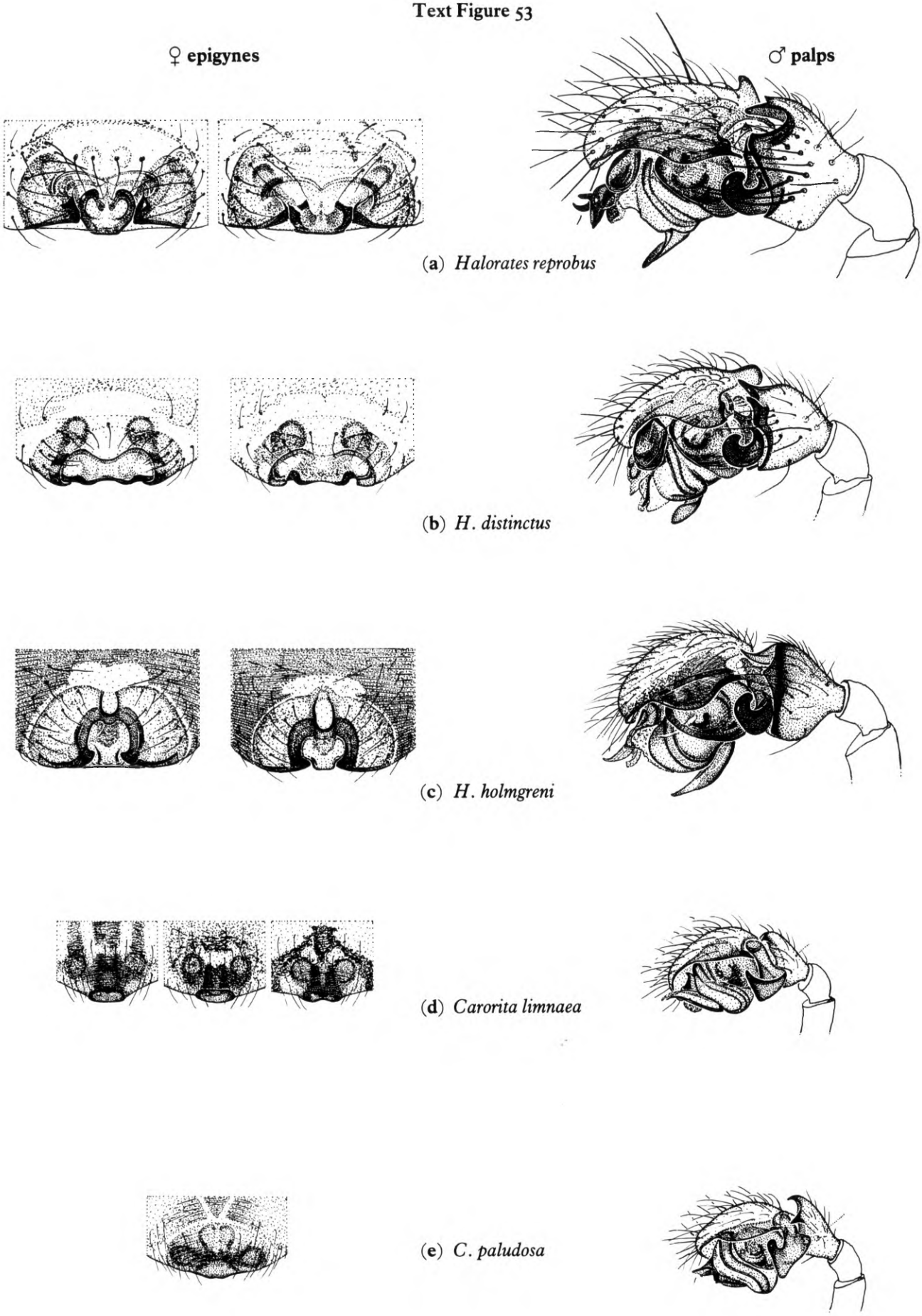
DISTINGUISHING THE SPECIES

Epigynes of both species with a protruding lip (Text Figs 53d,e); the latter is relatively thicker (sausage-shaped) in *C. limnaea* and with a thin sclerotized edge in *C. paludosa*. The adnexae can usually be seen through the integument and are arranged quite differently; in *C. paludosa* the seminal receptacles are closer to the posterior border, and there is usually a conspicuous pair of ducts visible in anterior midline, which often appear like paired question marks (؟). Male palps easily distinguished by palpal organs, paracymbia and palpal tibiae. *C. paludosa* is also a slightly larger spider than *C. limnaea* – to judge from all specimens examined.

DISTRIBUTION

Both species inhabit wet moss in bogs and marshes. *C. limnaea* has been recorded only from one site in Cheshire, and *C. paludosa* from two sites in Norfolk, one in Somerset and one in County Clare, Ireland.

Text Figure 53



Genus *Wiehlea* Braun, 1959

TmI 0.26–0.3; TmIV absent; tibial spines 2–2–1–1

The single British species in this genus is a very small, pale spider. Males are similar to females, with no modification of the carapace, but with a small conical tubercle on each chelicera, anterodistally.

Wiehlea calcarifera (Simon, 1884)

Plate 194a; Text Fig. 54a

Length: ♀♂: 1–1.3mm; TmI 0.26–0.3

Male similar in general appearance to female illustrated; legs yellow-brown. Epigyne highly characteristic. Male palp with distinctive and rather complex palpal organs; paracymbium with three hairs; palpal tibia with a dorsal apophysis, black at its tip, which curves around tightly to a fine point.

DISTRIBUTION

W. calcarifera is a rare spider, so far recorded from only a very few localities in the south of England, where it occurs in coarse soil, leaf-litter, and grassland.

Genus *Mioxena* Simon, 1926

TmI 0.3–0.37; TmIV absent; tibial spines 2–2–1–1

The single British species included in this genus is a very small, pale spider, the male of which does not have the head raised to form a lobe. The genus is very close to *Pseudomaro* and *Asthenargus* (see Taxonomic Note, p. 112).

Mioxena blanda (Simon, 1884)

Plate 190d; Text Fig. 54b

Length: ♀: 1.5–1.9mm; ♂: 1.4–1.7mm. TmI 0.3–0.37

Female as illustrated; legs pale yellow-brown. Male similar, but abdomen relatively smaller and spines on carapace a little larger. Epigyne (Text Fig. 54b) a projecting tongue, which varies somewhat in width as well as degree of sclerotization. Male palp highly characteristic.

DISTRIBUTION

M. blanda appears to be widespread throughout England and there are records from Scotland, but it is a rare spider and has been recorded from only a few localities. It has been found in a variety of habitats, including mud-flats, salt-marshes, grassland and leaf-litter.

Genus *Caviphantes* Oi, 1960

TmI 0.39–0.43; TmIV absent; tibial spines 2–2–1–1

There is one British species now included in this genus. It is a rather small, pale spider. Male similar to female, with no modification of the carapace, but with a conical tubercle on each chelicera, anterodistally.

TAXONOMIC NOTE

The genus *Lessertiella* Dumitrescu & Miller, 1962 was synonymized with *Caviphantes* Oi by Wunderlich (1979). *Caviphantes saxetorum* (Hull) was formerly included in *Lessertiella*.

Caviphantes saxetorum (Hull, 1916)

(= *Lessertiella saxetorum* (Hull))

Text Fig. 54c

Length: ♀♂: 1.3–1.7mm; TmI 0.39–0.43

Similar to *W. calcarifera* (Plate 194a) in general appearance, but usually a little larger. Legs very pale yellow. Epigyne with a pale projecting lip, which is lightly sclerotized at its tip (Text Fig. 54c); somewhat variable in shape and in the extent to which the adnexae are visible through the cuticle, but nevertheless characteristic. Male palp highly characteristic and rather complex (Text Fig. 54c); the ventrolateral part of the palpal organs comprises a transparent, membranous structure, through which various ducts and other structures are visible.

DISTRIBUTION

C. saxetorum is a rare spider which usually occurs under large stones, embedded in sandy riverbanks, and has been recorded from a very few localities in Scotland, northern England and Wales.

Genus *Asthenargus* (Simon & Fage, 1922)

TmI 0.3–0.4; TmIV absent; tibial spines 2–2–2–1

The single British species is a small, pale spider, the male of which does not have the carapace raised to form a lobe. The species *Asthenargus falconeri* (Jackson) is now replaced in the genus *Jacksonella* Millidge, 1951 (*q.v.*, see Taxonomic Note, p. 112).

Asthenargus paganus (Simon, 1884)

Plate 194d; Text Figs 54d,h

Length: ♀♂: 1.25–1.8mm; TmI 0.3–0.4

Male as illustrated; legs pale yellow-brown. Female with carapace similar in shape to '*Asthenargus falconeri* ♀' (Plate 194c). Epigyne a projecting brownish tongue, through which can usually be seen a pair of ducts leading from the tip to the spermathecae (Text Fig. 54d). The structure is more deeply sclerotized than in *Mioxena blanda* or *Pseudomaro aenigmaticus*, and there are also differences if epigyne viewed from behind, as illustrated (Text Fig. 54h). Male palpal organs highly characteristic as also is palpal tibia, viewed ectally or dorsally (Text Fig. 54d).

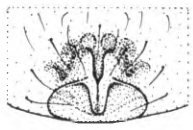
DISTRIBUTION

A. paganus is a rare spider with a very local distribution, usually occurring in woodland habitats in moss and litter. It probably has a fairly widespread distribution, but there are no records of the species for south and south-east England, and few from Ireland.

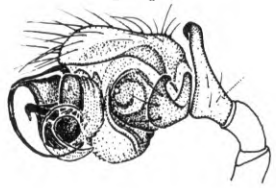
Text Figure 54

♀ **epigynes**

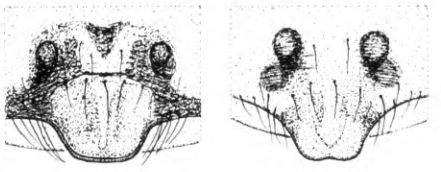
♂ **palps**



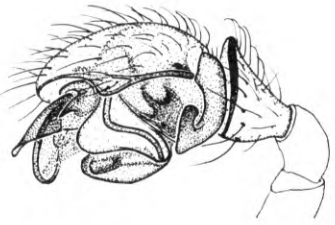
(**a**) *Wiehlea calcarifera*

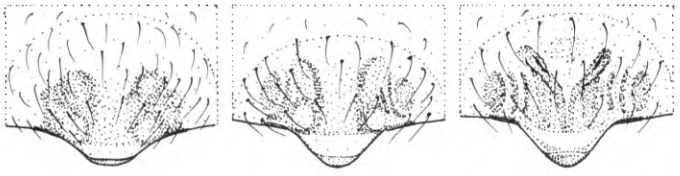


♀ **epigyne** posterior view ×180
D = dorsal plate

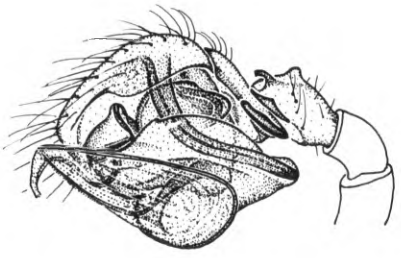


(**b**) *Mioxena blanda*

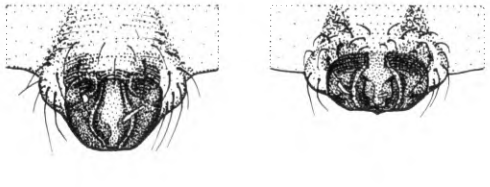


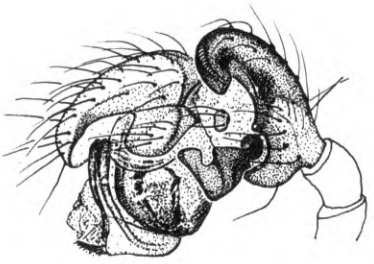


(**c**) *Caviphantes saxetorum*



♂ **palpal tibia**
dorsal view

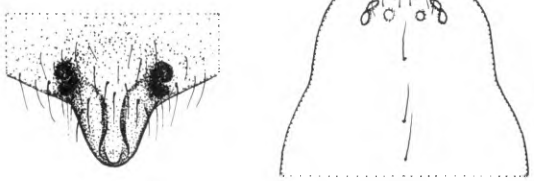




(**d**) *Asthenargus paganus*

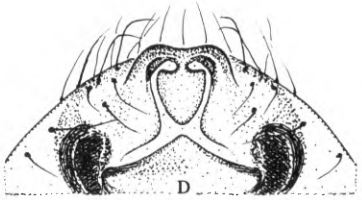
(**e**) *Jacksonella falconeri*

♀ **eyes**
dorsal view

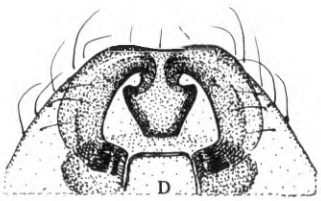


(**f**) *Pseudomaro aenigmaticus*

♀ **epigynes** posterior view ×180



(**g**) *P. aenigmaticus*



(**h**) *A. paganus*

Genus *Jacksonella* Millidge, 1951

TmI 0.32–0.37; TmIV absent; tibial spines 2–2–1–1

The single British species is a minute, pale spider, the male of which does not have carapace raised to form a lobe.

TAXONOMIC NOTE

The genus *Jacksonella* Millidge, 1951 was synonymized with *Asthenargus* Simon & Fage, 1922 by Millidge (1977). This was followed in the preparation of Volume 3, and Plate 194c thus appears as '*Asthenargus falconeri* (Jackson)'. However, this synonymy is now considered incorrect, and the species *falconeri* is replaced in the genus *Jacksonella*.

Jacksonella falconeri (Jackson, 1908)

(= *Asthenargus falconeri* (Jackson))

Plate 194c; Text Fig. 54e

Length: ♀♂: 0.95–1.2mm; TmI 0.32–0.37

Legs pale yellow-brown. Note the tooth-like process on each male chelicera, anterodistally; this is present, but much smaller, in females. Female abdomen usually a little larger than that of male.

DISTRIBUTION

J. falconeri is widely distributed throughout England, Wales and Scotland, and has been recorded from Ireland. It occurs at ground level in soil, under stones and in detritus. Although fairly frequent in some southern areas, it generally appears to be a rare species – its size probably contributes to this apparent rarity.

Genus *Pseudomaro* Denis, 1966

TmI 0.36–0.4; TmIV absent; tibial spines 2–2–2–1

This genus at present contains only one species, of which only females are known. The taxonomic position of the species is unknown, but it is obviously very close to *Mioxena* and *Asthenargus* (see Taxonomic Note, below).

TAXONOMIC NOTE

The genus *Pseudomaro* Denis, 1966, was erected on the basis of a single female, *P. aenigmaticus* Denis, taken in a cellar in 1961 (Denis, 1966). Two females were taken in England in 1976, and Snazell, (1978) in recording this new species, also commented on its uncertain taxonomic position (in particular that Denis thought the species was close to *Maro* O. P.-Cambridge, 1906, whereas in other respects it was close to *Asthenargus* Simon & Fage, 1922). The much-reduced eyes suggested that the spider might be cavernicolous, or occupying some other subterranean habitat. Brignoli (1971) described a new cavernicolous spider, *Lepthyphantes sanctibenedicti*, from Italy (later redescribed (Brignoli, 1979) as *Pseudomaro sanctibenedicti*), which is identical with, and a junior synonym of, *P. aenigmaticus* Denis.

Millidge (1984) defined various subfamilies of the Linyphiidae on the basis of epigynal and tracheal characters. The genus *Maro* was included in the subfamily Linyphiinae, the epigynes of which are characterized by the presence of a scape/socket on the dorsal plate, and by the location of genital openings inside an atrium, between ventral and dorsal plates. The genus *Asthenargus* was included in the new subfamily Drapetiscinae, the epigynes of which are characterized by the prolongation of the ventral plate into a scape, which carries the ducts and the openings which are located dorsally near the distal end. The genus *Mioxena* was included in the *Stemonyphantes* group, the epigynes of which are characterized by having genital openings exposed on the ventral (or occasionally caudal) surface of the epigyne, typically at the ends of two more or less longitudinal grooves which are the fused lateral margins of the ventral and dorsal plates.

Examination of the epigynes from behind (Text Figs 54b,g,h) reveals obvious similarities between *Pseudomaro aenigmaticus*, *Mioxena blanda* and *Asthenargus paganus*. Various features, including the shape of the dorsal plate, suggest that *P. aenigmaticus* is perhaps closer to *Mioxena*. *P. aenigmaticus* is also similar to *Asthenargus* in general appearance, chaetotaxy, cheliceral teeth and in having a retrolateral protuberance on all patellae.

Only the discovery of the male of *P. aenigmaticus* will allow correct placement of the species; probably in *Mioxena* or in *Asthenargus*.

Pseudomaro aenigmaticus Denis, 1966

Text Figs 54f,g

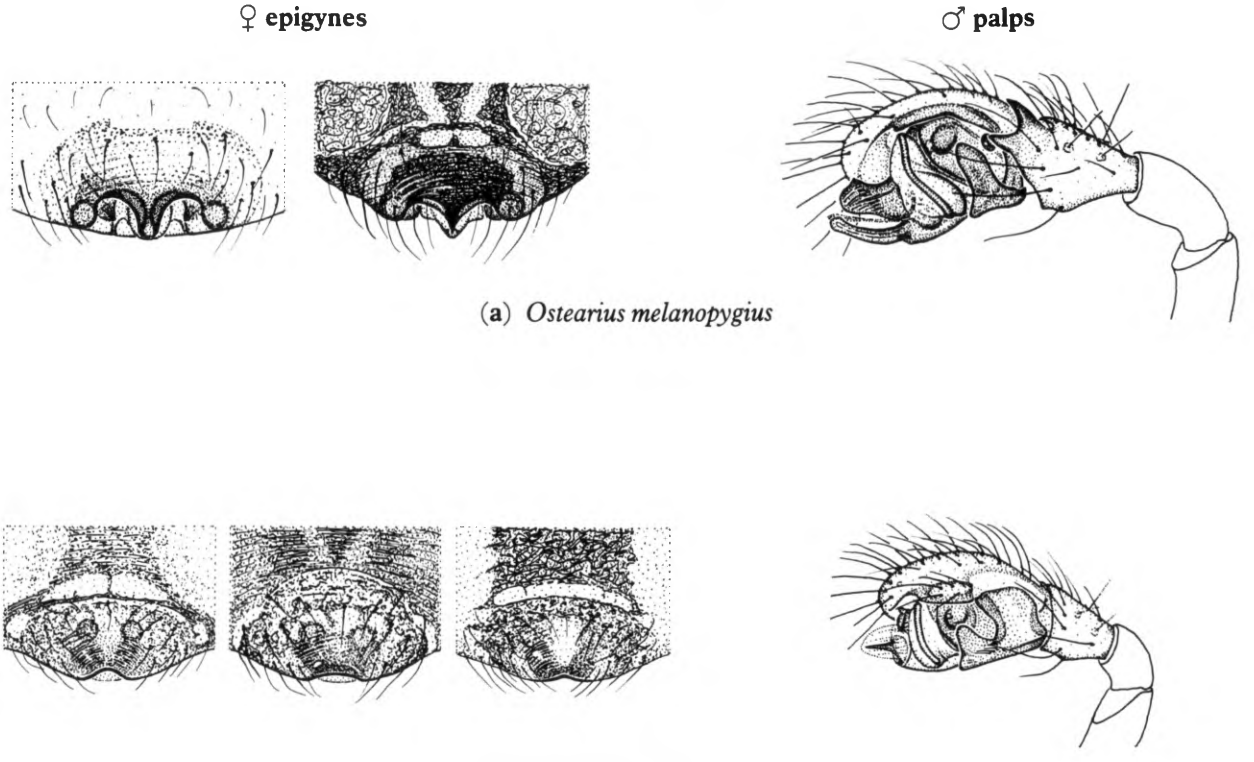
Length: ♀: 1.4–1.6mm; ♂ unknown; TmI 0.36–0.4

Very similar in general appearance to *Mioxena blanda* (Plate 190d); eyes very small and indistinct (Text Fig. 54f). Epigyne a pale, projecting tongue through which can be seen a pair of ducts leading from the tip to the spermathecae (Text Fig. 54f).

DISTRIBUTION

P. aenigmaticus has been recorded only from Dorset, in pitfall traps on chalk grassland. It may inhabit subterranean fissures or be myrmecophilous and also cavernicolous.

Text Figure 55



(**a**) *Ostearius melanopygius*

(**b**) *Aphileta misera*

Genus *Ostearius* Hull, 1911

TmI 0.42–0.49; TmIV absent; tibial spines 2–2–2–2

The single British species has a highly characteristic general appearance, the abdomen being reddish with its posterior tip black. Male carapace not raised to form a lobe.

Ostearius melanopygius (O. P.-Cambridge, 1879)

Plate 207b; Text Fig. 55a

Length: ♀♂: 2–2.6mm; TmI 0.42–0.49

Male as illustrated, although carapace may be marked with much more black; note the projecting conical process on each chelicera, anterodistally; legs long, yellow-brown in colour, and sometimes suffused with black. Female similar to male, but abdomen relatively larger. Occasionally the whole abdomen may be suffused with black. Epigyne a little variable in shape and depth of pigmentation (Text Fig. 55a). Male palp quite distinctive.

NOTE. The red colour in the abdomen persists for many years on preservation in spirit. I have specimens collected twenty years ago which are still distinctly reddish, and some from three years ago which are very nearly as red as when fresh. It is well known that spiders with green or red coloration fade within a few hours in spirit, and after a few months most of the colour has washed out completely. *O. melanopygius* is therefore interesting as a colourfast linyphiid!

DISTRIBUTION

O. melanopygius appears to have an increasingly widespread distribution over England, Scotland and Wales, but has not been recorded from Ireland. It occurs in a wide variety of habitats, often in association with man, such as buildings, gardens and rubbish tips, and is a frequent aeronaut.

Genus *Aphileta* Hull, 1920

TmI 0.31–0.4; TmIV absent; tibial spines 2–2–2–2, and with an additional prolateral spine on tibia I.

There is one British species in this genus, the male of which does not have the carapace raised to form a lobe.

Aphileta misera (O. P.-Cambridge, 1882)

Plate 207c; Text Fig. 55b

Length: ♀: 1.9–2.5mm; ♂: 1.7–2mm. TmI 0.31–0.4

Female as illustrated; legs yellow-brown. Male similar, but carapace a little narrower anteriorly, with eyes occupying whole width of head. Epigyne with a fairly pale projecting lip, which has a thin sclerotized margin on its posterior edge (Text Fig. 55b). Male palp small, but characteristic (Text Fig. 55b).

DISTRIBUTION

A. misera has a widespread but rather local distribution throughout the British Isles, and usually occurs in wet habitats.

Genus *Porrhomma* Simon, 1884

TmI 0.3–0.64; TmIV absent; tibial spines 2–2–2–2 (tibiae I and II also with one prolateral and one retrolateral spine. Femora I and II may have dorsal and prolateral spines also. Metatarsal spine present in *P. errans* but absent in the other British species).

This genus contains ten British species, the males of which do not have the carapace raised to form a lobe. The epigynes and male palps are all very similar (Text Figs 56a–e; 57a–d,f; 58a–e; 59a–e).

Porrhomma pygmaeum (Blackwall, 1834)

Plate 208; Text Figs 56a, 58a

Length: ♀: 1.6–2.45mm; ♂: 1.6–2mm. TmI 0.35–0.4

Female as illustrated; occasional specimens much paler (e.g. same colour as *Tapinocyba pallens*, Plate 189). Male similar to female. Both sexes may occasionally have two dorsal and two prolateral spines on femur I; sometimes the spines differ on right and left sides. Width of epigyne opening 0.048–0.072mm; width of female carapace 0.48–0.72mm.

Porrhomma convexum (Westring, 1861)

Text Figs 56b, 58b

Length: ♀: 2.25–3.2mm; ♂: 2.2–3.2mm. TmI 0.4–0.49

Similar in general appearance to *P. pygmaeum*, and equally variable; eyes usually relatively smaller than in *P. pygmaeum*, but this is not reliable as there is considerable variation. Width of epigyne opening 0.082–0.09mm; width of female carapace 0.79–0.89mm.

Porrhomma pallidum Jackson, 1913

Text Figs 56c, 58c

Length: ♀: 1.6–2.2mm; ♂: 1.7–2mm. TmI 0.3–0.41

This species usually has a rather pale yellow-brown carapace and legs, and a pale grey abdomen. Occasionally the carapace has darker margins and a darker wedge-shaped mark, anterior to fovea; abdomen may have faint chevrons. Some specimens of *P. pallidum* appear very similar to, and may be as dark as, light specimens of *P. pygmaeum*. Width of epigyne opening 0.054–0.073mm; width of female carapace 0.57–0.64mm.

Porrhomma campbelli F. O. P.-Cambridge, 1894

Text Figs 56d, 58d

Length: ♀♂: 2–2.9mm; TmI 0.3–0.4

Similar in general appearance to *P. pygmaeum*; eyes variable, sometimes like those of *P. pygmaeum*, but occasionally very much reduced like those of *P. egeria* (Text Fig. 57e). Width of epigyne opening 0.083–0.1mm; width of female carapace 0.69–0.87mm.

Porrhomma microphthalmum (O. P.-Cambridge, 1871)

Text Figs 56e, 58e

Length: ♀: 1.7–2.2mm; ♂: 1.6–2mm. TmI 0.3–0.4

Similar to *P. pygmaeum* in general appearance. Carapace yellow to brown with faint radiating striae, and sometimes a darker margin. Width of epigyne opening 0.072–0.088mm; width of female carapace 0.59–0.71mm.

Porrhomma errans (Blackwall, 1841)

Text Figs 57a, 59a

Length: ♀: 1.9–2.4mm; ♂: 1.9–2.2mm. TmI 0.57–0.64

Similar in general appearance to *P. pygmaeum*, but paler; abdomen with a few pale chevrons; a few hairs are present just anterior to fovea and around the eyes. Each metatarsus has a dorsal spine proximally. Width of epigyne opening 0.077–0.09mm; width of female carapace 0.65–0.7mm.

Porrhomma egeria Simon, 1884

Text Figs 57b,e, 59b

Length: ♀: 2.3–2.5mm; ♂: 2–2.5mm. TmI 0.36–0.43

General appearance like *P. pygmaeum*, but usually paler and with much smaller eyes; as seen in the illustrations (Text Fig. 57e) the relative size of anterior and posterior median eyes is variable, and the posterior median eyes may even differ in the same specimen. Width of epigyne opening 0.083–0.1mm; width of female carapace 0.74–0.89mm.

Porrhomma oblitum (O. P.-Cambridge, 1870)

Text Figs 57c, 59c

Length: ♀: 1.4–1.7mm; ♂: 1.2–1.7mm. TmI 0.35–0.44

Very similar in general appearance to *P. pygmaeum*, but equally variable and sometimes with markings as in *Latithorax faustus* (Plate 205a). Carapace often yellow-brown with darker marks and radiating striae, and sometimes a darker margin; abdomen pale grey to black. Femora without dorsal spines. Width of epigyne opening 0.044–0.057mm; width of female carapace 0.44–0.51mm. Epigyne and male palp (Text Figs 57c, 59c) seem to be indistinguishable from those of *P. pygmaeum*.

Porrhomma montanum Jackson, 1913

Text Figs 57d, 59d

Length: ♀: 1.6–2.2mm; ♂: 1.5–2mm. TmI 0.3–0.4

Similar in general appearance to *P. pygmaeum*, and equally variable. Femora without dorsal spines. Width of epigyne opening 0.055–0.074mm; width of female carapace 0.56–0.63mm.

Porrhomma rosenhaueri (L. Koch, 1872)

Text Figs 57f, 59e

Length: ♀: 2–2.3mm; ♂: 2–2.1mm. TmI 0.5–0.6

This species is a pale spider with relatively long, slender legs. The eyes are very small and almost completely devoid of pigment (Text Fig. 57f). Carapace, sternum and legs pale yellow-brown; abdomen very pale whitish or yellowish grey. Width of epigyne opening 0.07–0.076mm; width of female carapace 0.6–0.66mm. Despite earlier uncertainties, *P. rosenhaueri* is undoubtedly a distinct species, and in both somatic and genitalic structure is much closer to *P. microphthalmum* than to *P. convexum*.

DISTINGUISHING THE SPECIES

The ten British species all exhibit considerable intraspecific variation in depth of colour and size of eyes. Epigynes are also highly variable, as illustrated; the size and shape of the opening is variable, and the adnexae are variable and may or may not be clearly visible through the cuticle, and this is demonstrated by the series of illustrations for each species. The absolute width of the epigyne opening and female carapace may on occasions be useful; the size ranges given under the description of each species, all taken from British specimens, may well vary and will not necessarily apply to continental specimens. The male palps may need to be examined in mesal view, as well as ectally.

The leg spines are useful in splitting the species into four groups, as used by Locket & Millidge (1953), but they are not entirely reliable:

1 Each metatarsus with a spine ..... *P. errans*
– Metatarsi spineless 2
2(1) Femur I with two prolateral spines; eyes very small (Text Fig. 57e) ..... *P. egeria*
– Femur I with one prolateral spine 3
3(2) Femur I with no dorsal spines ..... *P. oblitum, P. montanum*
– Femur I with one or two dorsal spines ..... *P. pygmaeum, P. convexum, P. pallidum, P. campbelli, P. microphthalmum, P. rosenhaueri*

In *P. errans*, the presence of a spine on each metatarsus seems to be an entirely reliable specific character. The epigyne and male palp of *P. errans* (Text Figs 57a, 59a) are fairly characteristic.

P. egeria usually has two prolateral spines on femur I, and very small eyes (Text Fig. 57e). The epigyne of this species is sometimes similar to that of *P. campbelli* (*cf.* Text Figs 56d and 57b), and the latter species may sometimes have very small eyes. The epigynes of both species have, anteriorly, a pair of ducts each leading to a small spherical structure; in *P. egeria* (Text Fig. 57b) these ducts curve outwards, and in *P. campbelli* (Text Fig. 56d) inwards. Male palp of *P. egeria* highly characteristic (Text Fig. 59b).

P. oblitum and *P. montanum* both lack a dorsal spine on femur I. The epigyne opening and female carapace are usually wider in *P. montanum* (see descriptions), and the adnexae are also different (Text Figs 57c,d). The male palps of these two species are easily distinguished from one another (Text Figs 59c,d). *P. oblitum* is, however, very similar to *P. pygmaeum*, and probably not distinguishable from that species except by the absence of a dorsal spine on femur I and, usually, its smaller size. It may be that *P. oblitum* should be considered a subspecies of *P. pygmaeum*.

The remaining species, *P. pygmaeum*, *P. convexum*, *P. pallidum*, *P. campbelli*, *P. microphthalmum* and *P. rosenhaueri* usually have one or two dorsal spines and one prolateral spine on femur I, and no metatarsal spines. The epigynes of *P. pygmaeum* and *P. pallidum* generally have smaller openings than the other four species, and their adnexae, always visible in *P. pallidum*, are distinctly different. *P. pallidum* is usually a paler spider than *P. pygmaeum*. The epigyne of *P. campbelli* often has a pear-shaped opening, anterior to which the adnexae are visible as a pair of thick, dark structures and a pair of thinner, paler ducts (Text Fig. 56d): the epigyne could be confused with that of *P. egeria*, as discussed above. The epigyne of *P. microphthalmum* (Text Fig. 56e) has adnexae which, even in dark specimens, appear like a pair of posteriorly divergent teardrops, with other ducts sometimes visible deeper inside; the opening is usually rather square. In *P. convexum* the opening is slightly narrower and rounded anteriorly, and the adnexae are quite distinctive. *P. rosenhaueri* has an epigyne and adnexae similar in size and shape to those of *P. microphthalmum*; all specimens examined have been distinctly different from other *Porrhomma* species, and seem constantly to have a small notch on the posterior border of epigyne opening. The epigyne of *Bathyphantes approximatus* (p. 138; Text Fig. 70a) is also rather similar to those of *Porrhomma*, and the species could perhaps cause confusion in the case of a specimen with little or no abdominal pattern. However, the epigyne is considerably larger in *B. approximatus*, and the position of TmI is also different.

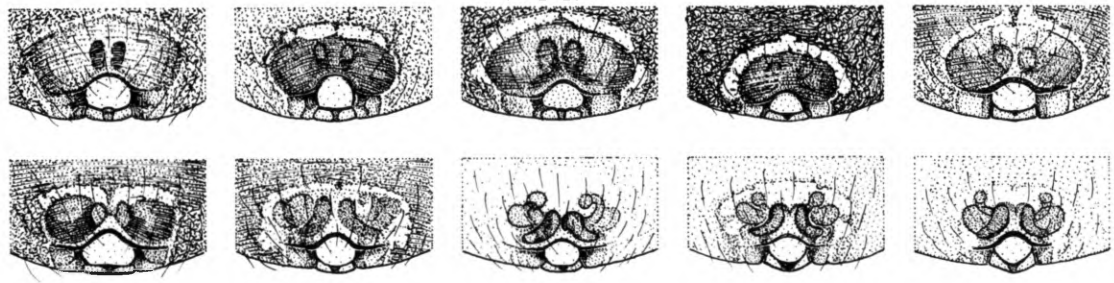
The male palps of all species can sometimes be distinguished by the form of the male palp viewed ectally, but often it is better to view the palpal tip from inside, when the structures in Fig. 58a can be seen: a hook-like process (H), similar in all species; the curved embolus (E); the transparent conductor (C); the tegular apophysis (T) (more easily seen in ectal view); the superior apophysis (S); the inferior apophysis (I). The size and shape of all these structures, taken together, provide for easy identification. In some species the margin of the lamella running between superior (S) and inferior (I) apophyses is another useful feature.

DISTRIBUTION

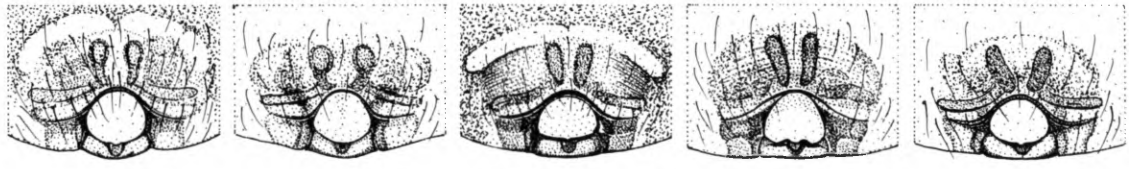
P. pygmaeum, *P. convexum*, *P. pallidum*, *P. egeria*, *P. errans* and *P. campbelli* are all widely distributed throughout the British Isles. *P. pygmaeum* is common, often being found in undergrowth in damp habitats. *P. convexum* also occurs in undergrowth and under stones, but is commoner in subterranean habitats – caves, mines and sometimes in buildings. *P. pallidum* occurs in woodland habitats, but more commonly under stones on high ground. *P. egeria* occurs frequently in subterranean habitats (caves, cellars, mines), but is rarer elsewhere. *P. errans* is a rare species, recorded from a wide variety of habitats, including woodland and grassland. *P. campbelli* is uncommon, specimens having been taken under stones often on higher ground. *P. microphthalmum* appears to be widely distributed throughout England but is rather local, usually occurring under stones and in undergrowth, and is a fairly frequent aeronaut. *P. montanum* occurs in North Wales, northern England and Scotland, mainly on high ground, and is an uncommon species. *P. oblitum* is a rare species, recorded from only a dozen or so localities scattered throughout England. *P. rosenhaueri* is also a rare species, which appears to be exclusively cave-dwelling, and has been recorded deep within caves in Ireland and South Wales.

Text Figure 56

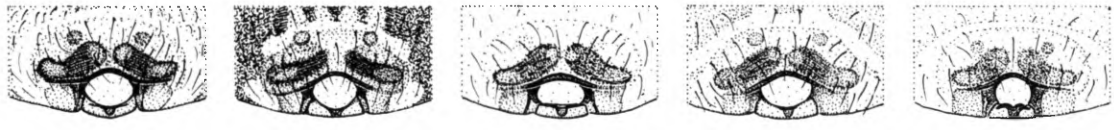
♀ epigynes



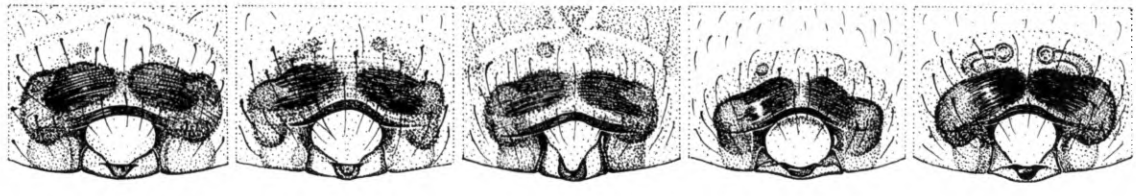
(**a**) *Porrhomma pygmaeum*



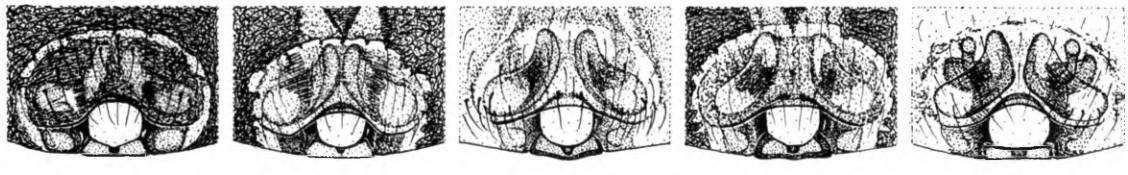
(**b**) *P. convexum*



(**c**) *P. pallidum*



(**d**) *P. campbelli*

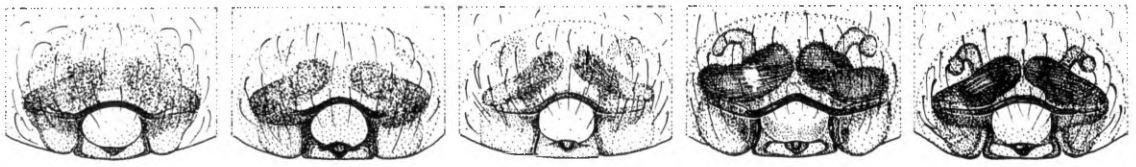


(**e**) *P. microphthalmum*

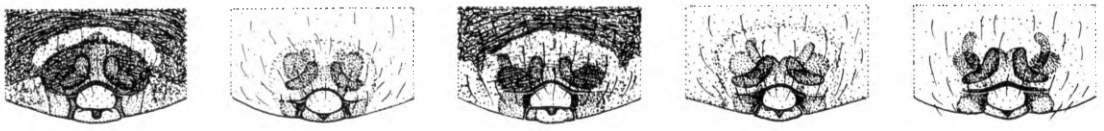
Text Figure 57

♀ epigynes

(**a**) *Porrhomma errans*



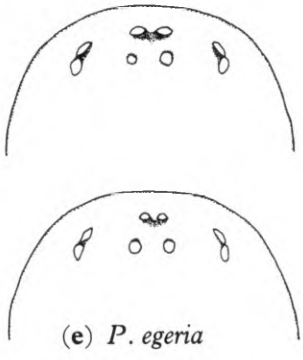
(**b**) *P. egeria*



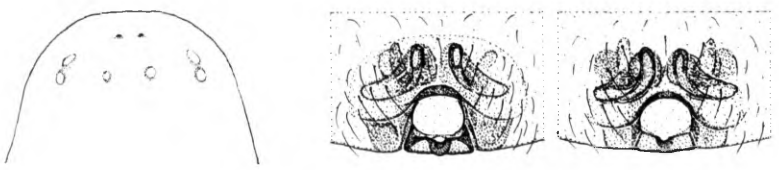
(**c**) *P. oblitum*

(**d**) *P. montanum*

♀ eyes dorsal view



(**e**) *P. egeria*



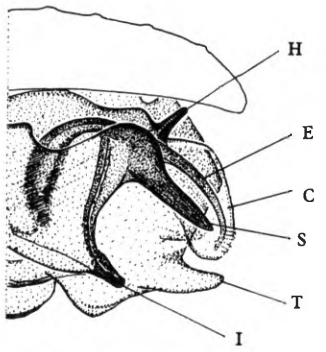
(**f**) *P. rosenhaueri*

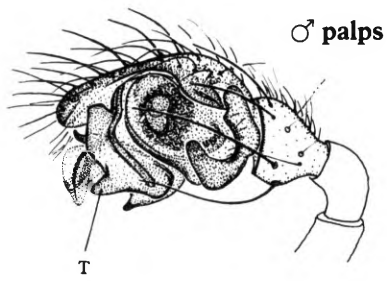
Text Figure 58

♂ palpal tips
mesal view ×180

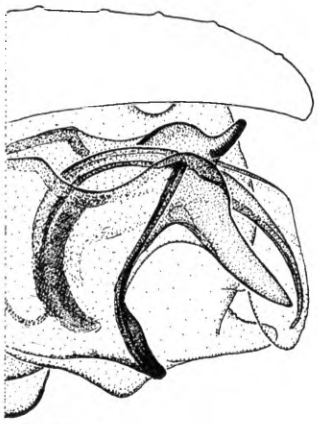
H = hook
E = embolus
C = conductor
S = superior apophysis
T = tegular apophysis
I = inferior apophysis

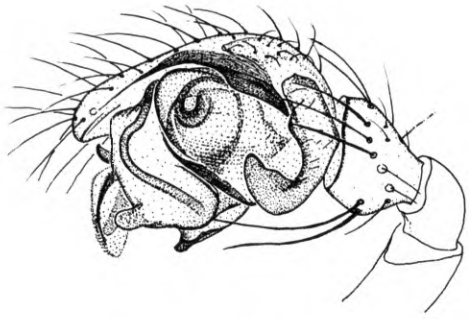
♂ palps



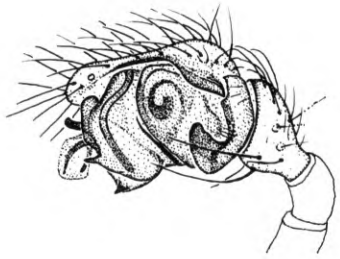


(**a**) *Porrhomma pygmaeum*

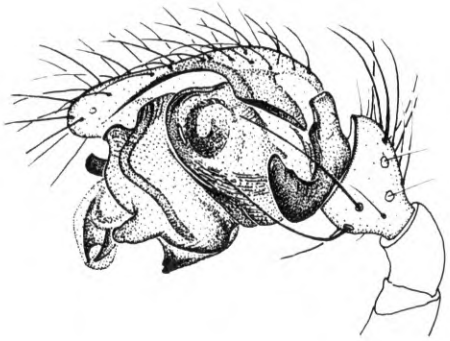




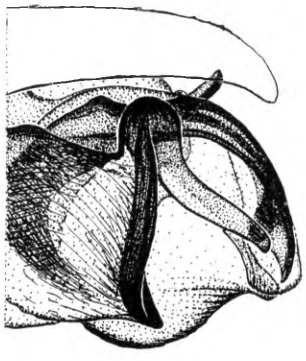
(**b**) *P. convexum*

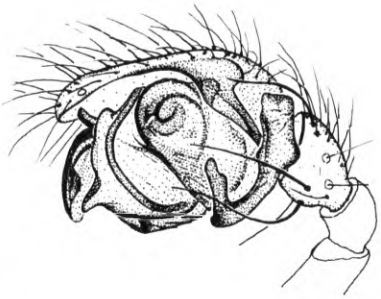


(**c**) *P. pallidum*



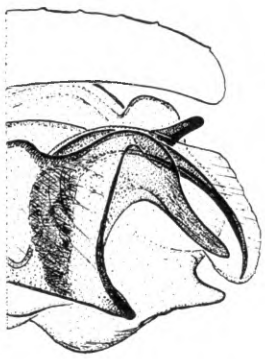
(**d**) *P. campbelli*



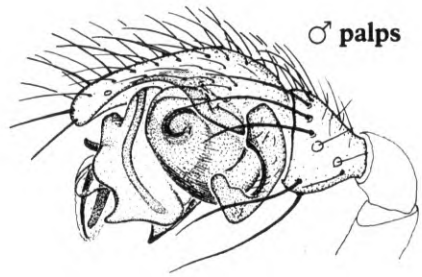


(**e**) *P. microphthalmum*

Text Figure 59

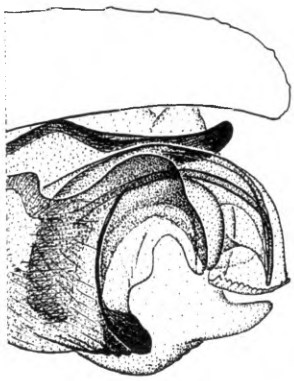


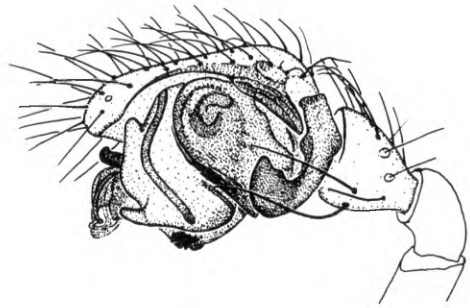
♂ **palpal tips**
mesal view ×180



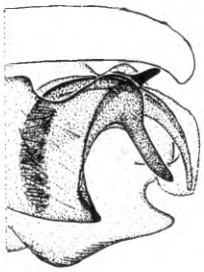
♂ **palps**

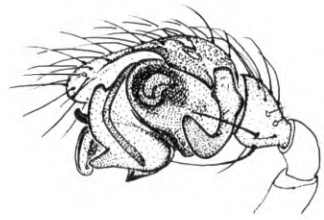
(**a**) *Porrhomma errans*



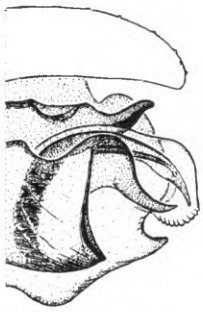


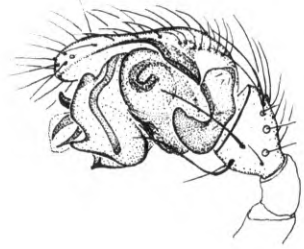
(**b**) *P. egeria*



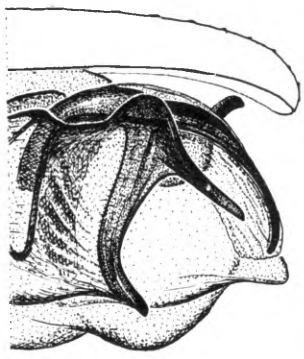


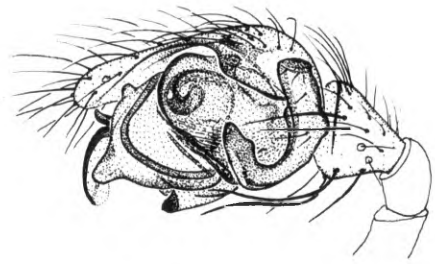
(**c**) *P. oblitum*





(**d**) *P. montanum*





(**e**) *P. rosenhaueri*

Genus *Agyneta* Hull, 1911

TmI 0.6–0.92; TmIV present; tibial spines 2–2–2–2

There are six British species at present included in this genus, the males of which do not have the head raised to form a lobe. The females of some species have the palpal tarsus markedly swollen (e.g. *A. subtilis* (Plate 209), *A. cauta* and *A. olivacea* (Text Figs 60c,d)), but in *A. conigera* (Plate 210) and *A. ramosa* this is not so. Male palps often have a conical elevation on the cymbium (Text Figs 60a, c-e, 61a); the palpal organs have a characteristic semi-transparent lamella (L in Text Fig. 60a), which is very useful in distinguishing the species. The genus *Meioneta*, Hull, 1920 should almost certainly be synonymized with *Agyneta*, but for the present, and to avoid confusion, these two genera are considered separately (see Taxonomic Note, below).

TAXONOMIC NOTE

The genera *Syedrula* Simon, 1929, and *Meioneta* Hull, 1920 were synonymized with *Agyneta* Hull, 1911 by Saaristo (1973). However, Millidge (1977) rejected the synonymy of *Meioneta* and *Agyneta* (arguing that they belong to different phylogenetic lines because of wide differences in trichobothrial positions) but accepted that *Syedrula* should be regarded as a synonym of *Meioneta*. In my view, this conclusion is probably not correct. Although the value of TmI is around 0.3 in both *Syedrula* and *Meioneta*, comparison, for instance, of the genitalia of *Meioneta (Syedrula) innotabilis* (Text Fig. 61b) with those of *Agyneta conigera* (Text Fig. 60e) shows that the genera are by no means clearly separable, which surely carries more phylogenetic weight than trichobothriotaxy. In any case, values of TmI show wide variation within other genera. For the present, however, the genera *Meioneta* and *Agyneta* are considered as separate taxonomic units. This will, at least, minimise confusion when referring to Volume 3 and the current check lists.

Agyneta subtilis (O. P.-Cambridge, 1863)

Plate 209; Text Fig. 60a

Length: ♀: 2–2.5mm; ♂: 2–2.4mm. TmI 0.75–0.85

Female as illustrated; note the palps which are strongly swollen. Male similar in general appearance, but abdomen relatively smaller.

Agyneta decora (O. P.-Cambridge, 1870)

Text Fig. 60b

Length: ♀: 1.8–2.5mm; ♂: 1.8–2mm. TmI 0.85–0.9

Very similar in general appearance to *A. subtilis*, the female also having strongly swollen palps.

Agyneta cauta (O. P.-Cambridge, 1902)

Text Fig. 60c

Length: ♀: 2–2.6mm; ♂: 1.8–2.1mm. TmI 0.83–0.91

Similar to *A. subtilis* in general appearance, the female having strongly swollen palps (Text Fig. 60c).

Agyneta olivacea (Emerton, 1882)

Text Fig. 60d

Length: ♀: 1.9–2.4mm; ♂: 1.8–2.1mm. TmI 0.81–0.92

Similar to *A. subtilis* in general appearance, but female palp rather less strongly swollen (Text Fig. 60d).

Agyneta conigera (O. P.-Cambridge, 1863)

Plate 210; Text Fig. 60e

Length: ♀: 1.9–2.2mm; ♂: 1.8–2.1mm. TmI 0.6–0.72

Female as illustrated; note that the palps are not strongly swollen. Male similar in general appearance.

Agyneta ramosa Jackson, 1912

Text Fig. 61a

Length: ♀: 2–2.5mm; ♂: 2–2.25mm. TmI 0.82–0.9

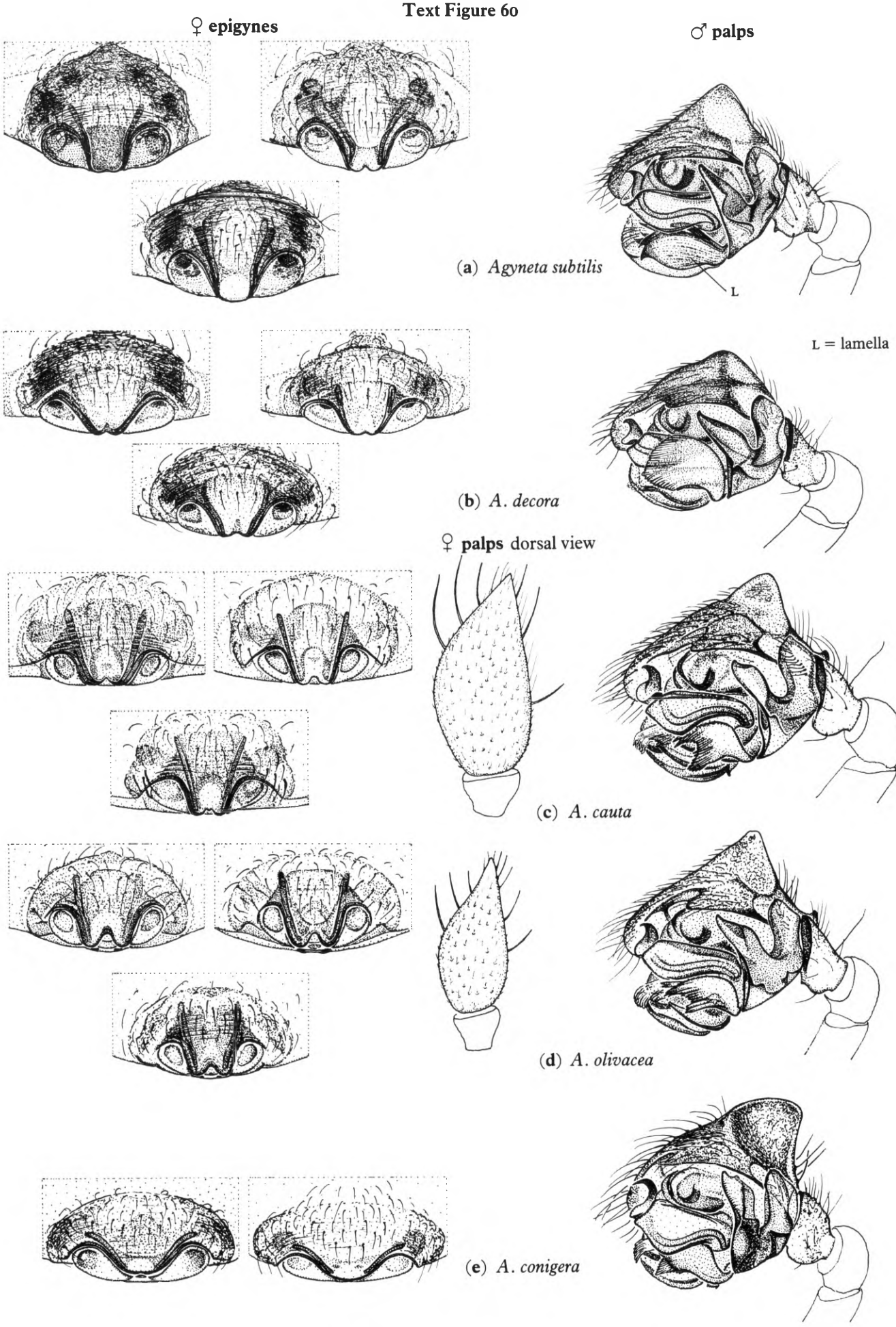
Similar to *A. conigera* in general appearance; female palp not strongly swollen.

DISTINGUISHING THE SPECIES

Males are readily distinguished by the form of the palps, especially the lamellae (L in Text Fig. 60a); the paracymbia and the shape of conical protuberance on the cymbia are also sometimes useful. The shape of the lamella varies a little, but is nevertheless highly characteristic. The only species likely to be confused are *A. cauta* and *A. olivacea*, in both of which there is a small protuberance on the cymbium proximally, just visible above the tibia in ectal view (Text Figs 60c,d), and absent in the other species. The paracymbium differs in the presence of a small tooth on the ventral margin in *A. olivacea*, which is absent and represented by a small ridge in *A. cauta*. The lamellae are similar and bifurcate; in *A. cauta* the lower branch of the lamella is larger than the upper; in *A. olivacea* the upper branch is larger, and itself carries a small extra branch dorsally near its tip.

Females require a little more care, having very similar epigynes, but can be divided into two groups, depending on whether the palps are strongly swollen (*A. subtilis*, *A. decora*, *A. cauta*, *A. olivacea*) or not (*A. conigera*, *A. ramosa*). *A. conigera* and *A. ramosa* are readily distinguished from each other by their epigynes and by the position of TmI. The epigynes of the remaining species – those with strongly swollen female palps – are distinguished by consideration of the form of the scape, the bulging semi-transparent bodies on either side, and the length and arrangement of the ducts and receptacles usually visible through the cuticle. In *A. subtilis* the scape is relatively long and narrow, and is only occasionally bifid posteriorly; the margins of the scape curve around laterally and completely encircle the bulging bodies on either side; the paired anteriorly divergent ducts do not extend further forward than the seminal receptacles, which are usually visible through the integument. In *A. decora*, as in *A. subtilis*, the paired ducts do not extend further forward than the seminal receptacles, but the scape is always slightly bifid posteriorly, and is relatively shorter and broader than in *A. subtilis*; the margins of the scape curve laterally around the bulging bodies, but sometimes stop short on each side, rather than curving right around. In both *A. cauta* and *A. olivacea* the paired ducts extend further forward than the seminal receptacles, which are usually visible through the integument; also, in both species, the scape is distinctly bifid. The female palpal tarsus is considerably more swollen in *A. cauta* than in *A. olivacea*, and comparison of the width of the palpal tarsus with that of the epigyne (Text Figs 60c,d, both drawn to the same scale) provides a useful means of distinguishing the species. The scape is generally a little narrower and has a fairly small angular notch in *A. cauta*, whereas in *A. olivacea* the scape is

Text Figure 60



relatively a little broader and has a deeper, more rounded notch. Posterior to the bifid end of the scape in *A. olivacea*, a pair of dark marks are visible in ventral view; these are absent in *A. cauta*.

DISTRIBUTION

All six species are probably widespread throughout the British Isles, but *A. ramosa* has not been recorded from Ireland. *A. subtilis* and *A. conigera* are relatively common species, being found in a variety of habitats in undergrowth, moss and grass. *A. decora* is found in similar situations, but is rather less frequent and is generally commoner in the north. *A. cauta* and *A. olivacea* are uncommon, and occur in moss and litter, sometimes in damp habitats; the relative distribution of these species is unknown, since *A. olivacea* has only recently been recognized as a species distinct from *A. cauta* by Hippa & Oksala (1985). *A. ramosa* appears to be rather rarer, usually occurring in moss in damp habitats.

Genus *Meioneta* Hull, 1920

TmI 0.21–0.32; TmIV absent; tibial spines 2–2–2–2; retrolateral spines sometimes present on tibiae; metatarsus and tarsus I and II also with one dorsal spine in *M. innotabilis*.

There are eight British species at present included in this genus, the males of which do not have the head raised to form a lobe. The genus *Meioneta* should almost certainly be synonymized with *Agyneta* (see Taxonomic Note, p. 120).

Meioneta innotabilis (O. P.-Cambridge, 1863)

(= *Syedrula innotabilis* (O. P.-Cambridge); see Taxonomic Note p. 120)

Plate 211; Text Fig. 61b

Length: ♀♂: 1.7–2.25mm; TmI 0.24–0.32

Female as illustrated; note the large posterior eyes and the dorsal spine on metatarsus and tarsus I and II. Male similar to female in general appearance, but abdomen relatively smaller.

Meioneta rurestris (C. L. Koch, 1836)

Plate 212; Text Fig. 61c

Length: ♀: 1.6–2.4mm; ♂: 1.6–2.3mm. TmI 0.24–0.3

Female as illustrated; note the posterior eyes (smaller and more widely spaced than in *M. innotabilis*), the darkened palpal tibia and tarsus, and absence of dorsal spines on both metatarsus and tarsus I and II, and of retrolateral spines on tibia I and II. Male similar to female in general appearance.

Meioneta gulosa (L. Koch, 1869)

Text Fig. 61d

Length: ♀: 1.6–2.2mm; ♂: 1.7–2mm. TmI 0.21–0.27

Very similar to *M. rurestris* in general appearance, eye size, darkened female palp and leg spines.

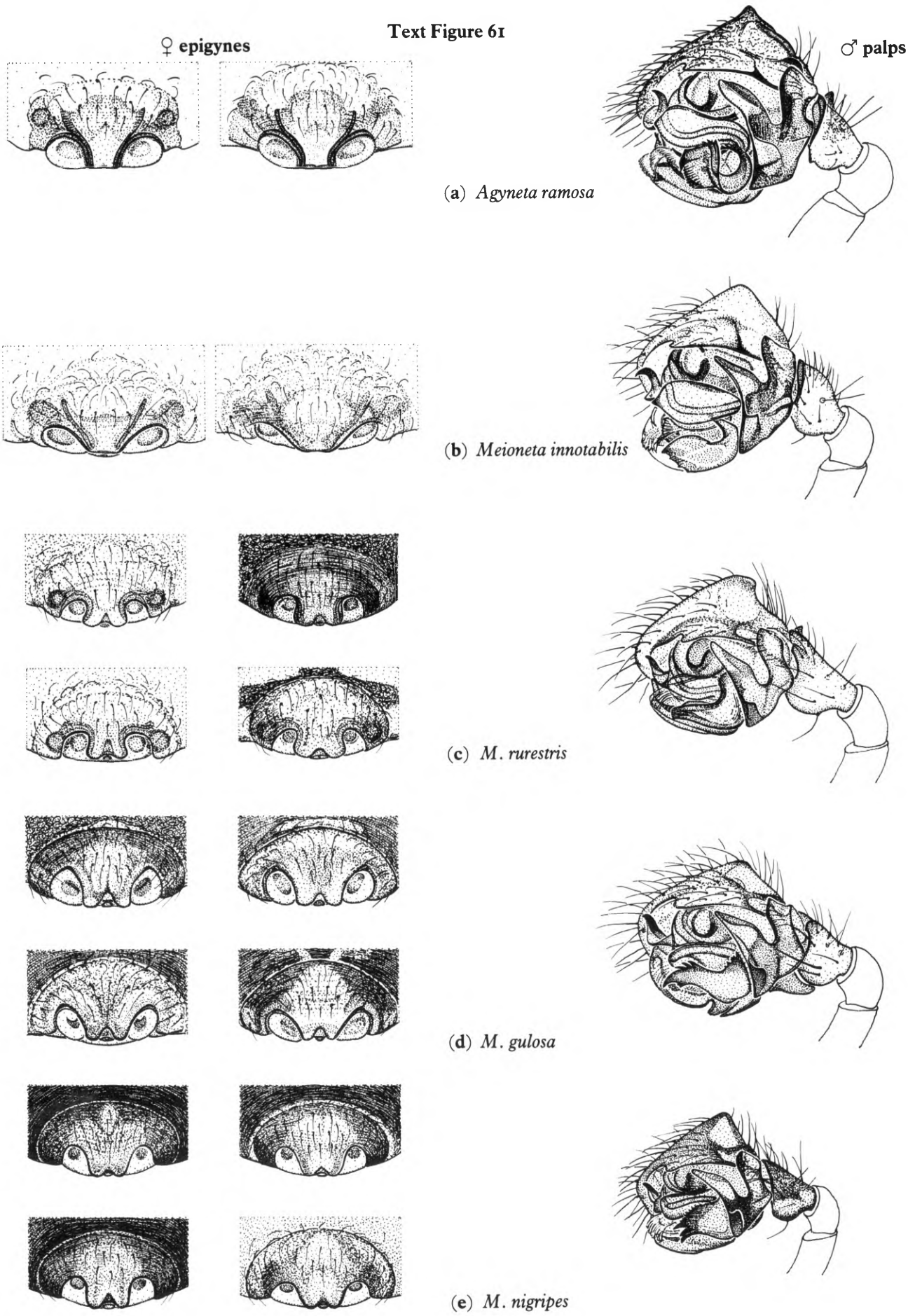
Meioneta nigripes (Simon, 1884)

Text Fig. 61e

Length: ♀: 1.6–2.2mm; ♂: 1.6–1.75mm TmI 0.21–0.27

This species is usually much darker than *M. rurestris* and *M. gulosa*; legs and carapace dark brown, female palp blackish and abdomen black. Leg spines as in *M. rurestris*. The posterior median eyes are much larger than in *M. rurestris*, and similar to those of *M. innotabilis*.

Text Figure 61



Meioneta beata (O. P.-Cambridge, 1906)
Text Fig. 62a

Length: ♀: 1.6–2.1mm; ♂: 1.5–1.9mm. TmI 0.21–0.27

Similar to *M. rurestris* in general appearance and in having darkened female palp. Tibia I and II each have a retrolateral spine, approximately level with distal dorsal spine.

Meioneta mollis (O. P.-Cambridge, 1871)
Text Fig. 62b

Length: ♀: 1.4–2mm; ♂: 1.2–1.6mm. TmI 0.22–0.28

Similar to *M. rurestris*, but with posterior eyes relatively larger and closer together, carapace and abdomen a little less dark, and with no darkening of female palp. Tibial spines as in *M. beata*.

Meioneta saxatilis (Blackwall, 1844)
Text Fig. 62c

Length: ♀: 1.8–2.2mm; ♂: 1.6–2mm. TmI 0.22–0.27

Similar to *M. rurestris*, but carapace usually paler, like that of *M. innotabilis*; female palp not darkened. Tibial spines as in *M. beata*. Male often darker than female.

Meioneta simplicitarsis (Simon, 1884)
Text Fig. 62d

Length: ♀♂: 1.5–2mm. TmI 0.22–0.26

Similar to *M. rurestris*, but carapace and palp paler.

DISTINGUISHING THE SPECIES

The species may be split into three groups, as follows:

1 Metatarsus and tarsus I and II with one dorsal spine ..... *M. innotabilis*
– Metatarsus and tarsus I and II spineless 2
2(1) Tibia I and II with a retrolateral spine ..... *M. beata, M. mollis, M. saxatilis, M. simplicitarsis*
– Tibia I and II without lateral spines ..... *M. rurestris, M. gulosa, M. nigripes*

M. innotabilis has genitalia similar to those of *Agyneta conigera* (Text Fig. 60e), but is easily distinguished by differences in its general appearance, eyes, leg spines and position of TmI (*cf.* Plates 210 and 211). *M. beata*, *M. mollis*, *M. saxatilis* and *M. simplicitarsis* are readily distinguished by their genitalia; epigynes rather variable, as illustrated, but nevertheless characteristic; male palps distinguishable by the form of their lamellae, paracymbia and tibiae. Males of *M. rurestris*, *M. gulosa* and *M. nigripes* are readily distinguished by their palps, in particular by the form of their lamellae as well as other differences. Females present a little more difficulty; in all three species there is a scape, bifid posteriorly, the anterolateral margins of which curve around to enclose a pair of roughly oval bulges, through which can be seen a pair of darker marks. In *M. rurestris* the scape is slightly narrower and waisted anteriorly, and the smallest radius of curvature around the bulges is closer to the midline than in *M. gulosa* and *M. nigripes*. The epigynes of *M. gulosa* and *M. nigripes* show subtle differences in the scape, the shape of the lateral oval bulges, and in the size, shape and position of the dark marks within. *M. nigripes* is further distinguished by being much darker (almost completely black), and by its large posterior median eyes.

DISTRIBUTION

M. innotabilis is widespread throughout the British Isles, and occurs fairly frequently on tree trunks and in the litter at the base of trees. *M. rurestris* and *M. saxatilis* are also widespread and relatively common species, which occur in low vegetation, grass, moss and litter. *M. beata* occurs in similar situations, but is less common. *M. mollis* is uncommon, occurring in leaf-litter, and has been recorded only from Wales and the southern half of England. *M. gulosa* and *M. nigripes* both occur on high ground, the former recorded from Wales, northern England and Scotland, and the latter from a very few mountainous localities in North Wales and Scotland. *M. simplicitarsis* has been recorded from only a few localities in southern England.

Genus *Micronetа* Menge, 1868

TmI 0.65–0.7; TmIV present; tibial spines 2–2–2–2; with an additional prolateral spine on tibia I.

There is only one British species in this genus, the male of which does not have the head raised to form a lobe.

Micronetа viaria (Blackwall, 1841)
Plate 213; Text Fig. 62e

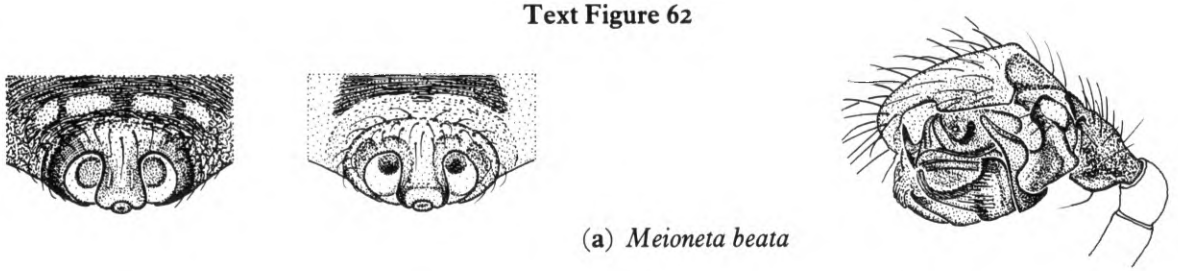
Length: ♀♂: 2.5–3mm. TmI 0.65–0.7

Female as illustrated; male similar in general appearance. Epigyne and male palp highly characteristic; male palpal patella furnished with four to six long spines.

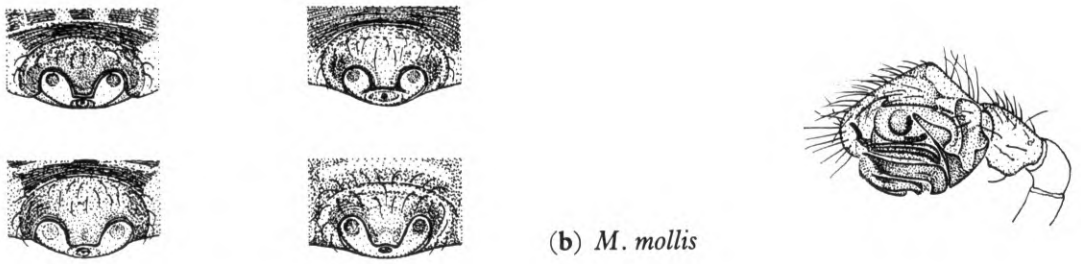
DISTRIBUTION

M. viaria is common and widespread throughout the British Isles, usually occurring in woodland litter.

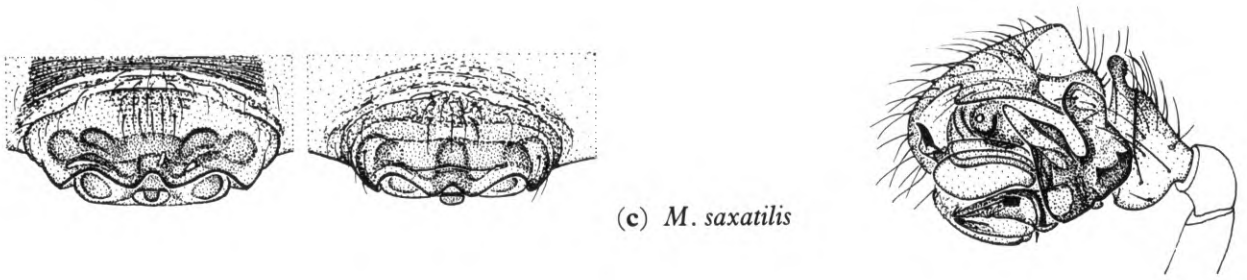
Text Figure 62



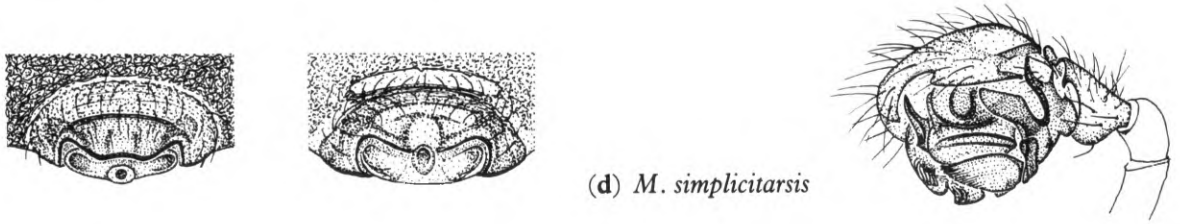
(**a**) *Meioneta beata*



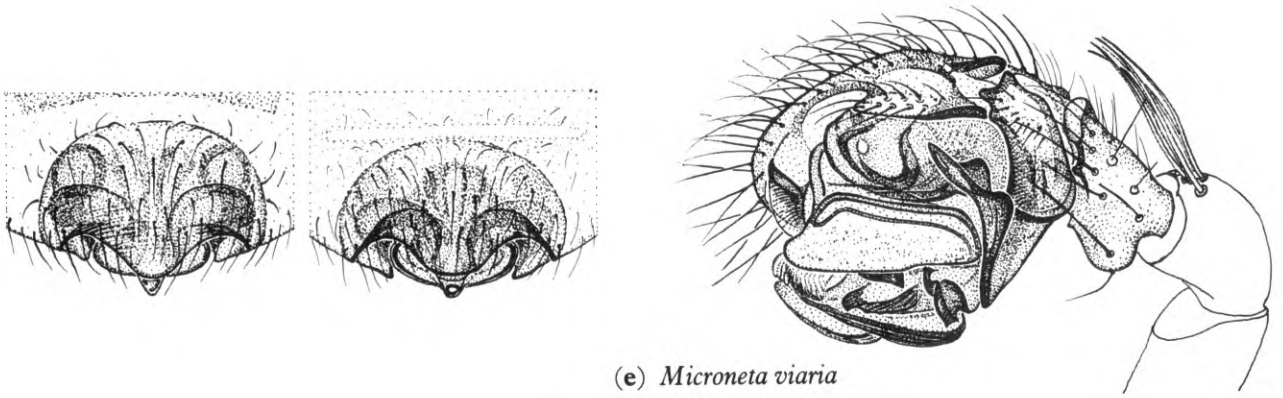
(**b**) *M. mollis*



(**c**) *M. saxatilis*



(**d**) *M. simplicitarsis*



(**e**) *Microneta viaria*

Genus *Maro* O. P.-Cambridge, 1906

TmI 0.36–0.46; TmIV absent; tibial spines 2–2–2–2

The three British species in this genus are very small, pale-coloured spiders with relatively large eyes. Males do not have the head raised to form a lobe.

Maro minutus O. P.-Cambridge, 1906

Plate 219a; Text Fig. 63a

Length: ♀: 1.1–1.5mm; ♂: 1.1–1.3mm. TmI 0.36–0.4

Female as illustrated; legs coloured as carapace. Male similar to female in general appearance.

Maro sublestus Falconer, 1915

Text Fig. 63b

Length: ♀: 1.15–1.5mm; ♂: 1.1–1.35mm. TmI 0.4–0.46

Similar to *M. minutus* in general appearance.

Maro lepidus Casemir, 1963

Text Fig. 63c

Length: ♀: 1.2–1.4mm; ♂: 1.1–1.2mm. TmI 0.4–0.45

Similar in general appearance to *M. minutus*.

DISTINGUISHING THE SPECIES

Females easily distinguished by epigynes, despite some variation, and by the adnexae, which are usually easily visible without clearing. Male palps rather variable and very small, but nevertheless exhibiting several distinguishing features.

DISTRIBUTION

Maro minutus is probably widespread throughout England, Scotland and Wales, but is uncommon and usually found in moss, grass and leaf-litter. *M. sublestus* is a rare species of wet habitats, recorded from seven widely scattered localities in England and Scotland. *M. lepidus* is also a rare species, recorded from wet sphagnum in a few localities in northern England and North Wales.

Genus *Syedra* Simon, 1884

TmI 0.3–0.35; TmIV absent; tibial spines 2–2–2–2; metatarsus I and II with one dorsal spine.

The single British species in this genus is a rather small spider with relatively large posterior median eyes. Males do not have the carapace raised to form a lobe.

Syedra gracilis (Menge, 1866)

Plate 207d; Text Fig. 63d

Length: ♀♂: 1.2–1.5mm. TmI 0.3–0.35

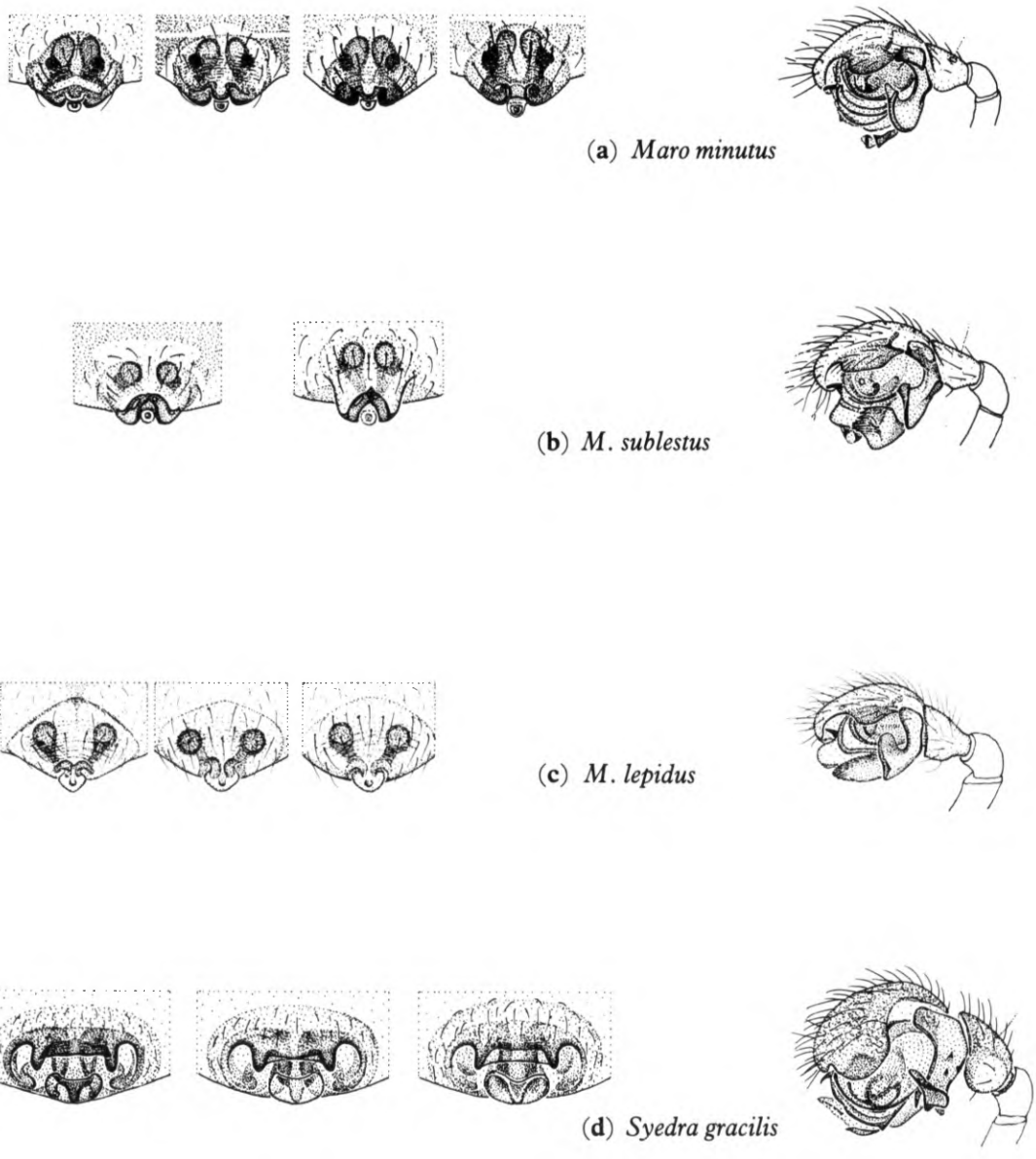
Male of highly characteristic appearance, as illustrated; legs coloured as carapace, and sometimes suffused with black. Female similar in general appearance; epigyne a little variable, but nevertheless characteristic. Male palp a little variable, very small but distinctive.

DISTRIBUTION

S. gracilis is probably widespread throughout England, and has been recorded from Scotland. It is, however, a rare species, taken from only about twenty localities, and is usually found in grass, moss and litter. It is most frequent on calcareous grassland.

Text Figure 63

♀ epigynes ♂ palps



(a) *Maro minutus*

(b) *M. sublestus*

(c) *M. lepidus*

(d) *Syedra gracilis*

Genus *Centromerus* Dahl, 1886

TmI 0.28–0.49; TmIV absent; tibial spines 2–2–2–2 or 2–2–2–1; metatarsus I and II with one dorsal spine; femur I (and sometimes II) with one or two dorsal spines; tibia I sometimes with a prolateral spine.

This genus now includes thirteen British species, all very similar in general appearance but having distinctive genitalia. Males do not have the carapace raised into a lobe, but in several species the male chelicerae are furnished with a longitudinal row of minute bristles, anterolaterally.

TAXONOMIC NOTE

The species *Centromerus expertus* (O. P.-Cambridge, 1871) was transferred to the new genus *Tallusia* by Lehtinen & Saaristo (1972). *Centromerus tantulus* Parker, 1962 is now considered to be an abnormal specimen of *C. dilutus* (O. P.-Cambridge) (Merrett, Locket *et al.*, 1985). *Centromerus parkeri* (Cooke, 1967) was shown to be an abnormal male of *C. prudens* (O. P.-Cambridge) by Roberts (1976).

The original spelling of *Centromerus (Tmeticus) levitarsis* (Simon, 1884: p. 395) has sometimes been changed to *laevitarsis*; *levitarsis* has been used in most European literature, but *laevitarsis* in British publications. Simon himself may be partly responsible for this since, in *Arachnides de France*, Tome 6, Pt. 3 (1929), he refers to the species as *C. levitarsis* on p. 548 and *laevitarsis* on p. 553! According to the Rules of the International Commission on Zoological Nomenclature the original spelling should stand, and this is used here.

Centromerus sylvaticus (Blackwall, 1841)

Plate 214; Text Fig. 64a

Length: ♀: 2.5–4mm; ♂: 2.2–3mm. TmI 0.35–0.42

Male similar in general appearance to female illustrated. Male chelicerae with longitudinal row of minute bristles.

Centromerus serratus (O. P.-Cambridge, 1875)

Text Fig. 64b

Length: ♀: 1.25–1.7mm; ♂: 1.5–1.8mm. TmI 0.28–0.32

Similar in general appearance to *C. sylvaticus*, but tibia IV usually has only one spine, and the metatarsal spines are very thin.

Centromerus albidus Simon, 1929

Text Fig. 64c

Length: ♀: 1.2–1.5mm; ♂: 1.35–1.5mm. TmI 0.28–0.33

Similar in general appearance to *C. sylvaticus*, but usually paler and with only one spine on tibia IV.

Centromerus cavernarum (L. Koch, 1872)

Text Fig. 64d

Length: ♀: 1.3–1.8mm; ♂: 1.5–1.8mm. TmI 0.29–0.34

Similar in general appearance to *C. sylvaticus*, but with only one spine on tibia IV.

Centromerus incilium (L. Koch, 1881)

Text Fig. 65a

Length: ♀: 2–2.3mm; ♂: 1.8–2.5mm. TmI 0.3–0.36

Similar in general appearance to *C. sylvaticus*.

Centromerus prudens (O. P.-Cambridge, 1873)

Text Fig. 65b

Length: ♀♂: 2.2–2.5mm. TmI 0.34–0.36

Similar in general appearance to *C. sylvaticus*.

Centromerus aequalis (Westring, 1851)

Text Fig. 65c

Length: ♀: *c.* 1.5mm; ♂: *c.* 1.8mm. TmI 0.3–0.35

Similar in general appearance to *C. sylvaticus*.

Centromerus arcanus (O. P.-Cambridge, 1873)

Text Fig. 65d

Length: ♀: 1.6–2.4mm; ♂: 2–2.5mm. TmI 0.36–0.49

Similar in general appearance to *C. sylvaticus*; tibia IV may have either one or two dorsal spines.

Centromerus incultus Falconer, 1915

Text Fig. 66a

Length: ♀♂: 1.5–1.8mm; TmI 0.4–0.45

Similar in general appearance to *C. sylvaticus*; tibia IV may have either one or two dorsal spines.

Centromerus persimilis (O. P.-Cambridge, 1912)

Text Fig. 66b

Length: ♀: 1.25–1.4mm; ♂: 1.3–1.4mm. TmI 0.3–0.35

Similar in general appearance to *C. sylvaticus*; tibia IV with only one dorsal spine.

Centromerus levitarsis (Simon, 1884)

(See Taxonomic Note, above)

Text Fig. 66c

Length: ♀♂: 1.6–1.9mm. TmI *c.* 0.4

Similar in general appearance to *C. sylvaticus*.

Centromerus dilutus (O. P.-Cambridge, 1875)

Text Fig. 66d

Length: ♀♂: 1.25–1.5mm. TmI 0.3–0.35

Similar in general appearance to *C. sylvaticus*; tibia IV with only one dorsal spine.

Centromerus capucinus (Simon, 1884)

Text Fig. 66e

Length: ♀: 1.7–2.8mm; ♂: 1.9–2.2mm.TmI 0.35–0.47

Similar in general appearance to *C. sylvaticus*.

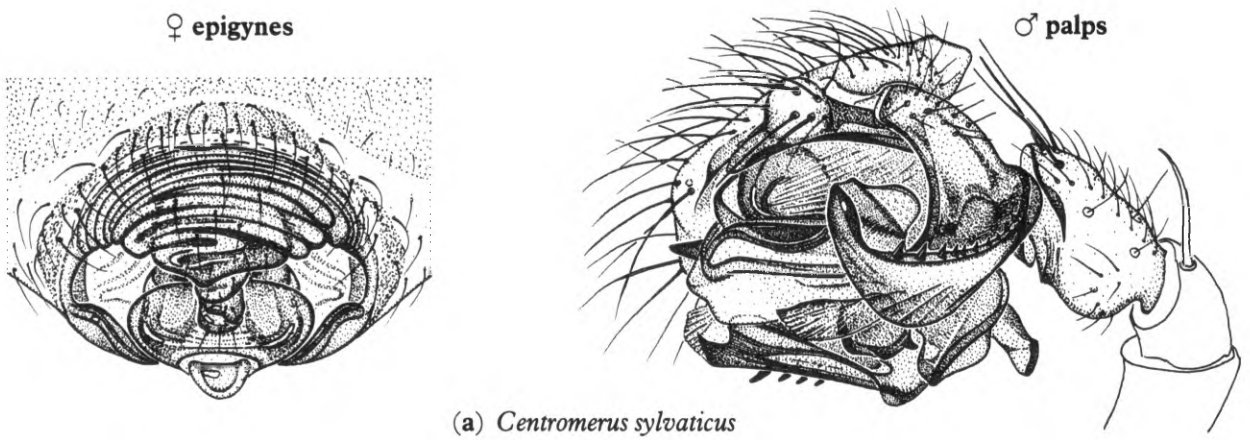
DISTINGUISHING THE SPECIES

Although the epigynes and male palps of all species show some variation, in both shape and depth of sclerotization, they allow for relatively easy identification (Text Figs 64–66).

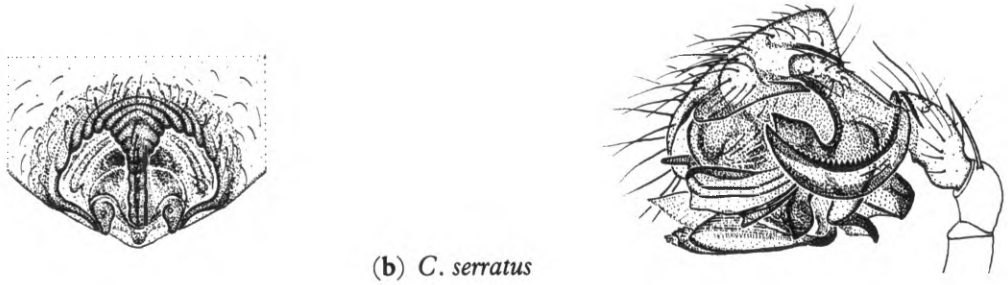
DISTRIBUTION

C. dilutus is widespread throughout the British Isles and is very common, especially in the detritus of woods. *C. sylvaticus* is also widespread and common, particularly in woods, but perhaps has a more local distribution. *C. prudens* occurs in a variety of situations, is widespread throughout the British Isles, but is appreciably commoner in the north. *C. arcanus* is widespread but rather less common, often occurring on high ground. *C. incilium* and *C. serratus* are uncommon species; the former has been recorded from a few localities in the south of England and one in Scotland, and the latter from localities in the south of England. The remaining species are rare: *C. cavernarum*, *C. capucinus* and *C. albidus* have been recorded from only a few localities in the southern half of England; *C. aequalis* from a very few localities in England and Scotland; *C. incultus* from

Text Figure 64

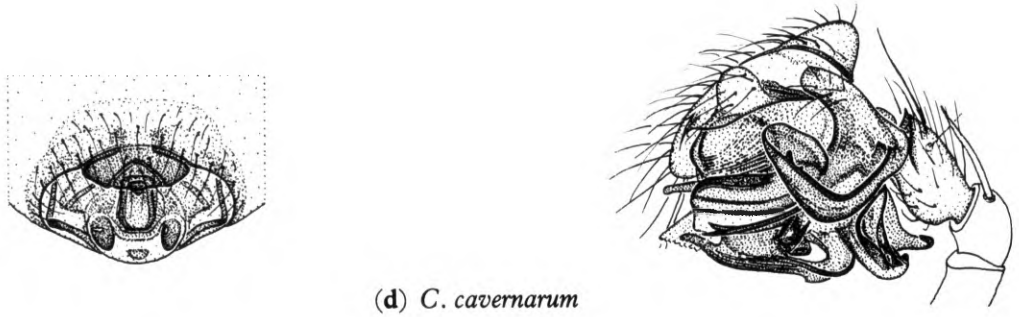


(**a**) *Centromerus sylvaticus*



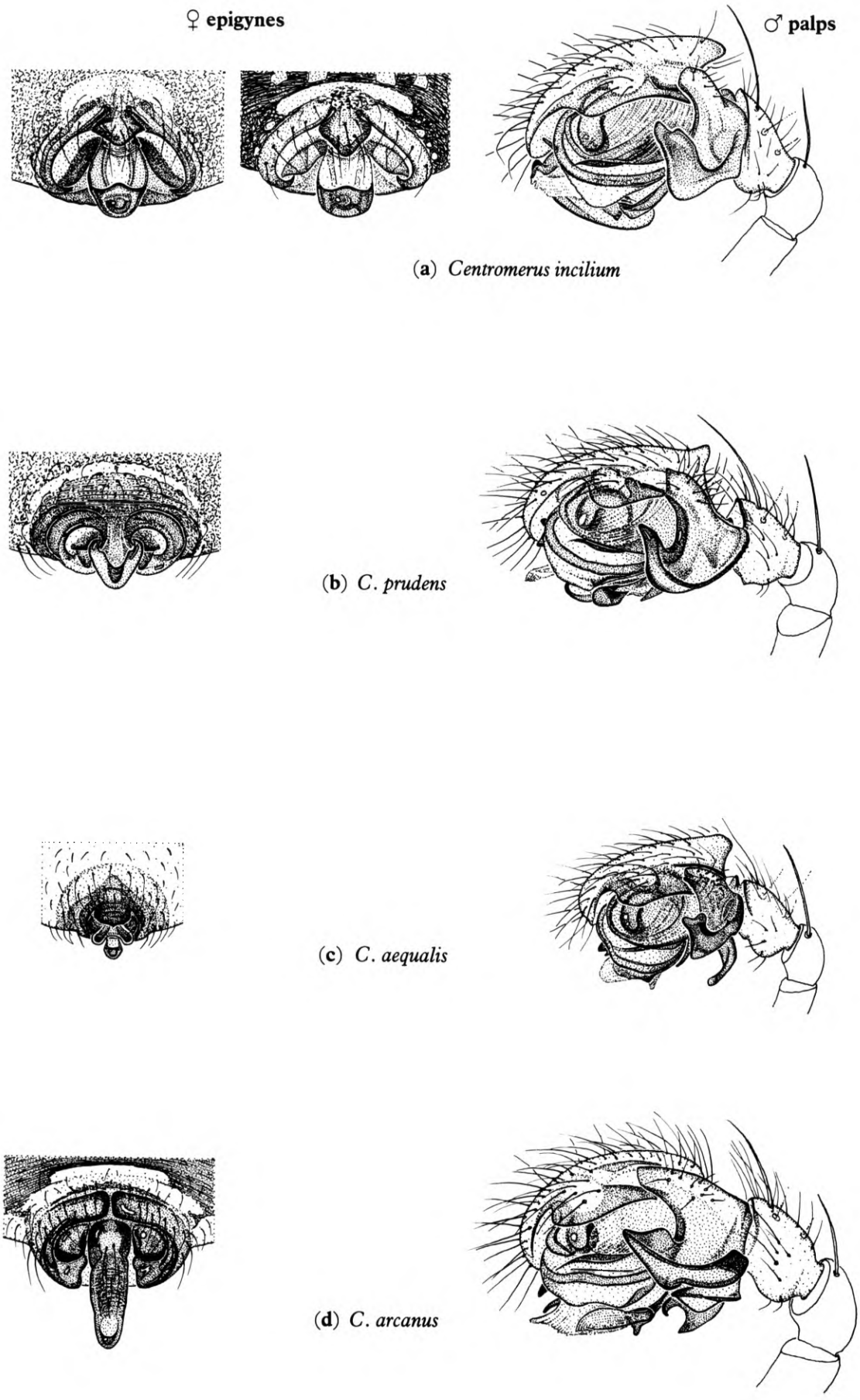
(**b**) *C. serratus*

(**c**) *C. albidus*

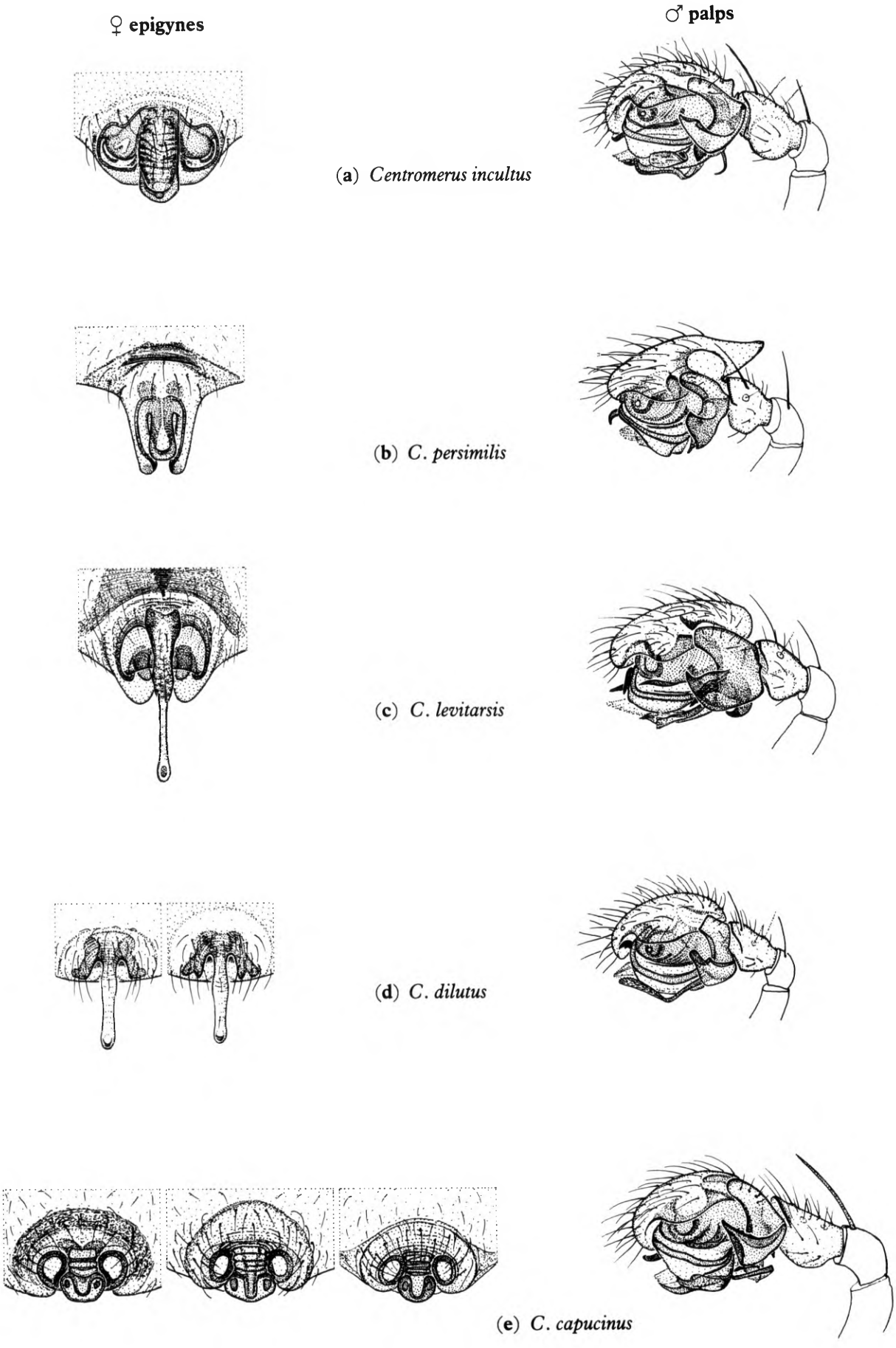


(**d**) *C. cavernarum*

Text Figure 65



Text Figure 66



two localities (wet habitats) in East Anglia; *C. persimilis* from only three localities in south-east Ireland and the north of England (two females under stones and a single male in crevice of limestone pavement); *C. levitarsis* from four widely-scattered, wet localities in England.

Genus *Tallusia* Lehtinen & Saaristo, 1972

TmI 0.34–0.44; TmIV absent; tibial spines 2–2–2–2

The single British species in this genus was formerly included in *Centromerus* (see Taxonomic Note, p. 128). The male does not have the carapace raised to form a lobe, but the chelicerae are furnished with a longitudinal row of minute bristles, anterolaterally.

Tallusia experta (O. P.-Cambridge, 1871)

Text Fig. 67a

Length: ♀♂: 2.5–3.6mm. TmI 0.34–0.44

Similar in general appearance to *C. sylvaticus* (Plate 214), but carapace and legs usually darker orange-brown in colour. Epigyne and male palp a little variable, but highly characteristic (Text Fig. 67a).

DISTRIBUTION

T. experta is widely distributed throughout the British Isles, and is fairly common. It occurs in moss and grass in a variety of habitats, including woods and marshy areas.

Genus *Centromerita* Dahl, 1882

TmI 0.4–0.53; TmIV absent; tibial spines 2–2–2–2; lateral and ventral spines also present on tibiae, and all metatarsi have one dorsal spine.

There are two British species in this genus. Males do not have the carapace raised to form a lobe, but have rather long hairs in the ocular region.

Centromerita bicolor (Blackwall, 1833)

Plate 215; Text Fig. 67b

Length: ♀♂: 3–3.5mm. TmI 0.4–0.53

Male similar in general appearance to female illustrated, but has numerous long, stout hairs (directed forwards) in the ocular region.

Centromerita concinna (Thorell, 1875)

Text Fig. 67c

Length: ♀: 2–3mm; ♂: 2–2.7mm. TmI 0.4–0.5

Female similar to *C. bicolor* in general appearance, but carapace usually paler yellow in colour. Male similar, but with a few stout hairs in ocular region.

DISTINGUISHING THE SPECIES

C. bicolor is usually larger than *C. concinna*, but there may be overlap; *C. bicolor* usually has more than one spine on metatarsus IV but, again, this is not reliable, although *C. concinna* has *never* more than one spine on metatarsus IV. The genitalia, therefore, afford the only reliable means of separating the species. Males are easily separated by consideration of the size of the palp and the structure of the paracymbia and palpal organs; the hairs on the head are much more prominent in males of *C. bicolor*. Females have epigynes which are similar and often rather dark and difficult to see. In both species, a broad lip extends backwards from the anterior margin and behind this protrudes a fairly wide scape (Text Figs 67b,c). In *C. bicolor* the anterior lip extends posterolaterally to form a distinct lobe on each side; in *C. concinna* the lip, although variable, does not have lateral lobes. The epigynes also differ in size; the width of the scape is greater than 0.1mm in *C. bicolor* and less than 0.1mm in *C. concinna*.

DISTRIBUTION

Both species are widely distributed throughout the British Isles and fairly common, especially in the north. Both are found in a variety of situations in moss, grass and leaf-litter, and may sometimes be locally abundant.

Genus *Sintula* Simon, 1884

TmI 0.23–0.25; TmIV absent; tibial spines 2–2–1–1; metatarsus I and II with one dorsal spine (occasionally absent).

There is one British species in this genus, the male of which does not have the head raised into a lobe. Both sexes have very distinctive genitalia.

Sintula cornigera (Blackwall, 1856)

Plate 219b; Text Fig. 67d

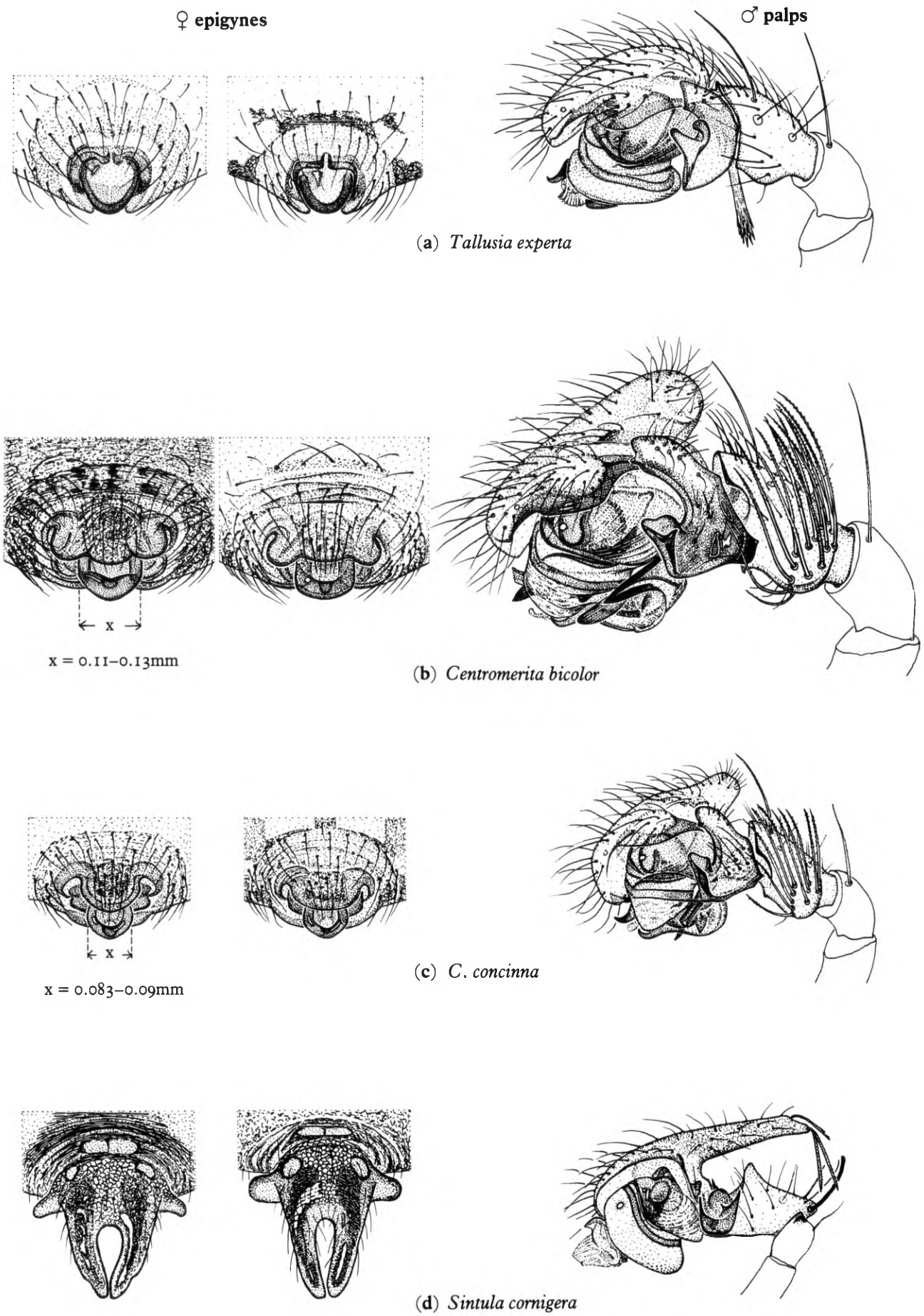
Length: ♀♂: 1.4–1.8mm. TmI 0.23–0.25

Female similar in general appearance to male illustrated, but abdomen relatively larger. Legs coloured as carapace and suffused, to a variable degree, with black. Epigyne relatively large for the size of spider, and of distinctive appearance (Text Fig. 67d). Male palp is highly characteristic.

DISTRIBUTION

S. cornigera is widely distributed throughout England, Wales and Scotland, but has not yet been recorded from Ireland. It is generally uncommon (but may be locally abundant), and occurs in moss, grass and litter in a variety of habitats.

Text Figure 67



(**a**) *Tallusia experta*

(**b**) *Centromerita bicolor*

(**c**) *C. concinna*

(**d**) *Sintula cornigera*

Genus *Oreonetides* Strand, 1901

TmI 0.35–0.45; TmIV absent; tibial spines 2–2–2–2

Only one British species is now included in this genus, two other species having been transferred to *Saaristoa* (see Taxonomic Note, below). The male does not have the carapace elevated to form a lobe.

Oreonetides vaginatus (Thorell, 1872)

Text Fig. 68a

Length: ♀: 3–3.8mm; ♂: 3–3.6mm. TmI 0.35–0.45

Both sexes similar in general appearance to *Saaristoa abnormis* (Plate 216). Epigyne and male palp a little variable, but nevertheless highly characteristic (Text Fig. 68a).

DISTRIBUTION

O. vaginatus is a rather uncommon species which occurs under stones, usually on mountains and fairly high ground, in Scotland, Ireland, North Wales and northern England.

Genus *Saaristoa* Millidge, 1978

TmI 0.33–0.48; TmIV absent; tibial spines 2–2–2–2

The two British species in this genus were formerly included in *Oreonetides* (see Taxonomic Note, below). Males do not have the head elevated to form a lobe.

TAXONOMIC NOTE

Saaristoa abnormis and *S. firma* were formerly included in the genus *Oreonetides*. They were transferred to the new genus *Saaristoa* by Millidge (1978), Saaristo (1972) having first shown that the two species did not belong in *Oreonetides*.

Saaristoa abnormis (Blackwall, 1841)

Plate 216; Text Fig. 68b

Length: ♀: 3–4mm; ♂: 2.8–4mm. TmI 0.43–0.48

Male similar in general appearance to female illustrated.

Saaristoa firma (O. P.-Cambridge, 1901)

Text Fig. 68c

Length: ♀♂: 1.6–2.1mm. TmI 0.33–0.43

Similar in general appearance to *Saaristoa abnormis*, but carapace with only three long spines in midline, between fovea and eye region.

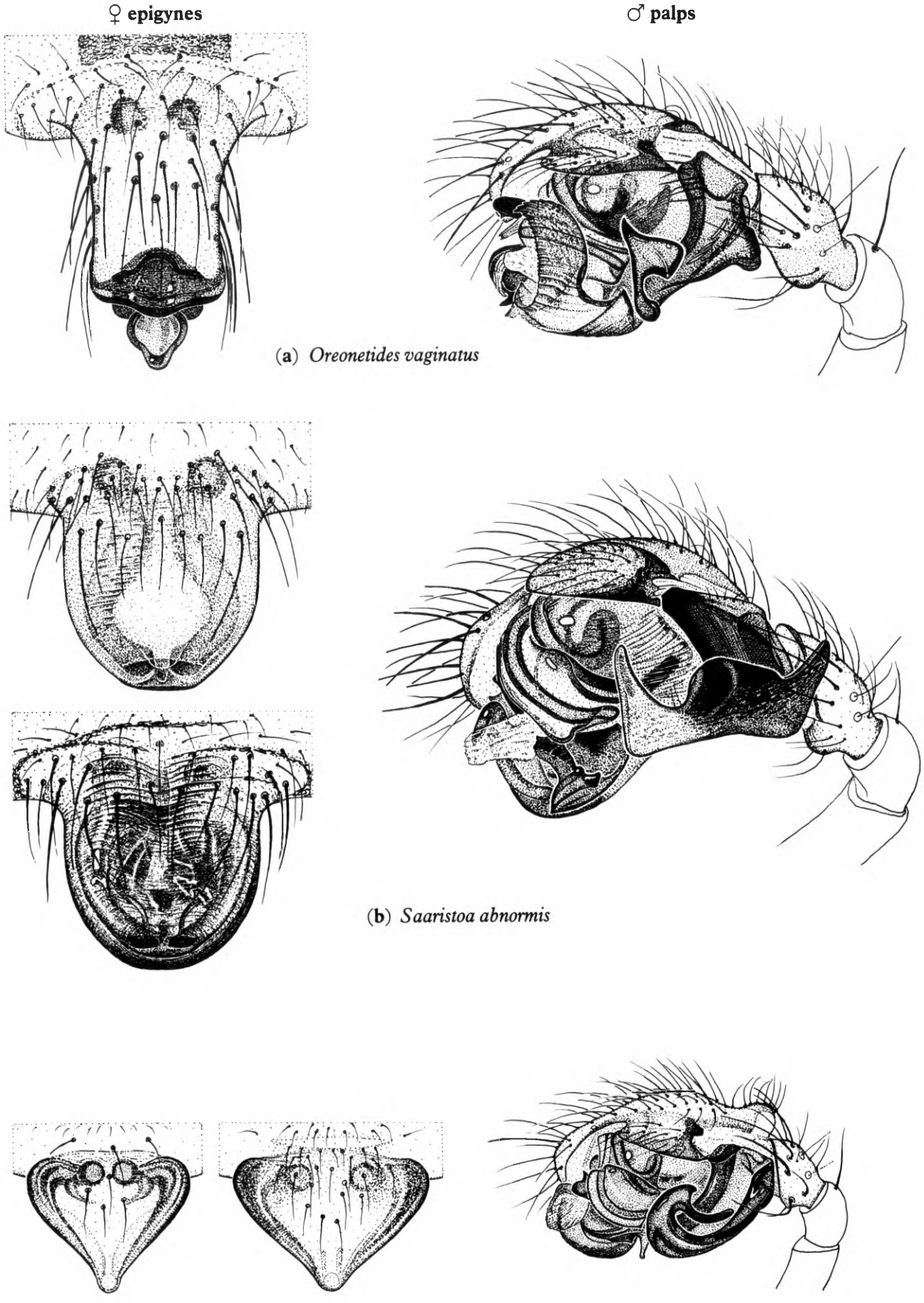
DISTINGUISHING THE SPECIES

Epigynes rather variable, but characteristic; that of *S. abnormis* (Text Fig. 68b) varies in the depth of sclerotization, and sometimes has the ventral surface concave, thus resembling a doughnut. Male palps highly characteristic.

DISTRIBUTION

Both species are widely distributed throughout the British Isles. *S. abnormis* is by far the commoner and occurs in a variety of habitats, woodland and moorland, in moss, grass and leaf-litter. *S. firma* is rather uncommon, but also occurs in a variety of situations.

Text Figure 68



Genus *Macrargus* Dahl, 1886

TmI 0.4–0.5; TmIV absent; tibial spines 2–2–2–2

There are two British species in this genus. Males are similar to females in general appearance.

Macrargus rufus (Wider, 1834)

Plate 217; Text Figs 69a,c

Length: ♀: 3.5–4.6mm; ♂: 3.25–4mm. TmI 0.4–0.5

Female as illustrated; male similar but with relatively smaller abdomen.

Macrargus carpenteri (O. P.-Cambridge, 1894)

Text Figs 69b,d

Length: ♀: 2.5–3.4mm; ♂: 2.5–3.3mm. TmI 0.4–0.5

Very similar in general appearance to *M. rufus*.

DISTINGUISHING THE SPECIES

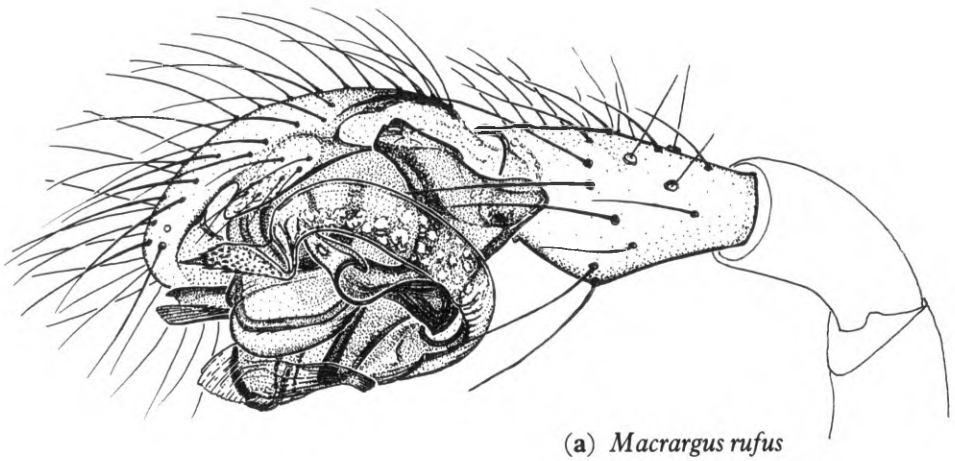
M. rufus is by far the commoner species and is generally a larger spider, with slightly larger genitalia, than *M. carpenteri*. Male palps differ in the shape of tibiae, paracymbia and palpal organs; there is a transparent lamella laterally, which curves around the paracymbium and has a clearly different tip in the two species. Epigynes variable but distinctive.

DISTRIBUTION

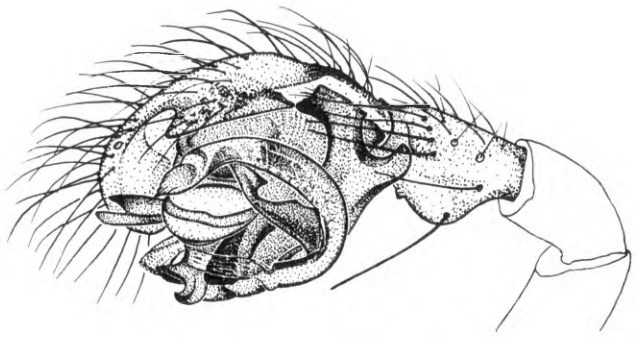
M. rufus is widely distributed throughout England, Wales and Scotland, but has been recorded from only two counties in Ireland. It occurs in grass, moss and leaf-litter in woods and a variety of other habitats. *M. carpenteri* is rare and has been recorded from only a few localities in Scotland and the north of England, always on high ground.

Text Figure 69

♂ **palps**



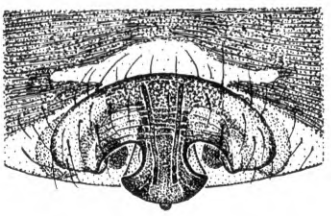
(**a**) *Macrargus rufus*



(**b**) *M. carpenteri*

♀ **epigynes**

(**c**) *M. rufus*



(**d**) *M. carpenteri*

Genus *Bathyphantes* Menge, 1866

TmI 0.2–0.35; TmIV absent; tibial spines 2–2–2–2; additionally there are often lateral and dorsal tibial spines.

There are five British species at present included in this genus. The abdomen often has a pattern of dark and light bars or chevrons. Males similar to females, with no elevation of the carapace.

Bathyphantes approximatus (O. P.-Cambridge, 1871)

Plate 218; Text Fig. 70a

Length: ♀: 2–3mm; ♂: 2.5–3mm. TmI 0.2–0.24

Female as illustrated; note that the number of femoral spines is variable, even within a single specimen. Male similar in general appearance. In both sexes the abdominal pattern may be obscured; sometimes with larger light areas dorsally, sometimes entirely dark. The male palp, as held by the spider, is usually rotated so that the ectal structures face dorsally (Text Fig. 70a).

Bathyphantes gracilis (Blackwall, 1841)

Text Fig. 70b

Length: ♀: 1.9–2.5mm; ♂: 1.5–2mm. TmI 0.25–0.3

Similar in general appearance to *B. approximatus*, but abdominal pattern variable and may be entirely absent, with abdomen uniform grey in colour.

Bathyphantes parvulus (Westring, 1851)

Text Fig. 70c

Length: ♀: 2–2.5mm; ♂: 1.6–2.2mm. TmI 0.25–0.3

Similar in general appearance to *B. approximatus*, but abdomen usually uniform grey-black.

Bathyphantes nigrinus (Westring, 1851)

Text Fig. 70d

Length: ♀♂: 2.4–2.8mm. TmI 0.2–0.27

Similar in general appearance to *B. approximatus*. Abdominal pattern variable, may be almost entirely dark grey, or paler chevrons may coalesce in midline to form a broad pale dorsal mark.

Bathyphantes setiger (F. O. P.-Cambridge, 1894)

Text Fig. 70e

Length: ♀♂: 1.7–2.2mm. TmI 0.26–0.35

Similar in general appearance to *B. approximatus*, but carapace usually very dark brown, suffused with black. Abdomen usually uniformly dark grey, but may have faint chevrons and, rarely, a pale broad median band dorsally.

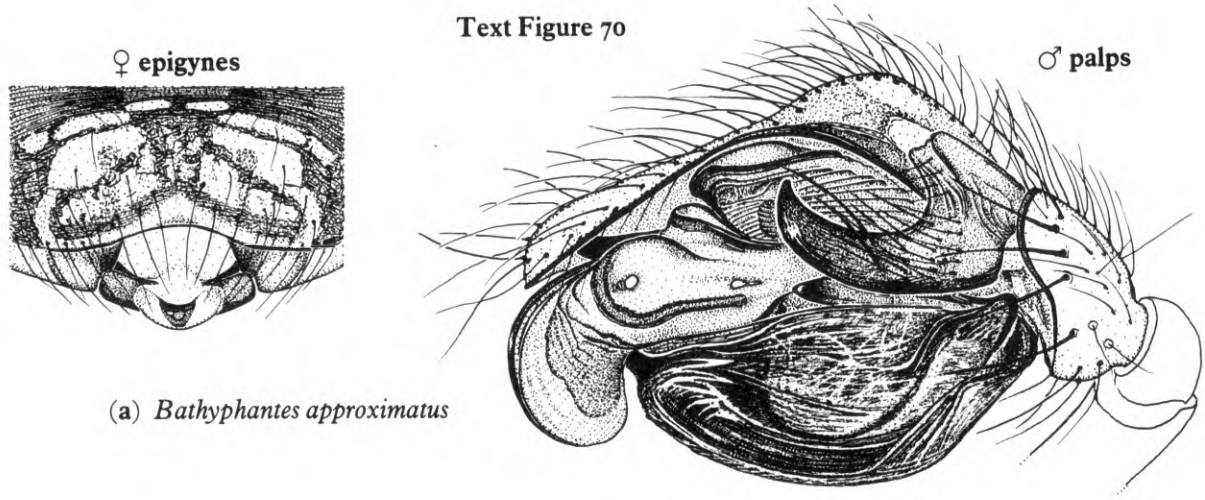
DISTINGUISHING THE SPECIES

The only slight difficulty likely to arise is in distinguishing *B. gracilis* and *B. parvulus*, which have closely similar genitalia (Text Figs 70b,c). However, male palps distinguished by hairs on paracymbia as well as by slight, but constant, differences in the palpal organs. Epigynes variable, as illustrated, but show several constant distinguishing features.

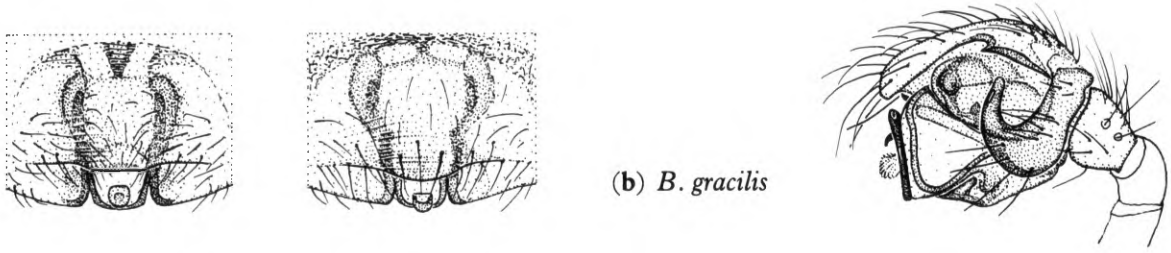
DISTRIBUTION

All five species have a widespread distribution throughout the British Isles. *B. gracilis*, *B. parvulus* and *B. nigrinus* all fairly common, occurring in grass, moss and undergrowth. *B. approximatus* and *B. setiger* are less common (especially *B. setiger*), have a rather local distribution, and are usually found in wet habitats.

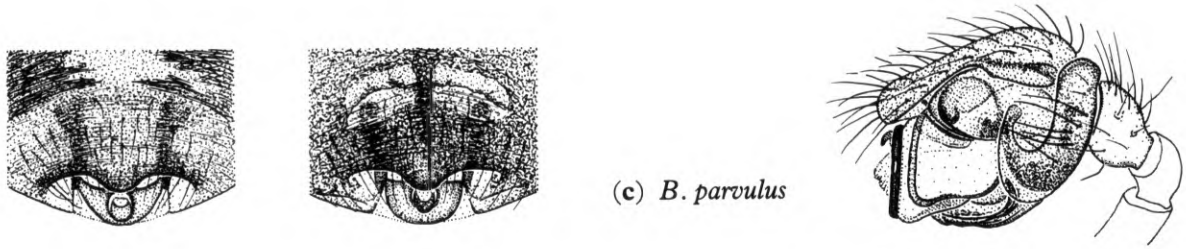
Text Figure 70



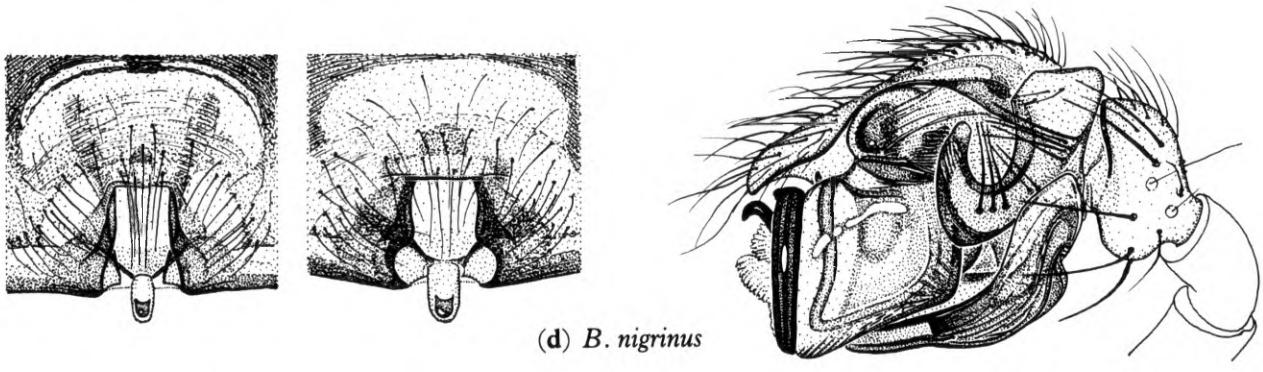
(a) *Bathyphantes approximatus*



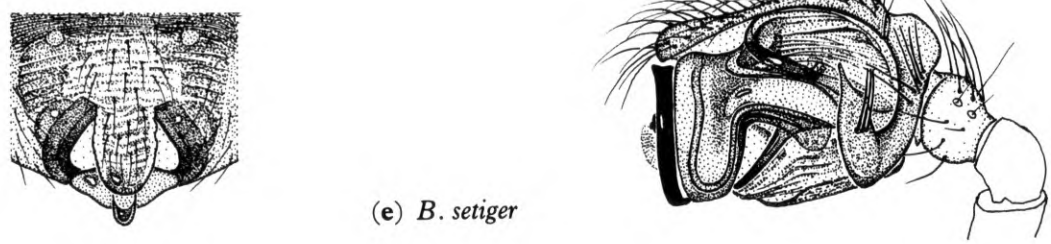
(b) *B. gracilis*



(c) *B. parvulus*



(d) *B. nigrinus*



(e) *B. setiger*

Genus *Kaestneria* Wiehle, 1956

TmI 0.15–0.28; TmIV absent; tibial spines 2–2–2–2; additionally there may be lateral tibial and femoral spines.

The two British species at present placed in this genus were formerly included in *Bathyphantes*, the species of which they closely resemble. Males are similar to females in general appearance.

Kaestneria dorsalis (Wider, 1834)

Text Fig. 71a

Length: ♀: 2.1–3mm; ♂: 2.1–2.6mm. TmI 0.15–0.21

Similar in general appearance to *Bathyphantes approximatus* (Plate 218). Abdomen may be uniform grey-black or may have broad, light chevrons; the latter may coalesce to form a rectangular, light area dorsally.

Kaestneria pullata (O. P.-Cambridge, 1863)

Text Fig. 71b

Length: ♀: 1.9–2.5mm; ♂: 1.9–2.3mm. TmI 0.2–0.28

Similar in general appearance to *Bathyphantes approximatus*. Abdominal markings very variable, as in *K. dorsalis*.

DISTINGUISHING THE SPECIES

The two species are easily distinguished by their genitalia.

DISTRIBUTION

Both species are widely distributed throughout the British Isles – *K. dorsalis* usually on bushes, especially gorse, and *K. pullata* in wet habitats. *K. dorsalis* is perhaps a little less common than *K. pullata*.

Genus *Diplostyla* Emerton, 1882

TmI 0.21–0.28; TmIV absent; tibial spines 2–2–2–2; additionally there are lateral tibial spines and dorsal femoral spines.

The single British species in this genus was formerly included in *Bathyphantes*. Male similar to female in general appearance.

Diplostyla concolor (Wider, 1834)

Plate 219c; Text Fig. 71c

Length: ♀: 2.2–3mm; ♂: 2.2–2.6mm. TmI 0.21–0.28

Female as illustrated; legs yellow-brown. Male similar in general appearance. Epigyne with a long scape originating from the anterior margin (Text Fig. 71c). Male palp characteristic.

DISTRIBUTION

D. concolor is widespread throughout the British Isles and fairly common, occurring in a wide variety of situations in moss, grass and leaf-litter, but probably commonest on calcareous grassland.

Genus *Poeciloneta* Kulczynski, 1894

TmI 0.71–0.8; TmIV present; tibial spines 2–2–2–2; femur I with one prolateral spine.

The single British species in this genus has a highly distinctive general appearance, and the sexes are similar.

Poeciloneta globosa (Wider, 1834)

Plate 220; Text Fig. 71d

Length: ♀: 1.8–2.6mm; ♂: 1.75–2.4mm. TmI 0.71–0.8

Female as illustrated; male similar but with relatively smaller abdomen. Epigyne with a broad tongue (Text Fig. 71d), which varies somewhat in shape and degree of projection. Male palp a little variable, but characteristic.

DISTRIBUTION

P. globosa is widespread throughout the British Isles, occurring often on open ground in moss, grass, leaf-litter and under stones.

Genus *Drapetisca* Menge, 1866

TmI 0.94–0.98; TmIV present; tibial spines 2–2–2–2; several additional spines on tibiae, and each metatarsus has a dorsal spine.

The single British species in this genus has a highly characteristic general appearance, and the sexes are similar. Chelicerae fairly long, with five to six large teeth.

Drapetisca socialis (Sundevall, 1832)

Plate 221; Text Fig. 71e

Length: ♀♂: 3.2–4mm. TmI 0.94–0.98

Female as illustrated but abdomen often larger. Abdominal pattern variable; sometimes entirely dark, but usually some pattern is discernible. Male similar in general appearance. Epigyne and male palp highly characteristic (Text Fig. 71e).

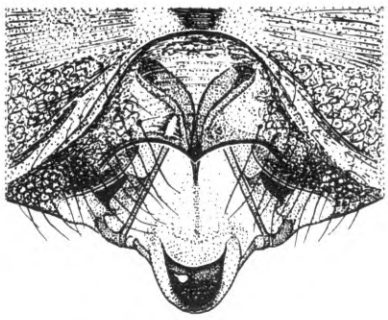
DISTRIBUTION

D. socialis is widespread throughout the British Isles, but almost always on the bark or in litter at the base of trees; sometimes locally abundant. Usually quite well camouflaged on bark.

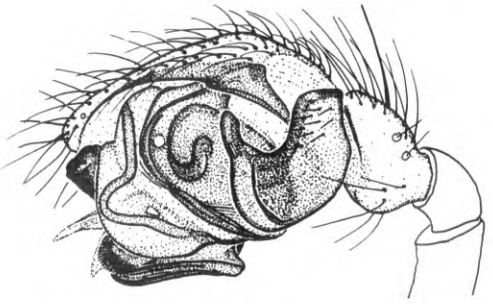
Text Figure 71

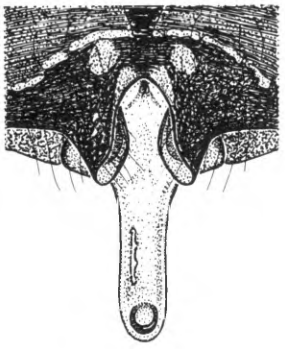
♀ epigynes

♂ palps

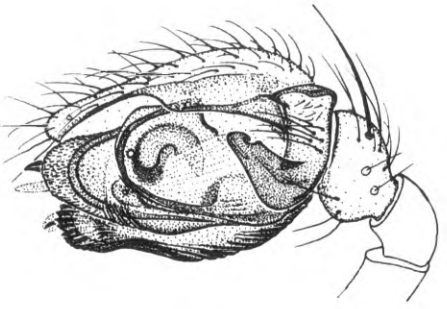


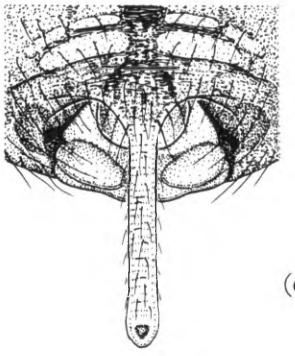
(**a**) *Kaestneria dorsalis*



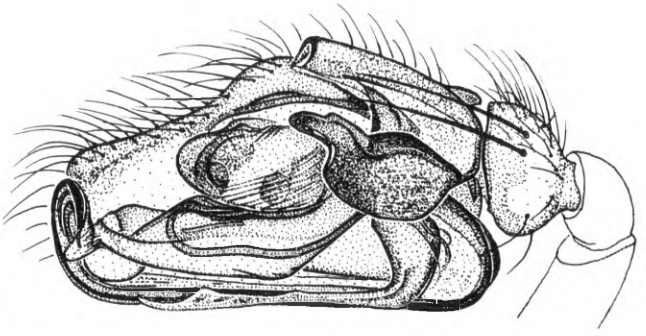


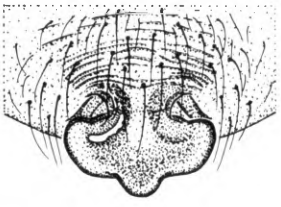
(**b**) *K. pullata*



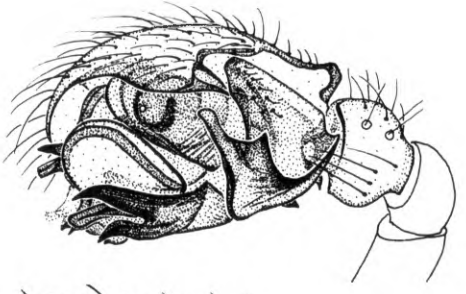


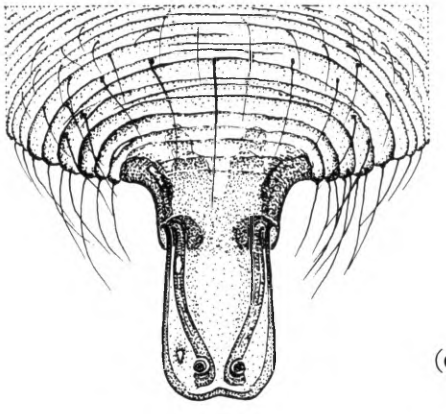
(**c**) *Diplostyla concolor*



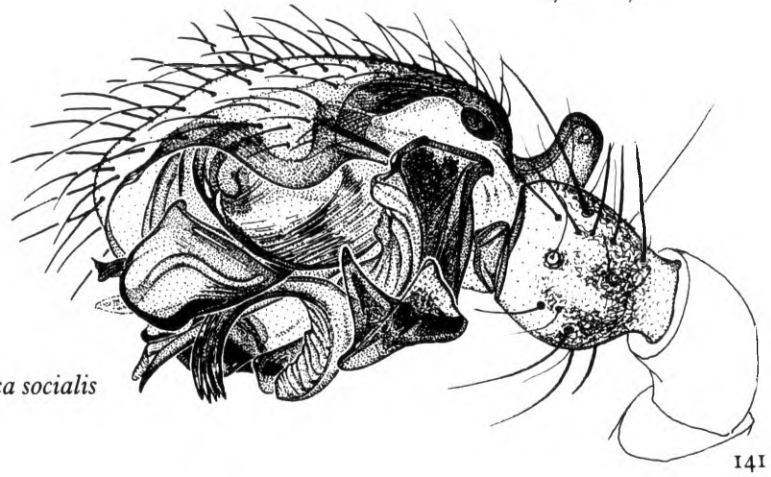


(**d**) *Poeciloneta globosa*





(**e**) *Drapetisca socialis*



Genus *Tapinopa* Westring, 1851

TmI 0.25–0.3; TmIV absent; tibial spines 2–2–2–2; with additional lateral tibial spines and femoral and metatarsal spines.

The single British species in this genus has a highly characteristic appearance, and the sexes are similar. Legs relatively short. Chelicerae have five to six long teeth.

Tapinopa longidens (Wider, 1834)

Plate 222; Text Fig. 72a

Length: ♀: 2.5–4.5mm; ♂: 2.5–4.3mm. TmI 0.25–0.3

The female illustrated has a relatively small abdomen. Note the rather elongate carapace which overhangs the chelicerae anteriorly. Male similar but head region of carapace furnished with numerous stout hairs. Epigyne variable but characteristic (Text Fig. 72a). Male palp highly characteristic; the tarsal projection may be clearly bifid, as illustrated, or the smaller ventrolateral projection may be almost completely absent.

DISTRIBUTION

T. longidens is widely distributed throughout the British Isles, and may be locally abundant in a variety of habitats. It is perhaps commonest in woods, and spins a small, glistening sheet web, usually near ground level.

Genus *Floronia* Simon, 1887

TmI 0.18–0.22; TmIV absent; tibial spines 2–2–2–2; with numerous additional tibial, femoral and metatarsal spines.

The single British species in this genus has a highly characteristic appearance, which is similar in both sexes. Chelicerae have five to six large teeth. Legs relatively long. Male carapace slightly elevated.

Floronia bucculenta (Clerck, 1757)

Plate 223; Text Fig. 72b,c

Length: ♀♂: 4–5mm. TmI 0.18–0.22

Female as illustrated. Male similar but with less globular abdomen; carapace elevated in head region and furnished with stout hairs (Text Fig. 72c – note that this carapace is illustrated at a slightly smaller magnification than others). Epigyne highly characteristic (Text Fig. 72b), as also is male palp.

DISTRIBUTION

F. bucculenta is widely distributed throughout the British Isles, but there are relatively few records from Scotland and Ireland. It occurs on bushes and low vegetation in a variety of habitats.

Genus *Taranucnus* Simon, 1884

TmI 0.2–0.25; TmIV absent; tibial spines 2–2–2–2; with numerous additional femoral, tibial and metatarsal spines.

The single British species in this genus has an abdominal pattern, relatively long legs, and resembles spiders of the genus *Lepthyphantes*. Males have the ocular region very slightly raised, but not forming a lobe.

Taranucnus setosus (O. P.-Cambridge, 1863)

Plate 219d; Text Fig. 73a

Length: ♀: 2.7–3.4mm; ♂: 2.5–3.2mm. TmI 0.2–0.25

Male as illustrated; legs orange-brown; note the ocular region, which is slightly elevated and furnished with a few stout hairs. Female similar but usually has a larger abdomen; pattern sometimes like that of male illustrated (Plate 219d), but occasionally like that of *Lepthyphantes zimmermanni* (Plate 229g). Epigyne and male palp characteristic (Text Fig. 73a).

DISTRIBUTION

T. setosus is a rather uncommon species, which has a widespread but local distribution throughout England and Wales; also recorded from south-west Ireland. It occurs in a variety of situations, but usually in wet habitats.

Genus *Labulla* Simon, 1884

TmI 0.25–0.3 (occasionally absent in male); TmIV absent; tibial spines 2–2–2–2; with numerous additional lateral and dorsal spines on femora, tibiae, patellae and metatarsi.

The single British species in this genus has an unmistakable general appearance and genitalia.

Labulla thoracica (Wider, 1834)

Plates 224, 232b; Text Figs 73b, 74a

Length: ♀: 3.4–6.4mm; ♂: 4.5–5.5mm. TmI 0.25–0.3

General appearance and genitalia characteristic. Even in the field, male palps are strikingly large structures.

DISTRIBUTION

L. thoracica is widespread and common throughout the British Isles. It spins a sheet web at the base of trees, amongst vegetation on overhanging banks, and in a variety of other fairly shaded habitats.

Genus *Stemonyphantes* Menge, 1866

TmI 0.25–0.35; TmIV present; tibial spines 2–2–2–2; with numerous additional lateral and dorsal spines on femora, tibiae, patellae and metatarsi.

The single British species in this genus has an unmistakable general appearance and genitalia.

Stemonyphantes lineatus (Linnaeus, 1758)

Plate 225; Text Figs 73c, 74b

Length: ♀: 4.4–6.4mm; ♂: 4–5mm. TmI 0.25–0.35

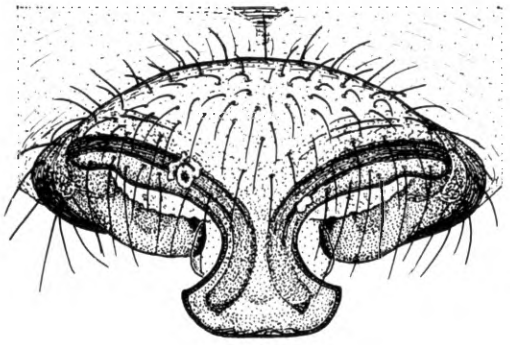
Female as illustrated; abdomen varies in colour and may have a green, yellow or pink tinge to the pale areas; the three longitudinal dark lines may be continuous or broken into a series of small spots. Male similar but with relatively smaller abdomen; metatarsus I slightly swollen and sinuously curved. Epigyne characteristic (Text Fig. 73c), as also is male palp, which bears a striking resemblance to a horse's head (Text Fig. 74b).

DISTRIBUTION

S. lineatus is widespread and common throughout the British Isles, and occurs in a variety of habitats. Usually found at ground level, in litter or under stones, but occasionally higher up in vegetation.

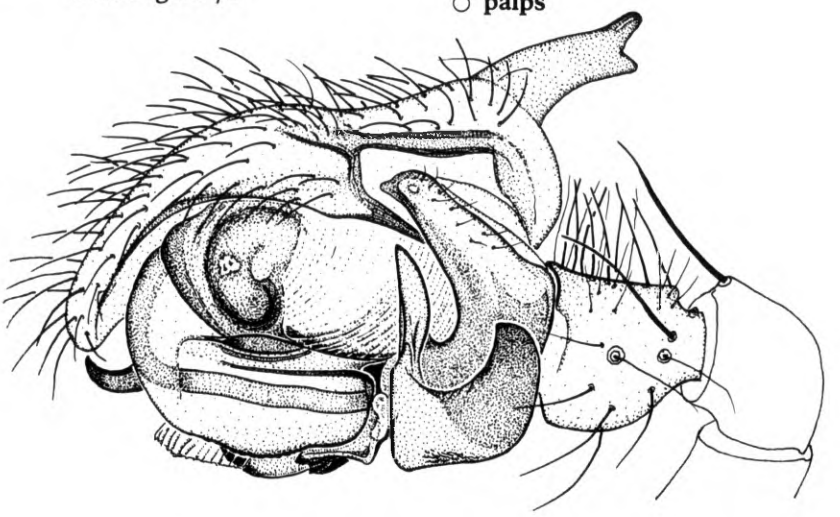
Text Figure 72

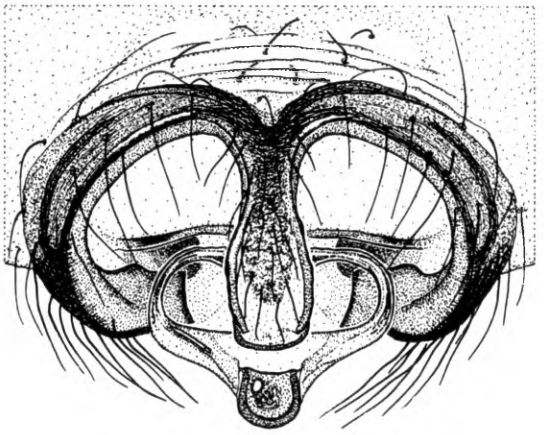
♀ epigynes



(a) *Tapinopa longidens*

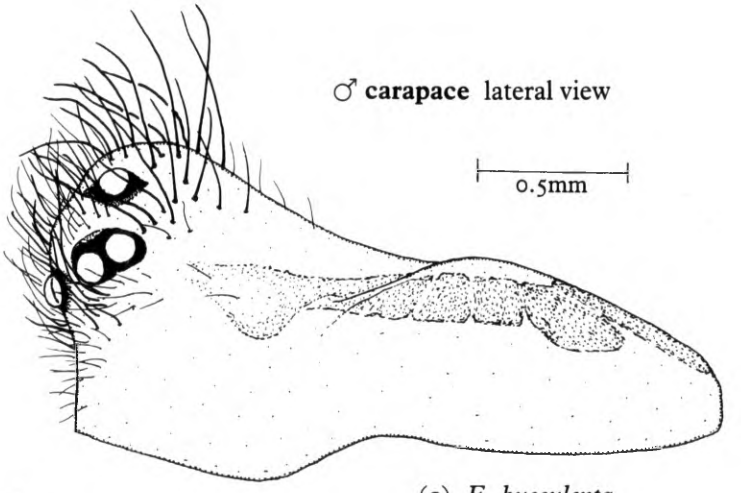
♂ palps



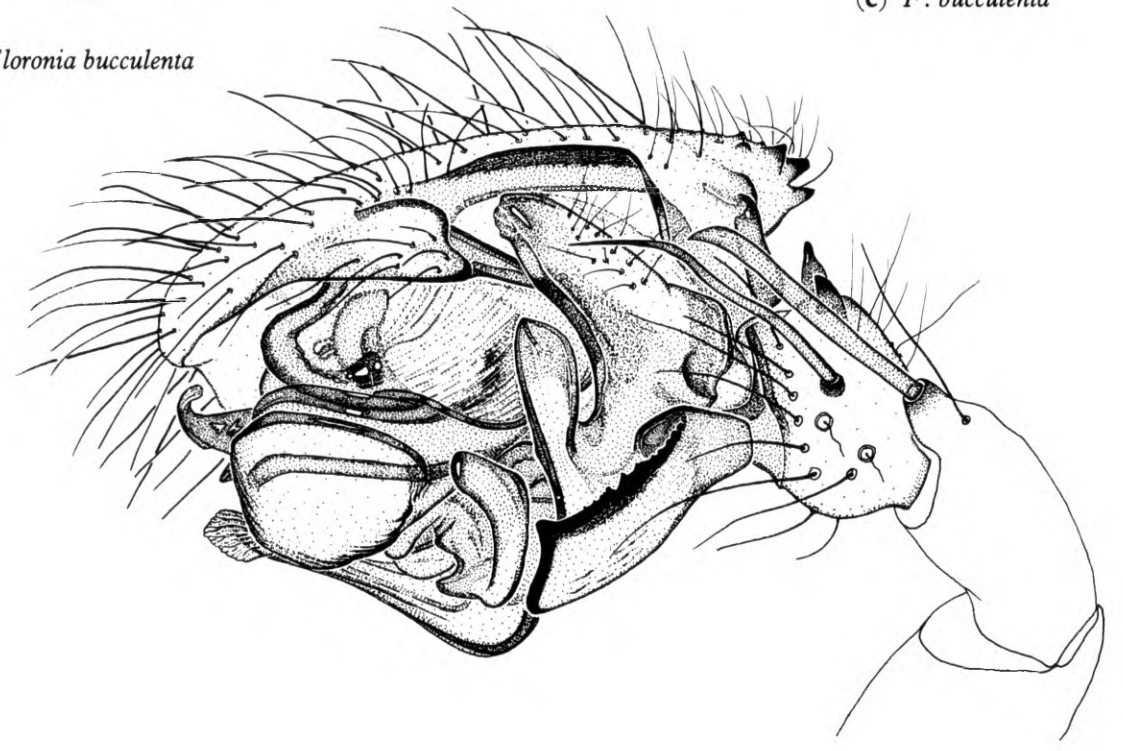


(b) *Floronia bucculenta*

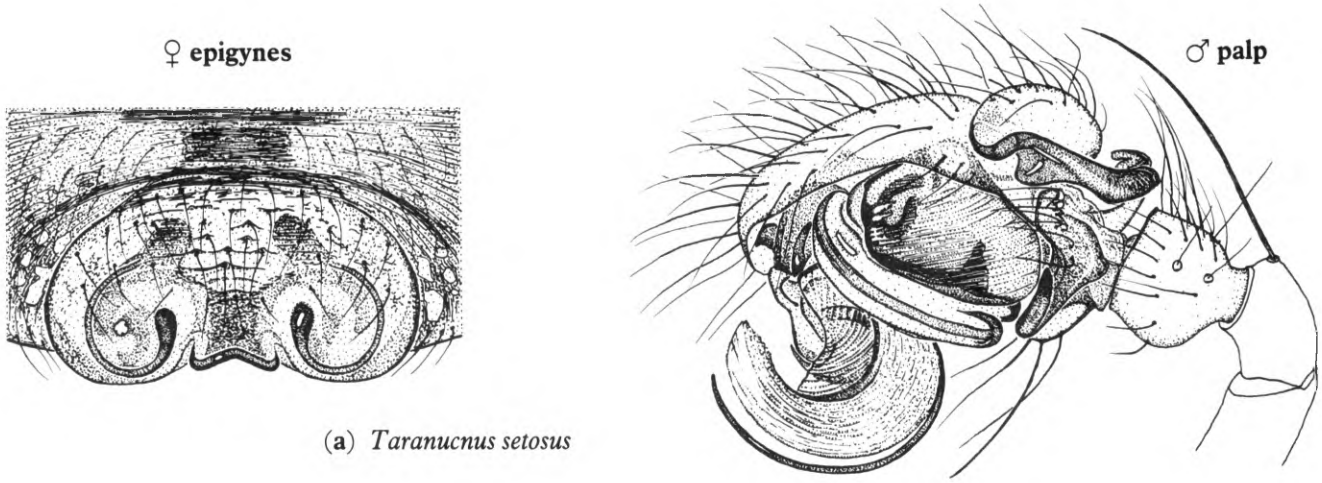
♂ carapace lateral view



(c) *F. bucculenta*

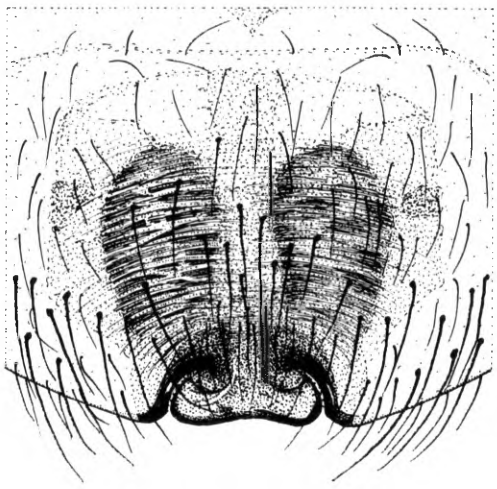


Text Figure 73



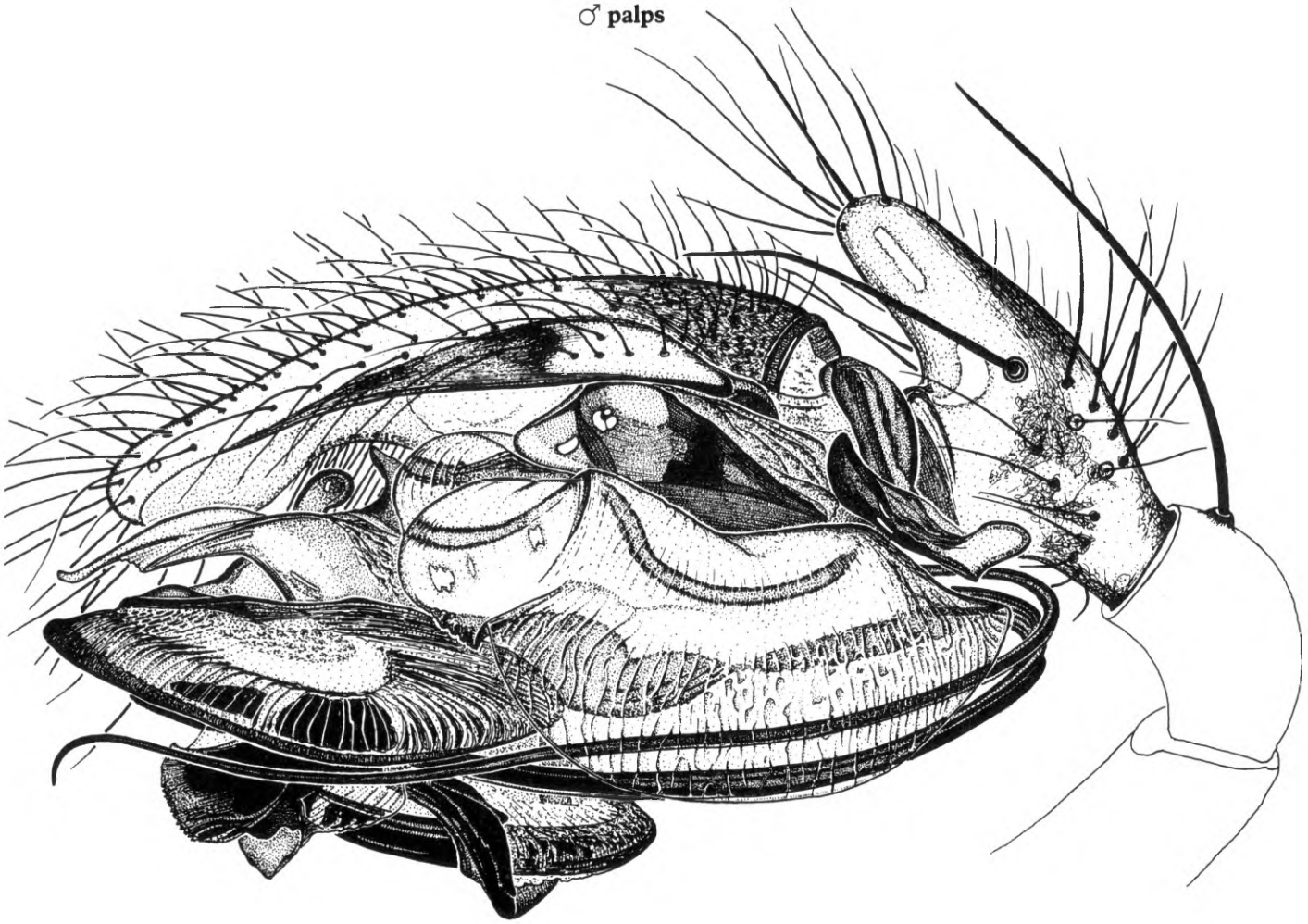
(**a**) *Taranucnus setosus*

(**b**) *Labulla thoracica*

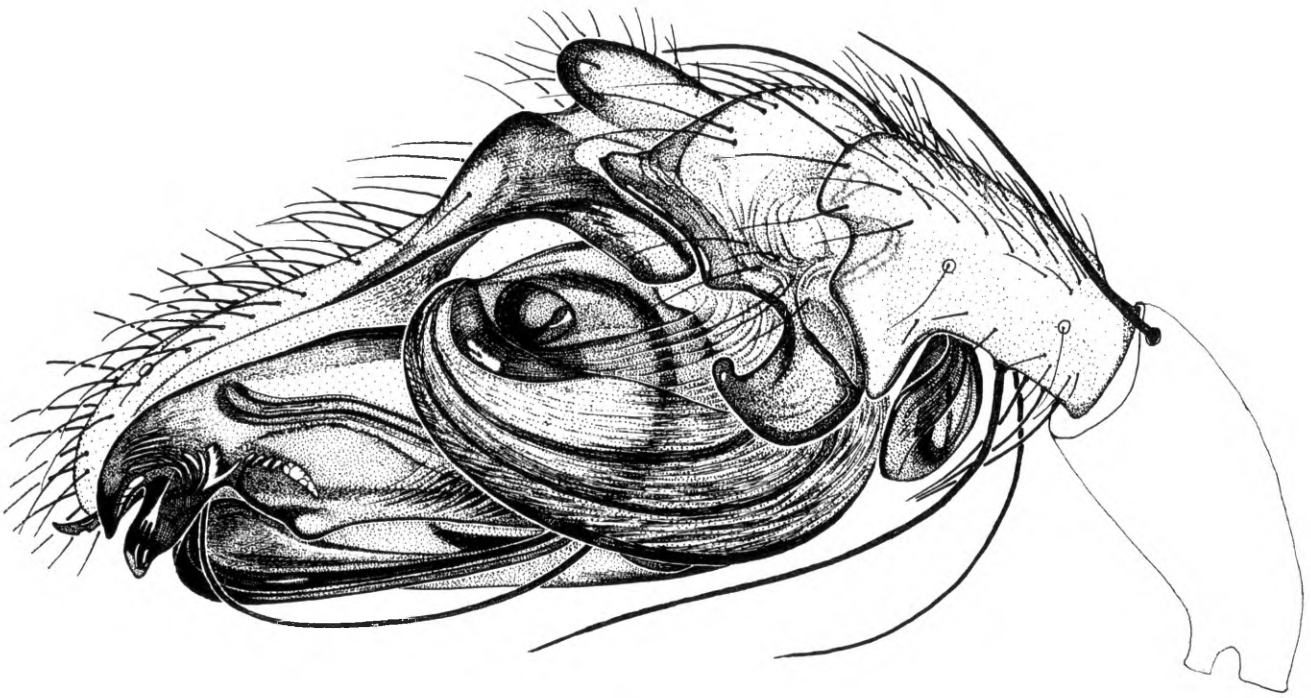


(**c**) *Stemonyphantes lineatus*

Text Figure 74
♂ palps

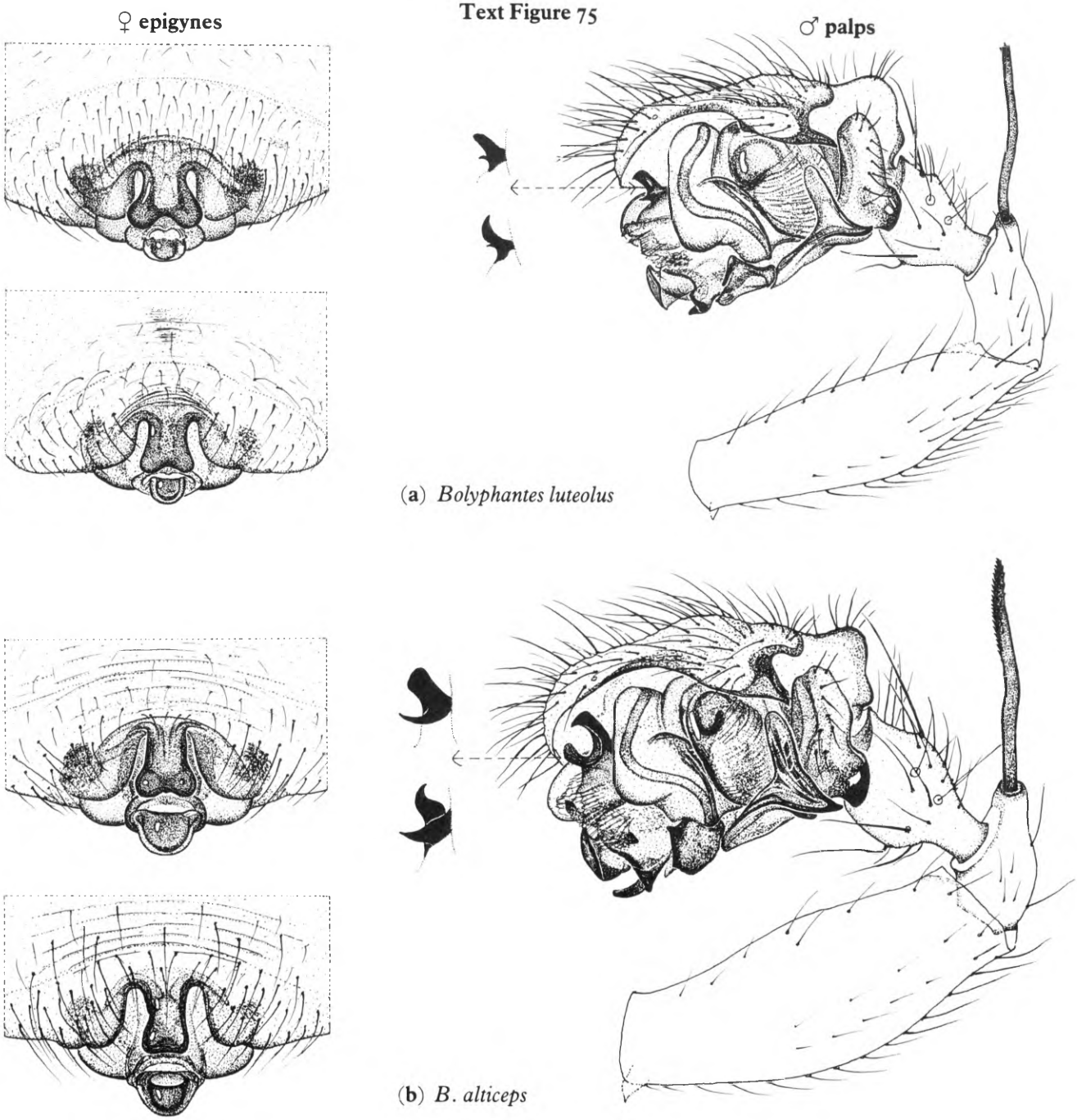


(**a**) *Labulla thoracica*

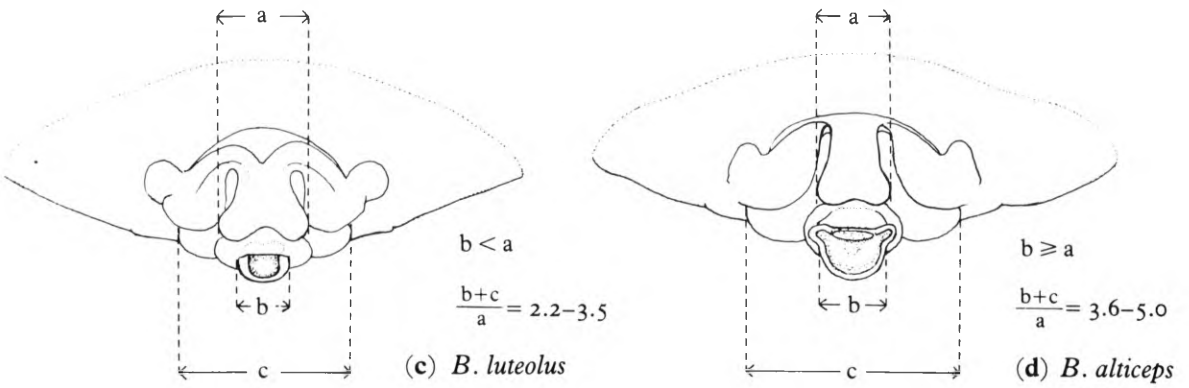


(**b**) *Stemonyphantes lineatus*

Text Figure 75



distinguishing *Bolyphantes* epigynes



Genus *Bolyphantes* C. L. Koch, 1837

TmI 0.15–0.2; TmIV absent; tibial spines 2–2–2–2; with numerous additional lateral and dorsal spines on femora, tibiae, patellae and metatarsi.

There are two British species in this genus, the males of which have the head raised into a rounded conical protuberance. An abdominal pattern is present, and the legs are long and thin.

Bolyphantes luteolus (Blackwall, 1833)

Plate 226; Text Figs 75a,c, 76a

Length: ♀: 3.5–4mm; ♂: 3–3.5mm. TmI 0.15–0.2

Female as illustrated; in some specimens the darker parts of abdomen may have a yellowish or greenish tinge, rather than being pinkish brown. Male similar, but with head region of carapace elevated (Text Fig. 76a).

Bolyphantes alticeps (Sundevall, 1832)

Text Figs 75b,d, 76b

Length: ♀: 3.5–4.5mm; ♂: 3–4mm. TmI 0.15–0.2

Very similar in general appearance to *B. luteolus*. Male with head region of carapace elevated (Text Fig. 76b).

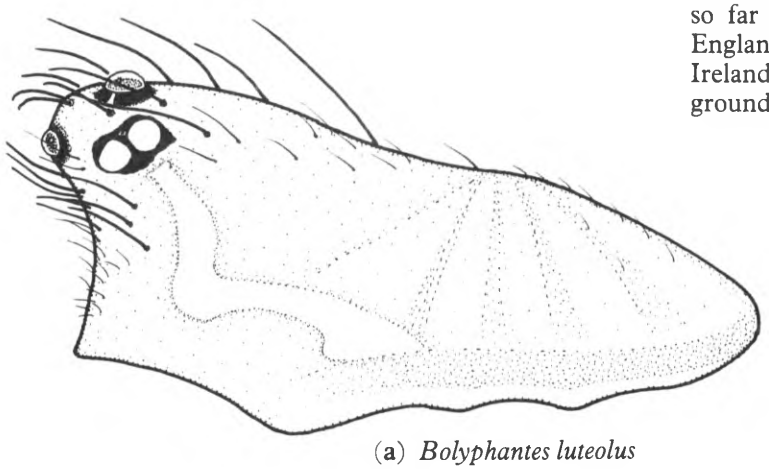
DISTINGUISHING THE SPECIES

B. luteolus and *B. alticeps* are very similar to one another in both somatic and genitalic structure. They have probably been frequently confused. Epigynes extremely variable in both species, as illustrated (Text Figs 75a,b), but are reliably separable by consideration of the dimensions and formulae given in Text Figs 75c,d. Male palps also variable (Text Figs 75a,b); the most useful single character distinguishing them is the form of the stout patellar spine. In *B. luteolus* the tip of the spine appears like the jagged edge of a broken broomstick, whereas in *B. alticeps* the distal third of the spine is tapered and serrated. Males also separable by the form of the carapace (Text Figs 76a,b), which is more strongly elevated in *B. alticeps* and produced into a distinct snout between the anterior and posterior median eyes.

Some females of *B. luteolus* could easily be confused with those of *Lepthyphantes expunctus* (Text Fig. 81a); *L. expunctus*, however, is a smaller spider and differs in the position of TmI.

DISTRIBUTION

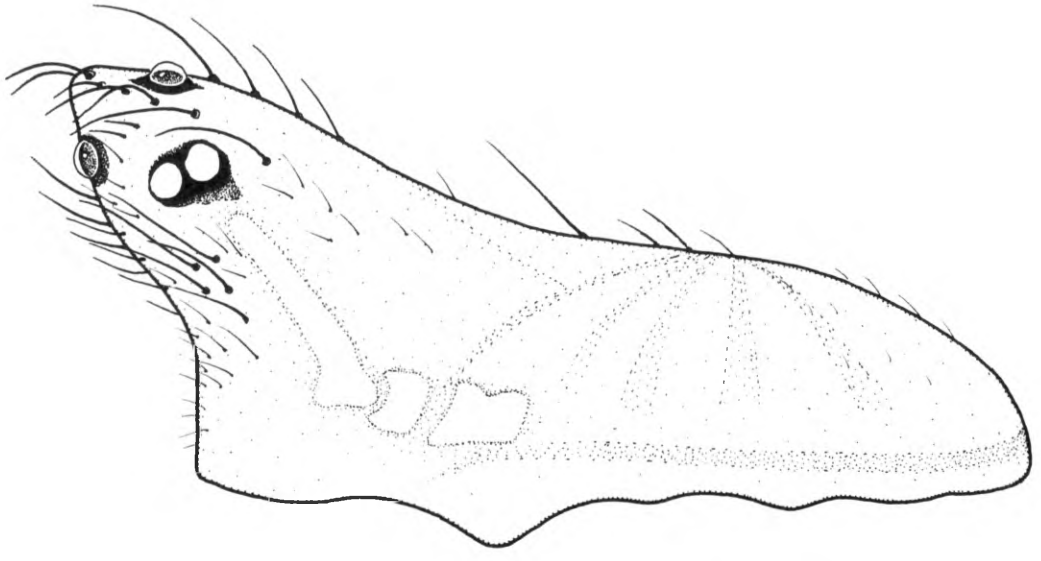
B. luteolus is widespread throughout the British Isles but is much commoner in the north. It occurs in a variety of situations, on bushes, grass and other vegetation, and at ground level under stones and in leaf-litter. *B. alticeps* has so far been recorded from the more northern parts of England and Wales, and from Scotland, but not from Ireland. It also occurs in a variety of habitats, both at ground level and in vegetation.



(a) *Bolyphantes luteolus*

Text Figure 76

♂ **carapaces** lateral view



(b) *B. alticeps*

Genus *Lepthyphantes* Menge, 1866

TmI 0.12–0.86; TmIV absent; tibial spines 2–2–2–2; with numerous additional lateral and dorsal spines on femora, tibiae, patellae and metatarsi.

There are twenty-one British species currently included in this genus. Males are similar in general appearance to females, and do not have the head raised into a lobe. Legs relatively long and slender in both sexes.

TAXONOMIC NOTE

Lepthyphantes umbraticola (Keyserling, 1866) (= *L. audax* Sörensen, 1898) was shown to be a junior synonym of *L. complicatus* (Emerton, 1882) by Holm (1958). *L. carri* Jackson, 1913 is a junior synonym of *L. midas* Simon, 1884. This synonymy was discovered and mentioned by Crocker (1979) and a further paper will be published (Crocker, in prep.). *L. midas* is almost certainly not congeneric with other British species included in *Lepthyphantes*.

L. expunctus is, in several respects, closer to the genus *Bolyphantes* (e.g. epigynes and male palps show some common features, and the whitish abdominal patterns are very similar), but further work is needed to clarify this.

Lepthyphantes nebulosus (Sundevall, 1830)

Plate 227; Text Fig. 77a

Length: ♀: 3.4–4.6mm; ♂: 3.4–4.2mm. TmI 0.12–0.17

Female as illustrated; abdominal pattern variable, and the dark bars may be darker or paler; dark, bifurcate median line on carapace characteristic. Male similar in general appearance.

Lepthyphantes leprosus (Ohlert, 1865)

Plate 229a,b; Text Fig. 77b

Length: ♀: 2.5–4mm; ♂: 2.5–3.5mm. TmI 0.18–0.23

Female and male as illustrated; legs yellow-brown to brown.

Lepthyphantes minutus (Blackwall, 1833)

Plate 228; Text Fig. 77c

Length: ♀: 3.5–4mm; ♂: 3–4mm. TmI 0.18–0.23

Female as illustrated; male similar, but abdomen occasionally like that of *L. leprosus* male (Plate 229b).

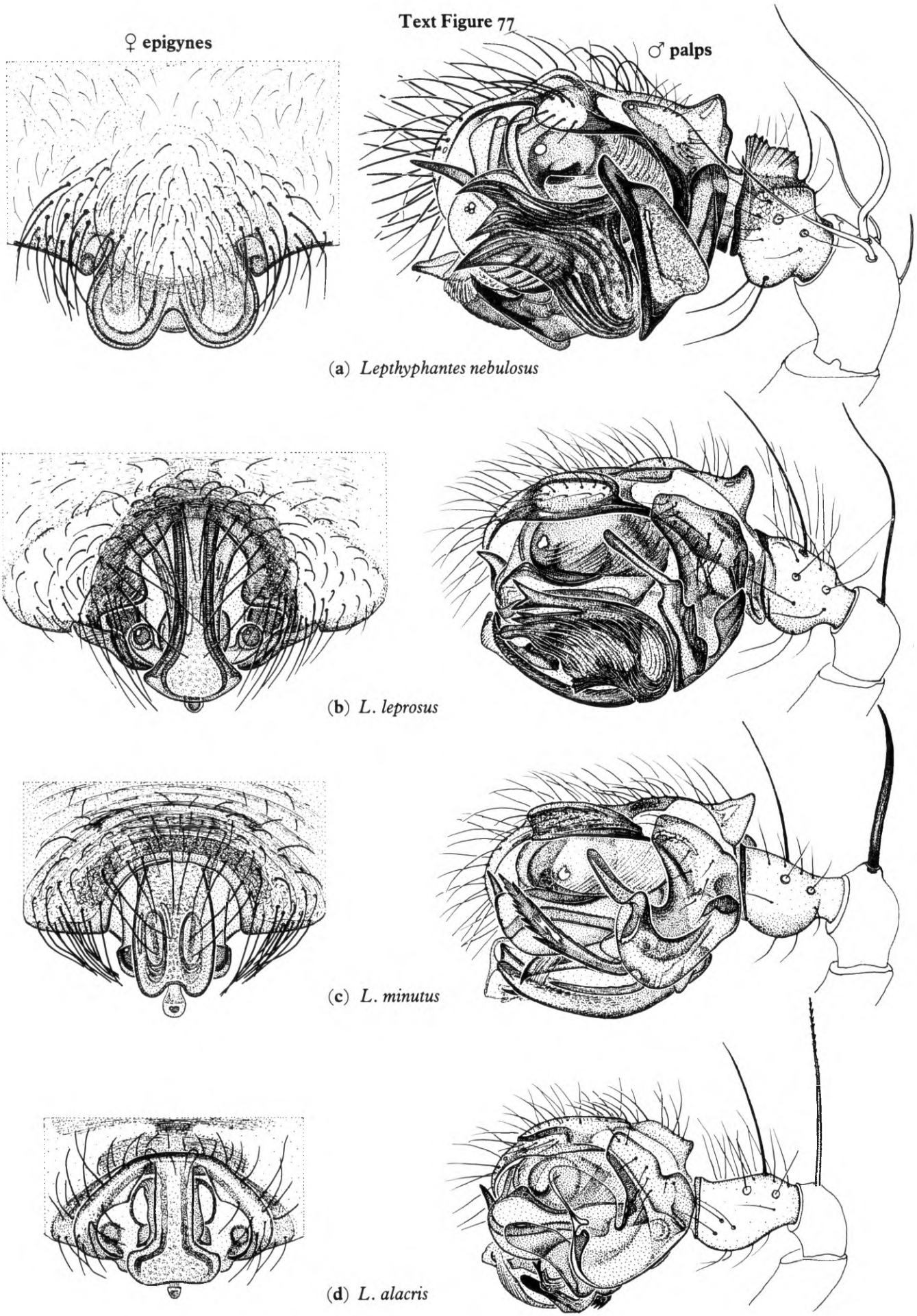
Lepthyphantes alacris (Blackwall, 1853)

Plate 229c; Text Fig. 77d

Length: ♀: 2.6–3.3mm; ♂: 2.4–2.7mm. TmI 0.18–0.22

Female abdomen as illustrated; carapace and legs yellow-brown. Male similar but with slimmer abdomen.

Text Figure 77



(a) *Lepthyphantes nebulosus*

(b) *L. leprosus*

(c) *L. minutus*

(d) *L. alacris*

Lepthyphantes whymperi F. O. P.-Cambridge, 1894
Text Fig. 78a

Length: ♀: 2.7–3.2mm; ♂: 2.5–3.2mm. TmI 0.22–0.25

Carapace and legs yellow-brown; abdomen grey-black with no clear pattern. Males seem to exhibit dimorphism with regard to the hairs on metatarsus I: some specimens have numerous, very long, tactile hairs, and others have only a few, very short hairs. No intermediates were seen in the relatively small sample examined.

Lepthyphantes obscurus (Blackwall, 1841)
Plate 229d; Text Fig. 78b

Length: ♀: 1.9–2.4mm; ♂: 1.8–2.3mm. TmI 0.83–0.86

Female abdomen as illustrated; carapace and legs brown to dark brown. Male similar, but abdomen sometimes uniformly grey-black.

Lepthyphantes tenuis (Blackwall, 1852)
Plate 229h; Text Fig. 78c

Length: ♀: 2.1–3.2mm; ♂: 2–2.6mm. TmI 0.18–0.22

Female abdomen as illustrated; carapace and legs yellow-brown. Male similar in general appearance.

Lepthyphantes zimmermanni Bertkau, 1890
Plate 229g; Text Fig. 78d

Length: ♀: 2.1–3.2mm; ♂: 2–2.6mm. TmI 0.18–0.22

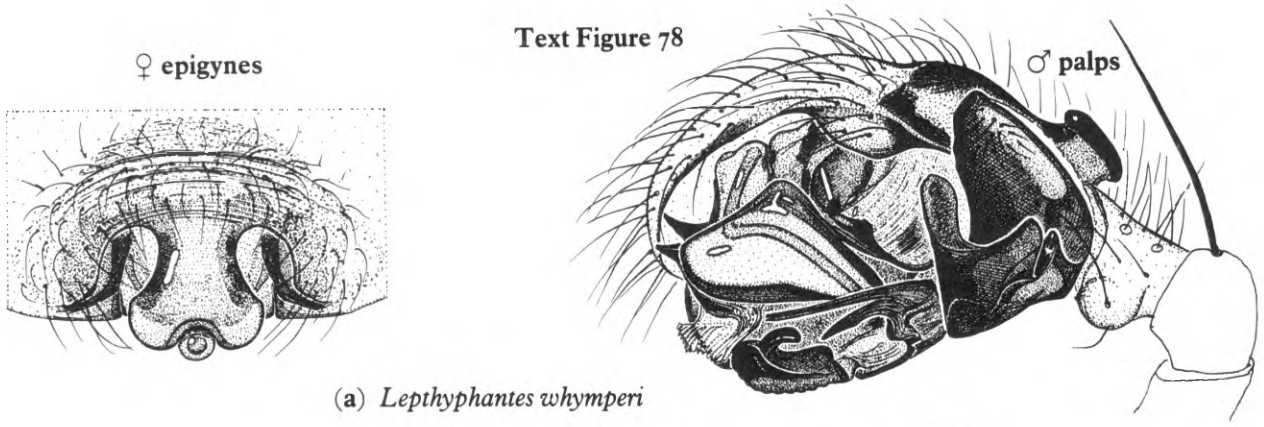
Female abdomen as illustrated; carapace and legs yellow-brown. Male similar in general appearance.

Lepthyphantes cristatus (Menge, 1866)
Plate 229e, Text Fig. 78e

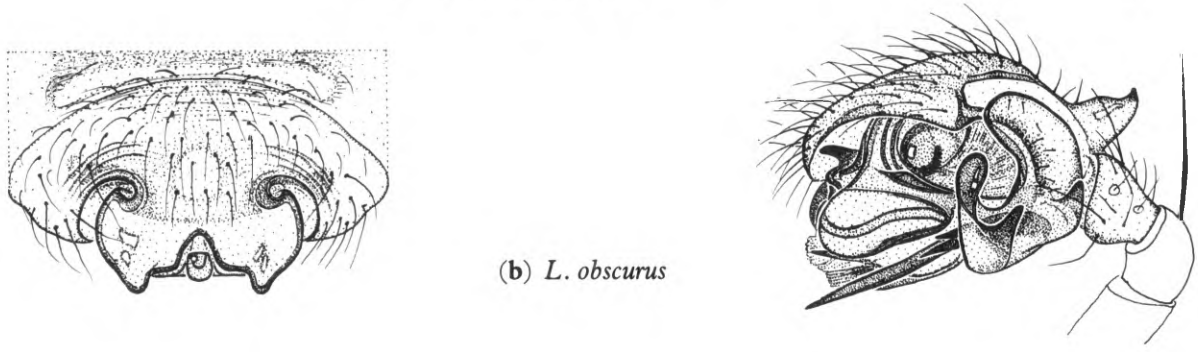
Length: ♀: 2–2.8mm; ♂: 2–2.5mm. TmI 0.2–0.27

Female abdomen as illustrated; carapace and legs yellow-brown. Male similar in general appearance.

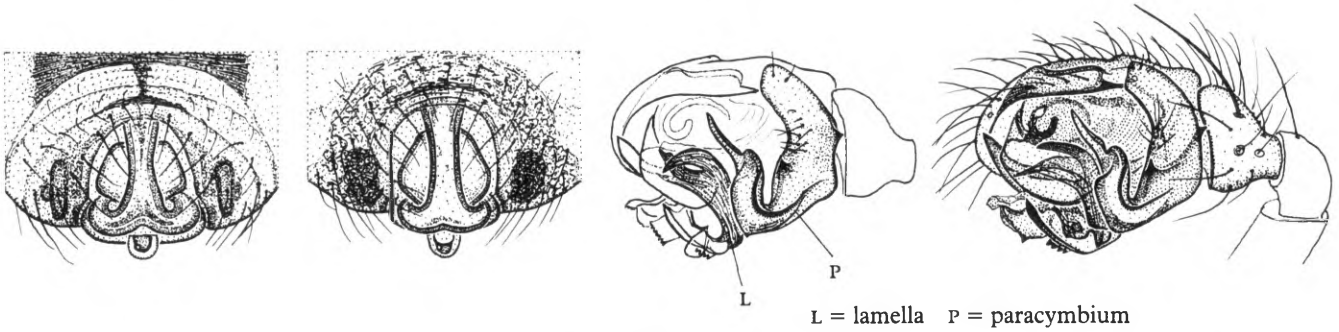
Text Figure 78



(a) *Lepthyphantes whymperi*

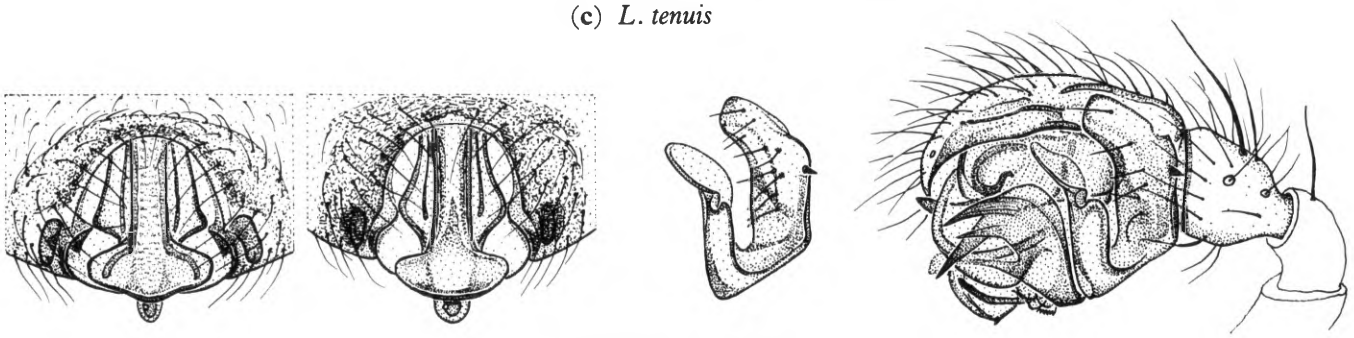


(b) *L. obscurus*

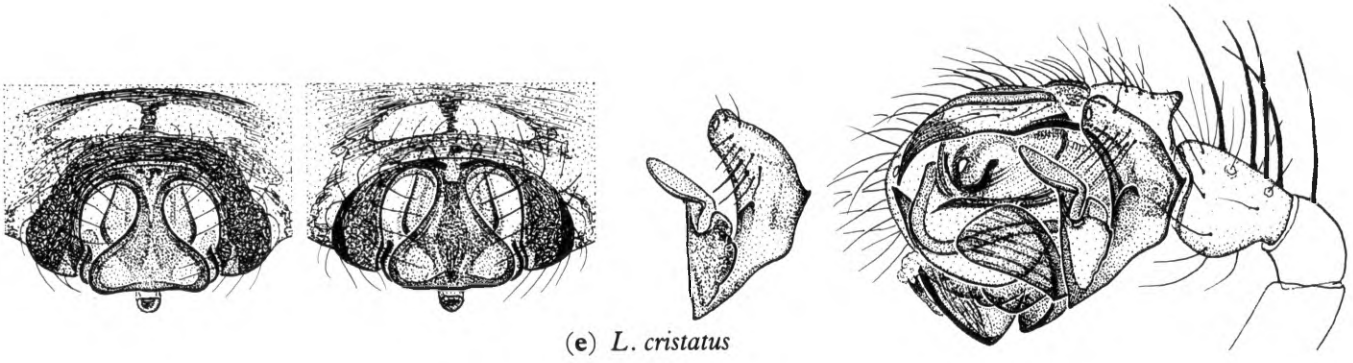


L = lamella P = paracymbium

(c) *L. tenuis*



(d) *L. zimmermanni*



(e) *L. cristatus*

Lepthyphantes mengei Kulczynski, 1887
Plate 229f; Text Fig. 79a
Length: ♀: 1.6–2.2mm; ♂: 1.5–2mm. TmI 0.18–0.22
Female abdomen as illustrated; carapace and legs yellow-brown. Male similar in general appearance.

Lepthyphantes flavipes (Blackwall, 1854)
Plate 229i; Text Fig. 79b
Length: ♀: 1.9–2.5mm; ♂: 1.8–2mm. TmI 0.18–0.22
Female abdomen as illustrated; occasionally uniformly grey-black; carapace and legs yellow-brown. Male similar in general appearance.

Lepthyphantes tenebricola (Wider, 1834)
Text Fig. 79c
Length: ♀♂: 2.4–3mm. TmI 0.2–0.25
Female abdomen like that of *L. zimmermanni*; carapace brown, legs yellow-brown. Male similar in general appearance.

Lepthyphantes ericaeus (Blackwall, 1853)
Plate 229j; Text Fig. 79d
Length: ♀: 1.4–1.9mm; ♂: 1.3–1.6mm. TmI 0.15–0.19
Female abdomen pale grey to black with no pattern; carapace and legs yellow-brown. Male similar in general appearance.

Lepthyphantes pallidus (O. P.-Cambridge, 1871)
Text Fig. 79e
Length: ♀: 1.6–2.3mm; ♂: 1.6–2mm. TmI 0.17–0.2
Female abdomen pale yellowish grey to dark grey, occasionally with very faint chevrons; carapace and legs yellow-brown. Male similar in general appearance.

Lepthyphantes pinicola Simon, 1884
Text Fig. 80a
Length: ♀♂: 1.9–2.2mm. TmI 0.21–0.24
Female abdomen unicolorous grey-black; carapace and legs yellow-brown. Male similar in general appearance.

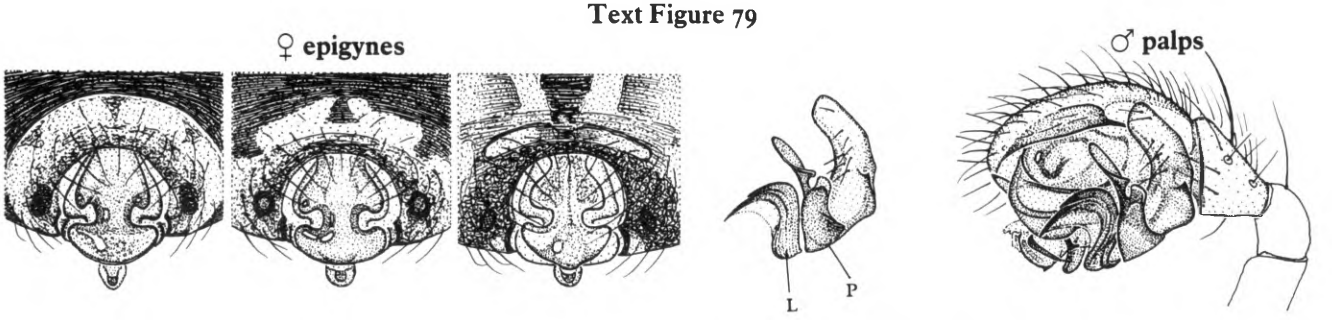
Lepthyphantes insignis O. P.-Cambridge, 1913
Text Fig. 80b
Length: ♀: 1.6–2.5mm; ♂: 1.6–2mm. TmI 0.16–0.18
Female abdomen pale grey with fairly long hairs; carapace and legs yellow-brown. Male similar in general appearance.

Lepthyphantes angulatus (O. P.-Cambridge, 1881)
Text Fig. 80c
Length: ♀♂: 1.8–2.3mm. TmI 0.17–0.24
Female abdomen grey-black; carapace and legs yellow-brown. Male similar in general appearance.

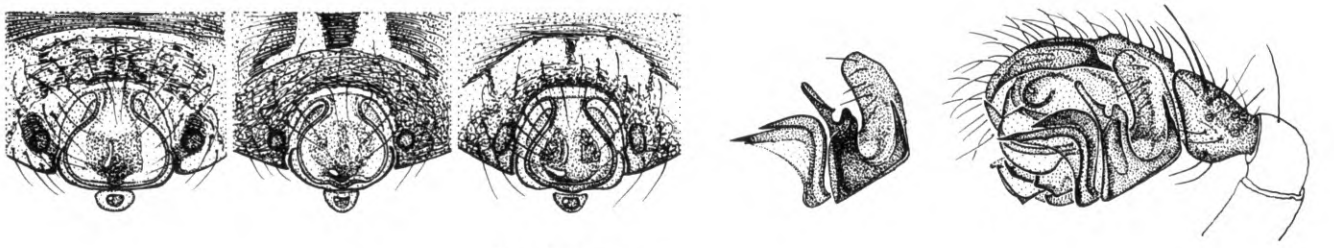
Lepthyphantes antroniensis Schenkel, 1933
Text Fig. 80d
Length: ♀: 1.65–1.8mm; ♂: 1.5–1.6mm. TmI 0.19–0.22
Female abdomen grey-black; carapace and legs yellow-brown, sometimes suffused with black. Male similar in general appearance.

Lepthyphantes complicatus (Emerton, 1882)
(= *L. umbraticola* (Keyserling) and *L. audax* Sörensen – see Taxonomic Note, p. 148)
Text Fig. 80e
Length: ♀♂: 1.7–2.2mm. TmI 0.18–0.22
Female abdomen grey; carapace and legs yellow-brown. Male similar in general appearance.

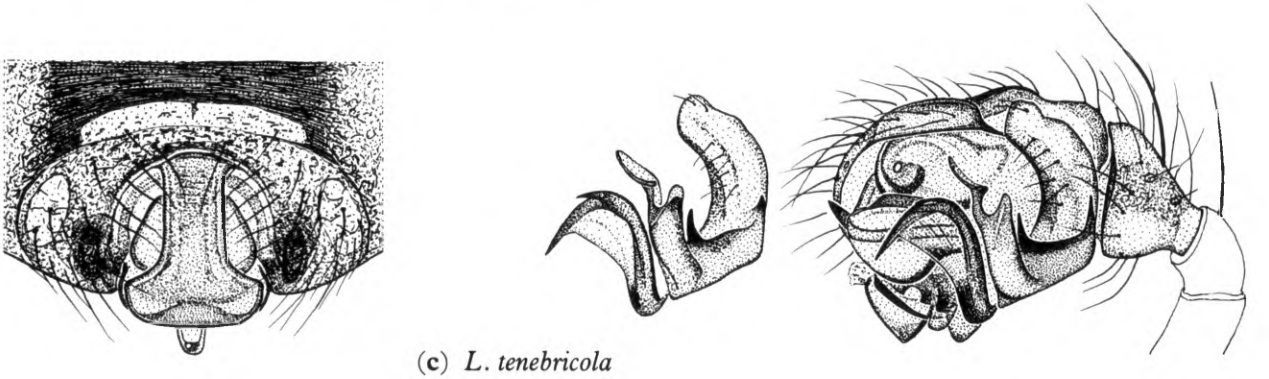
Text Figure 79



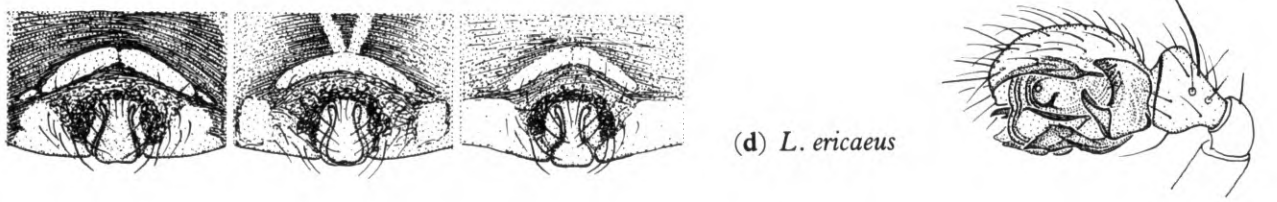
(**a**) *Lepthyphantes mengei* L = lamella P = paracymbium



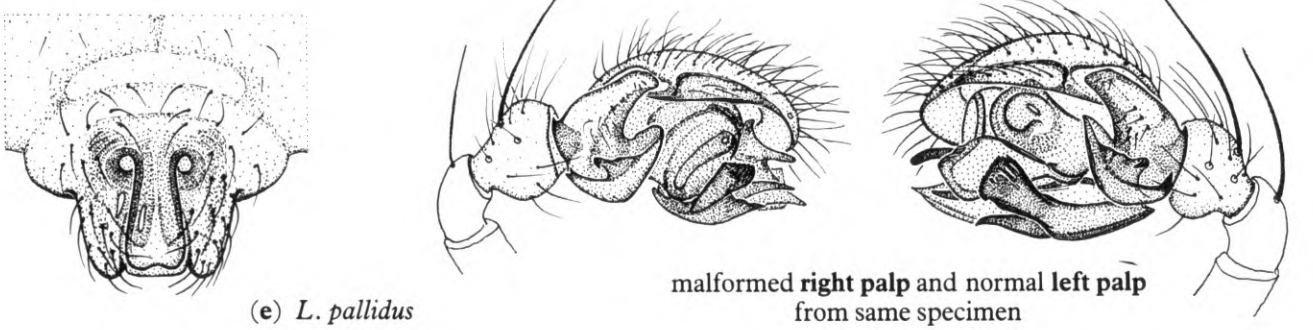
(**b**) *L. flavipes*



(**c**) *L. tenebricola*



(**d**) *L. ericaeus*

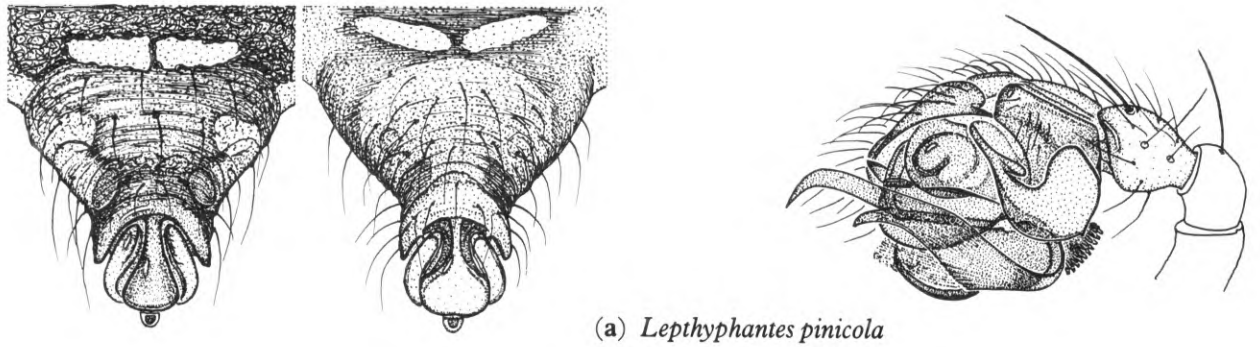


(**e**) *L. pallidus*

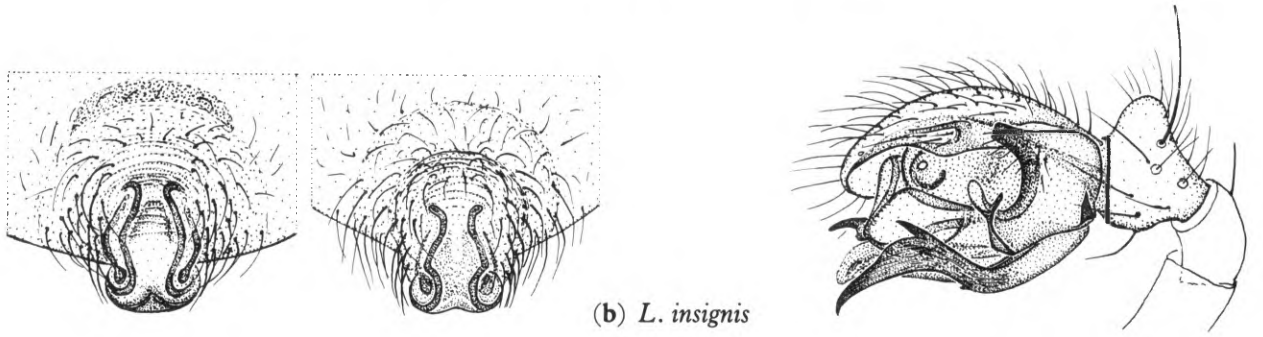
malformed **right palp** and normal **left palp** from same specimen

Text Figure 80

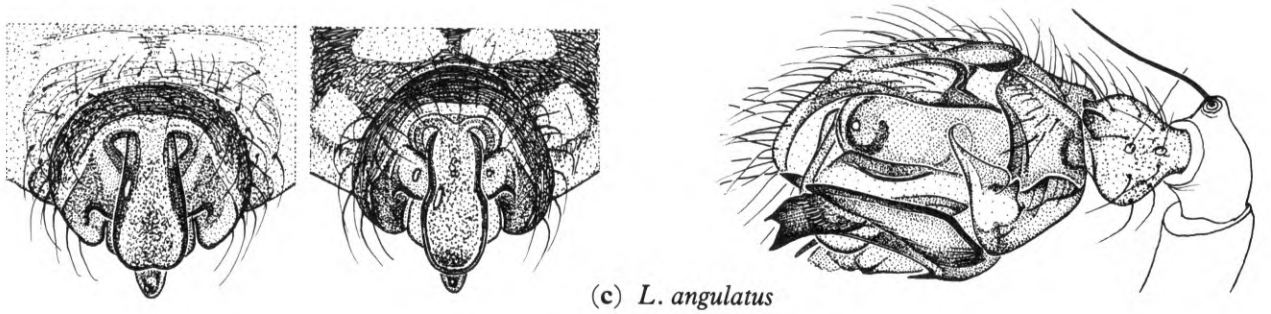
♀ epigynes ♂ palps



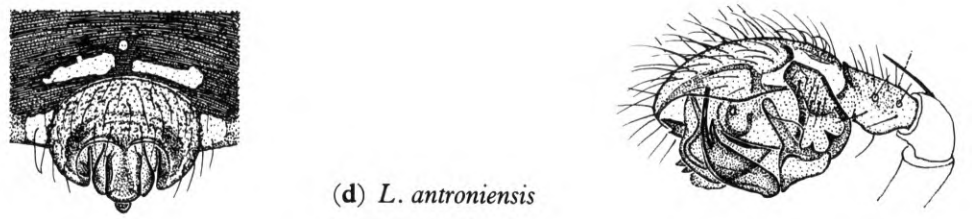
(a) *Lepthyphantes pinicola*



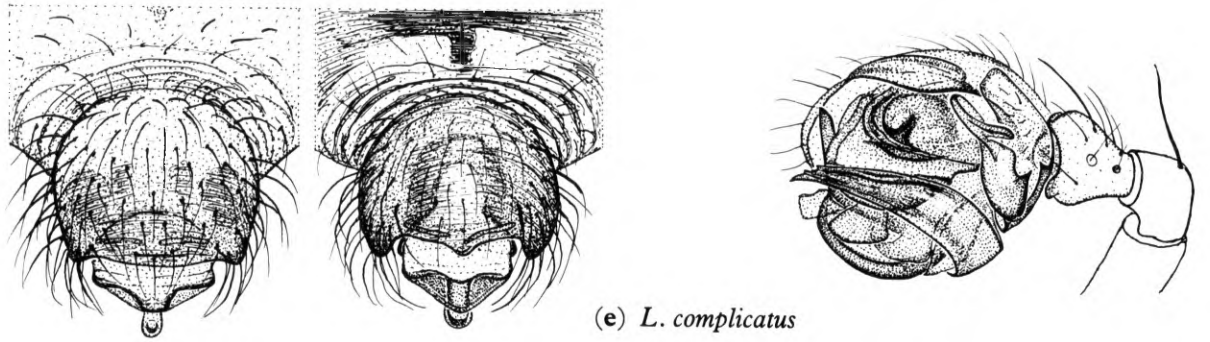
(b) *L. insignis*



(c) *L. angulatus*

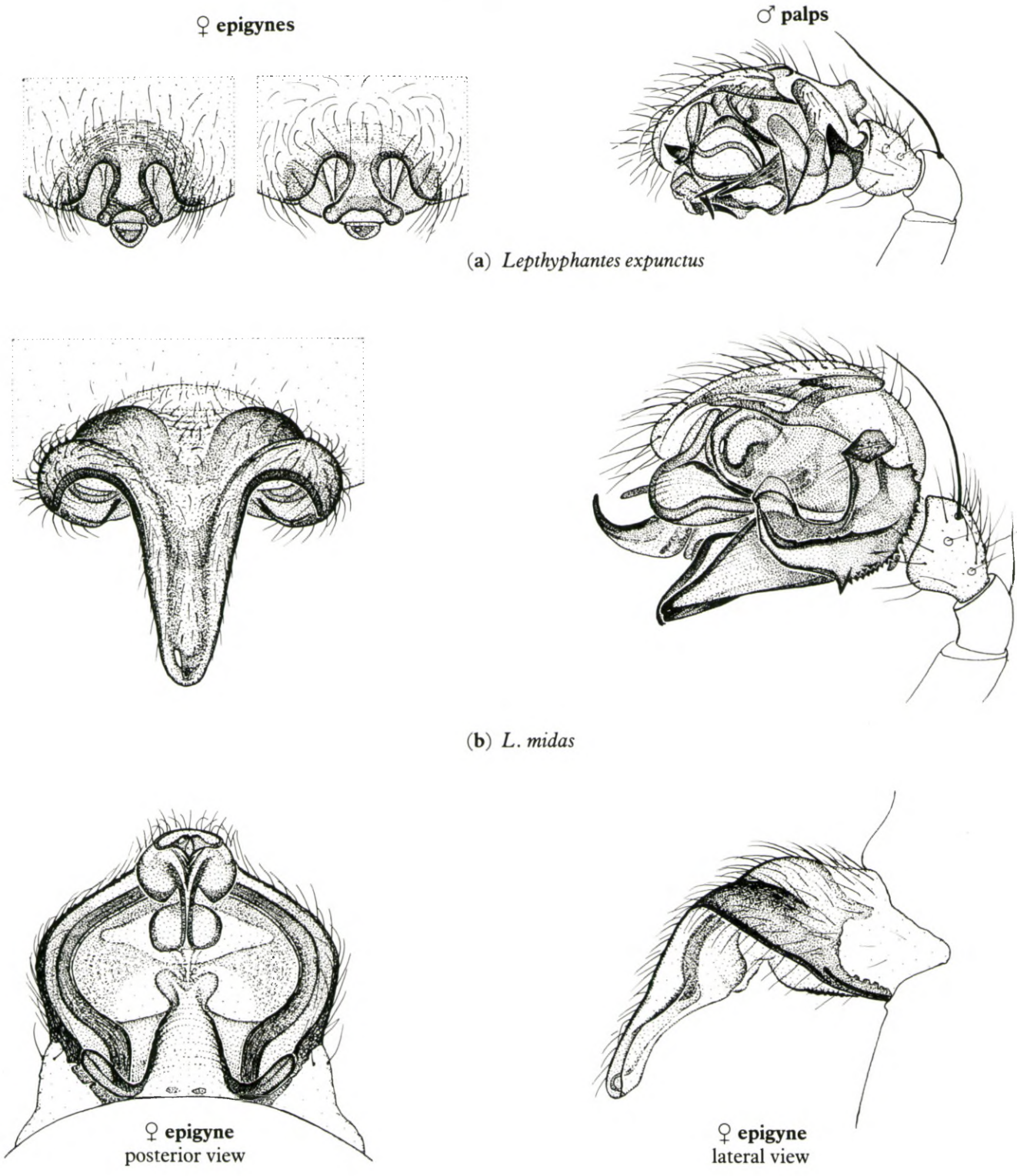


(d) *L. antroniensis*



(e) *L. complicatus*

Text Figure 81



Lepthyphantes expunctus (O. P.-Cambridge, 1875)
Text Fig. 81a
Length: ♀♂: 1.8–2.5mm. TmI 0.22–0.31
Female abdomen whitish dorsally as in *Bolyphantes luteolus* (Plate 226); there is a dark median mark anteriorly over the cardiac area, and a series of black bars or chevrons posteriorly; carapace and legs yellow-brown. Male similar in general appearance.

Lepthyphantes midas Simon, 1884
(= *L. carri* Jackson)
Plate A, p. 156; Text Fig. 81b
Length: ♀: 2.5–2.8mm; ♂: 2.3–2.6mm. TmI 0.19–0.22
Female as illustrated; male similar in general appearance.

Plate A

Lepthyphantes midas Simon ♀

DISTINGUISHING THE SPECIES

For convenience in identification, the species may be keyed out into seven groups according to leg spines, position of TmI and abdominal pattern. The leg spines are not entirely reliable, and in some cases (e.g. metatarsal spines of *L. antroniensis*) this is allowed for. Similarly, some species which normally have an abdominal pattern may on occasions be unicolorous, and those with a uniform grey abdomen may sometimes be marked with fairly distinct pale chevrons.

1 Metatarsus I with more than one spine ..... *..L. nebulosus, L. leprosus, L. minutus, L. alacris, L. whymperi*
– Metatarsus I with only one spine 2

2(1) Tibia I with ventral spines; abdomen whitish dorsally ..... *L. expunctus*
– Tibia I with no ventral spines; abdomen with dark bars dorsally, or uniformly grey-black 3

3(2) TmI 0.83–0.86 ..... *L. obscurus*
– TmI 0.12–0.31 4

4(3) Abdomen pale grey to black, with no distinct pattern 5
– Abdomen with more or less distinct pattern of dark bars and small white patches on grey-brown background 6

5(4) Metatarsus IV spineless ..... *L. ericaeus, L. pallidus, L. pinicola, L. insignis, L. antroniensis*
– Metatarsus IV with one spine ..... *L. angulatus, L. antroniensis, L. complicatus*

6(4) Epigyne a relatively enormous projecting scape; male palp also highly distinctive (Text Fig. 81b) ..... *L. midas*
– Epigynes and male palps much smaller and quite different in form (Text Figs 78c–e, 79a–c) ..... *L. tenuis, L. zimmermanni, L. cristatus, L. mengei, L. flavipes, L. tenebricola*

The species within each of the groups are distinguished, in most cases relatively easily, by their genitalia. Epigynes vary, as illustrated. Note should be taken of the shape and relative sizes of the scape, the opening on each side, and any deeper structures visible behind the scape. In some species (e.g. *L. obscurus*), the epigyne may protrude to a highly variable degree, and may have to be viewed from anteriorly in order to obtain a 'ventral' view.

Male palps are a little variable; that illustrated for *L. pallidus* (Text Fig. 79e) shows both a normal and malformed palp from the same specimen; such palpal abnormalities are not uncommon in spiders, and can lead to confusion. When examining *Lepthyphantes* male palps, the whole structure should be taken into account, and there are normally several distinguishing features. Parts of the lamella and paracymbium are sometimes transparent and difficult to see. The form of the lamella and paracymbium (L, P in Text Figs 78c, 79a) is of particular value in distinguishing the species *L. tenuis*, *L. zimmermanni*, *L. cristatus*, *L. mengei*, *L. flavipes* and *L. tenebricola*. In *L. tenuis* (Text Fig. 78c) the paracymbium bears, on its proximal part, two teeth – one on the posterior margin and one near the anterior margin. The lamella is rather variable in shape, as illustrated. *L. zimmermanni* (Text Fig. 78d) has only one paracymbial tooth, near the posterior margin, its point directed slightly downwards; the lamella is large, with several pointed branches. *L. cristatus* (Text Fig. 78e) also has one paracymbial tooth, arising from the posterior margin, its point directed upwards; there is also a ridge (or blunt tooth) near the anterior margin; the lamella has a smooth outline. *L. mengei* (Text Fig. 79a) has a single, short paracymbial tooth near the posterior margin, quite distinct from that of *L. flavipes* (Text Fig. 79b), which is long and almost needle-like in appearance. The lamella in *L. mengei*, although variable, is distinctly curved, its tip pointing downwards; in *L. flavipes* the lamella is less curved, almost right-angular, its tip pointing more or less forwards. In both species there is a transparent (almost invisible) membrane within the curve/angle of the lamella. *L. tenebricola* (Text Fig. 79c) has two distinct paracymbial teeth often connected by a ridge; they and the lamella are a little variable.

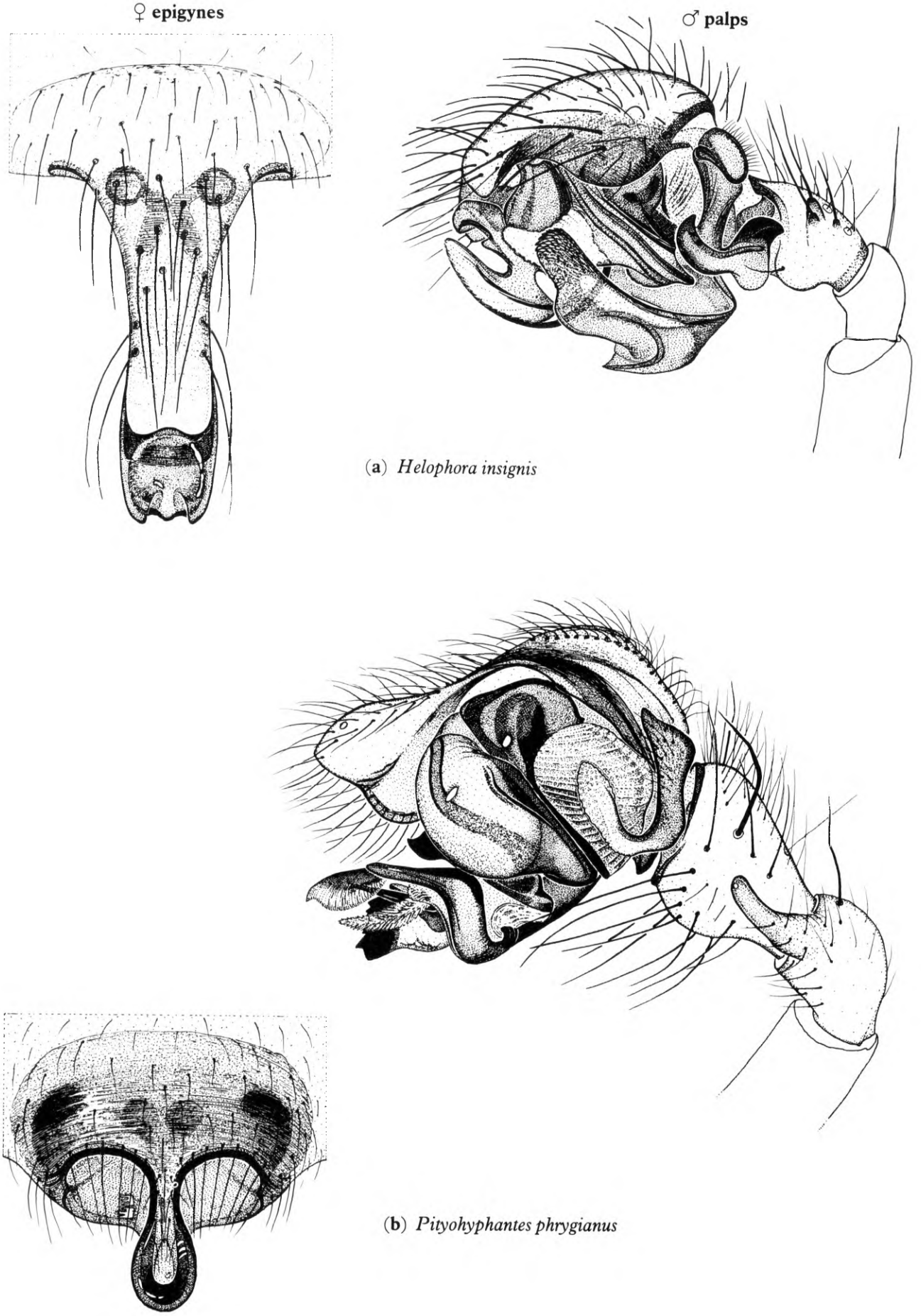
DISTRIBUTION

L. leprosus, *L. minutus*, *L. tenuis*, *L. zimmermanni* and *L. ericaeus* are common and widespread throughout the British Isles; *L. leprosus* often associated with houses and domestic rubbish, *L. minutus* usually at the base of trees, *L. tenuis* and *L. zimmermanni* in a very wide variety of habitats and *L. ericaeus* often in dry, heathery places. *L. alacris*, *L. obscurus*, *L. cristatus*, *L. mengei* and *L. flavipes* are also widespread, only slightly less common, and occur in a wide variety of situations – moss, grass, undergrowth and leaf-litter. *L. pallidus* and *L. tenebricola* are less frequent but widely distributed; *L. pallidus* in moss, grass, underground cavities and under stones, and *L. tenebricola* in woodland litter where, in the north, it may be locally common. *L. nebulosus* is fairly common in houses and outbuildings in the south of England, but is less common in the north and largely unrecorded from Scotland and Ireland.

L. whymperi is uncommon and has usually been recorded from mountains in northern England, Wales, Ireland and Scotland; occasionally there have been sporadic records at low altitudes. *L. angulatus* is also uncommon, having been recorded from North Wales, northern England and Scotland, usually on high ground. *L. expunctus* is essentially a Scottish species which may occur in great local abundance on trees (often pines) and surrounding herbage. There have been a few English records, as far south as Yorkshire.

The remaining species are rare: *L. pinicola* has been recorded from a few localities on high ground in England, Wales and Scotland; *L. complicatus* and the newly-recorded *L. antroniensis* (Ashmole & Merrett, 1981) from mountains in Scotland; *L. insignis* from grassland in a few localities in the south of England and East Anglia, and one locality in Scotland; the extremely rare *L. midas* from ancient woodland sites in Sherwood, Charnwood, Windsor and Epping Forests.

Text Figure 82



(**a**) *Helophora insignis*

(**b**) *Pityohyphantes phrygianus*

Genus *Helophora* Menge, 1866

TmI 0.7–0.78; TmIV present; tibial spines 2–2–2–2; with several additional spines on tibiae and metatarsi, but no femoral spines.

There is one British species in this genus, the male of which does not have the head elevated to form a lobe.

Helophora insignis (Blackwall, 1841)

Plate 230; Text Fig. 82a

Length: ♀: 3.5–4mm; ♂: 3–3.8mm. TmI 0.7–0.78

Female as illustrated; abdomen sometimes paler grey-brown; the indistinct black chevrons are sometimes absent, but there are nearly always a few black streaks laterally and a dark patch around spinners. Male similar in general appearance. Epigyne highly characteristic (Text Fig. 82a), although the length and width of the scape is a little variable. The scape also varies in its degree of protrusion, and may be found either lying flat along the abdomen, or projecting out at right angles. Male palp rather variable, but characteristic; the lamella varies considerably in the position of its tip.

DISTRIBUTION

H. insignis is widespread throughout the British Isles, usually occurring in woodland, especially on dog's mercury (*Mercurialis perennis*), in moss, grass and other low vegetation.

Genus *Pityohyphantes* Simon, 1929

TmI 0.2–0.25; TmIV absent; tibial spines 2–2–2–2; with numerous additional spines on femora, patellae, tibiae and metatarsi.

The single British species in this genus has a highly characteristic appearance, which is similar in both sexes.

Pityohyphantes phrygianus (C. L. Koch, 1836)

Plate 231; Text Fig. 82b

Length: ♀: 4–6mm; ♂: 4–5mm. TmI 0.2–0.25

Male similar to female in general appearance, but abdomen relatively smaller and overall colour usually a little darker. Epigyne and male palp highly characteristic; the palpal patella has a finger-like process laterally.

DISTRIBUTION

P. phrygianus was reported as a possible recent colonist of Britain by Ashmole, Locket *et al.* (1978). It appears to be largely restricted to conifer plantations in northern England and Scotland.

Genus *Linyphia* Latreille, 1804

TmI 0.14–0.25; TmIV absent; tibial spines 2–2–2–2; with numerous additional lateral and dorsal spines on femora, patellae, tibiae and metatarsi.

There are two British species in this genus, the males of which do not have the head elevated to form a lobe. Female abdomen oval, with distinct pattern. Male abdomen narrower and cylindrical; pattern often fainter, but sometimes with a pair of conspicuous light patches anterolaterally. Of the seven other species previously included in *Linyphia*, five have been transferred to *Neriene* Blackwall (p. 162) and two to *Microlinyphia* Gerhardt (p. 164) – see Taxonomic Note, below.

TAXONOMIC NOTE

The species of the genus *Linyphia* were reclassified by van Helsdingen (1969; 1970) based on the structure and functioning of the genitalia. He retained *triangularis* (Clerck) and *hortensis* Sundevall in *Linyphia*, transferred *montana* (Clerck), *clathrata* Sundevall, *peltata* Wider, *furtiva* O. P.-Cambridge and *marginata* C. L. Koch to *Neriene* Blackwall, 1833, and transferred *pusilla* Sundevall and *impigra* O. P.-Cambridge to *Microlinyphia* Gerhardt, 1928. Locket, Millidge *et al.* (1974) accepted the genus *Microlinyphia* but could not agree on the question of separating *Neriene* from *Linyphia*. They decided to use *Neriene* as a subgenus, the name for each species being written in the form *Linyphia (Neriene) montana* (Clerck). My view is that, whatever one's opinion regarding 'splitting' or 'lumping' of the species, the criteria for separating *Neriene* from *Linyphia* are as valid as those for separating *Microlinyphia*, and that if we accept the latter we should also accept the former.

Regarding *Neriene* as a separate genus presents a nomenclatural problem in the case of *Linyphia marginata* C. L. Koch, 1834. As a new combination, it should bear the name *Neriene marginata* (C. L. Koch), but the latter constitutes a junior homonym, since the use of *Neriene marginata* by Blackwall in 1833 (later shown to be a junior synonym of *Neriene clathrata* (Sundevall)) preceded it by one year. The oldest available synonym must therefore be used and this is *Linyphia radiata* Walckenaer, 1841. *Linyphia marginata* C. L. Koch thus becomes *Neriene radiata* (Walckenaer). The species *L. peltata* and *L. marginata* have sometimes been included in yet another separate genus – *Prolinyphia* Homann, 1952.

Linyphia triangularis (Clerck, 1757)

Plates 232a, 233; Text Figs 83a, 84a

Length: ♀: 5–6.6mm; ♂: 4.6–6mm. TmI 0.14–0.2

Note the sexual dimorphism; the male has a relatively broader carapace, long divergent chelicerae and a narrow, cylindrical abdomen with less distinct pattern.

Linyphia hortensis Sundevall, 1829

Plate 234; Text Figs 83b, 84b

Length: ♀: 4–5mm; ♂: 3–5mm. TmI 0.2–0.25

Female as illustrated; male similar in general shape to that of *L. triangularis*, but carapace dark brown; abdomen with faint folium like that of female, and a pair of white patches anterolaterally.

DISTINGUISHING THE SPECIES

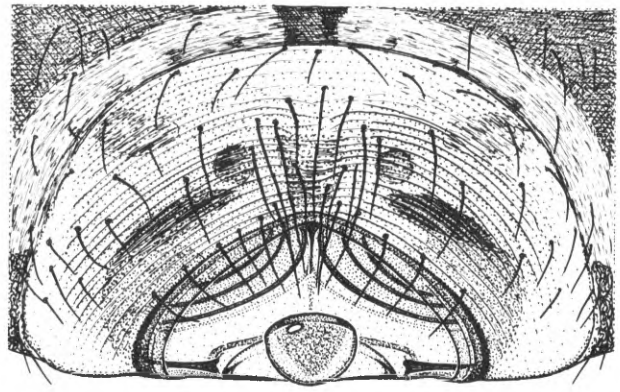
These two species are easily distinguished by their genitalia and general appearance.

DISTRIBUTION

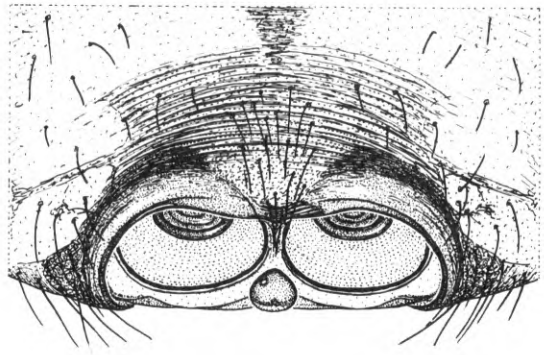
Both species are widespread throughout the British Isles. *L. triangularis* is a ubiquitous species, and in summer and autumn its sheet webs can be found on almost every bush or plant with stiff foliage. *L. hortensis* is less common, and usually occurs on low vegetation in woods where it may be locally abundant, especially on dog's mercury (*Mercurialis perennis*).

Text Figure 83

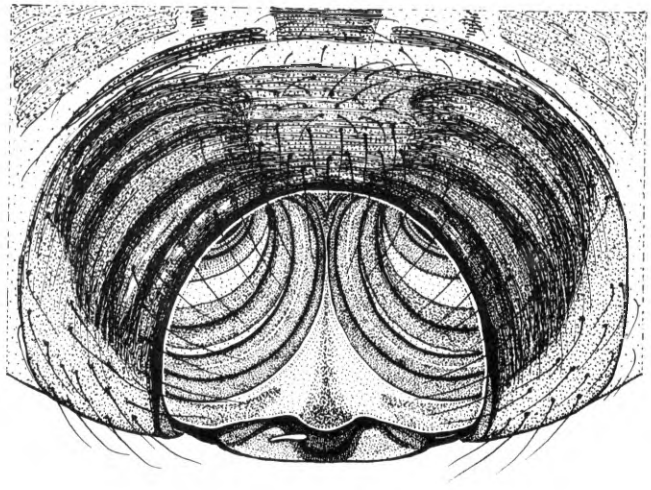
♀ epigynes



(**a**) *Linyphia triangularis*

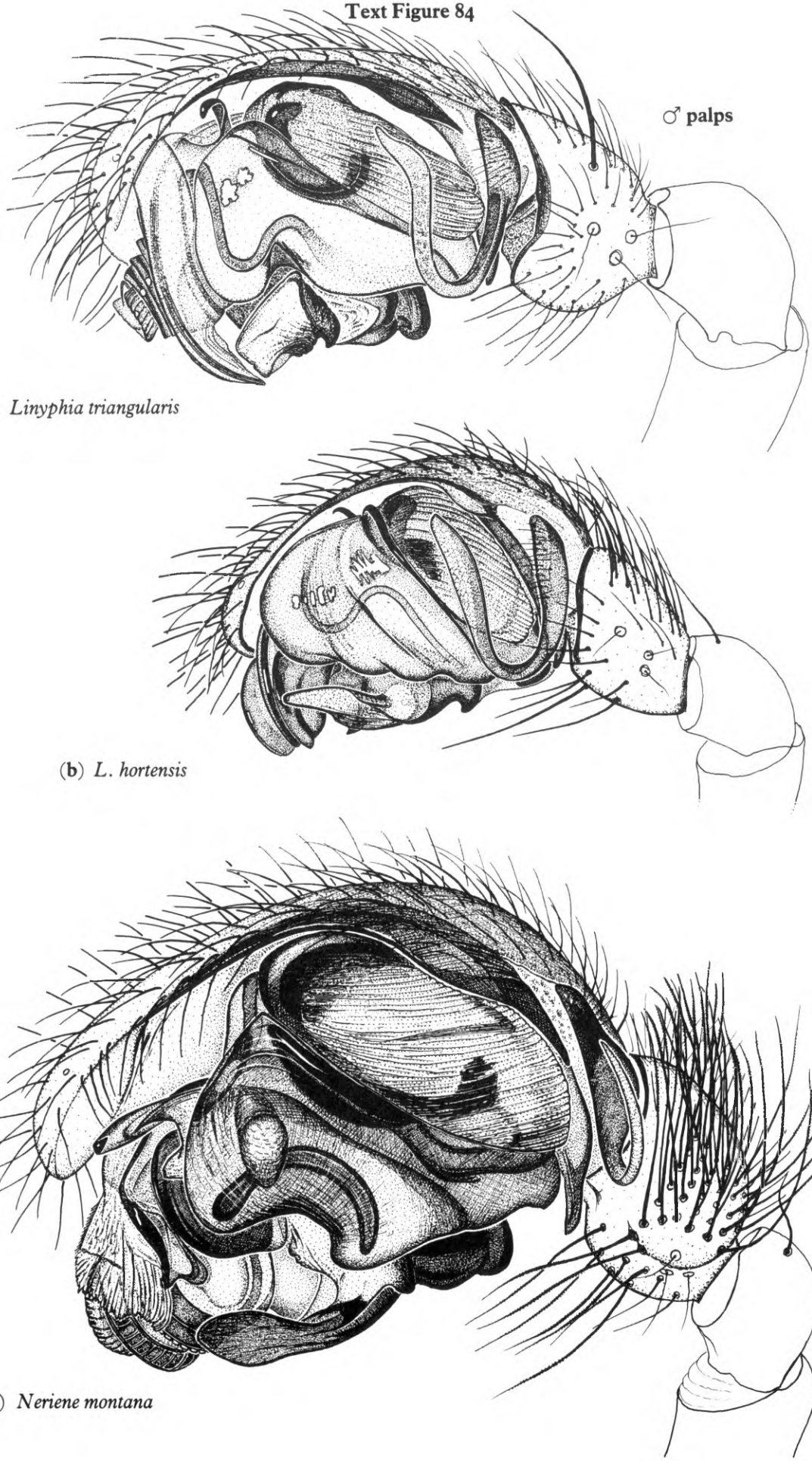


(**b**) *L. hortensis*



(**c**) *Neriene montana*

Text Figure 84



(**a**) *Linyphia triangularis*

(**b**) *L. hortensis*

(**c**) *Neriene montana*

Genus *Neriene* Blackwall, 1833

TmI 0.12–0.30; TmIV absent; tibial spines 2–2–2–2; with numerous additional lateral and dorsal spines on femora I and II (except *N. radiata*), patellae, tibiae and metatarsi.

The five British species placed in this genus have previously been included in (or treated as a subgenus of) *Linyphia* (see Taxonomic Note, p. 159). Males do not have the head elevated to form a lobe.

Neriene montana (Clerck, 1757)

Plate 232c; Text Figs 83c, 84c

Length: ♀: 4.4–7.4mm; ♂: 4–7mm. TmI 0.22–0.3

Female similar to male illustrated; abdomen larger but with similar purplish brown folium.

Neriene clathrata (Sundevall, 1829)

Text Fig. 85a

Length: ♀: 3.7–5mm; ♂: 3.4–4.8mm. TmI 0.18–0.25

Similar in general appearance to *N. montana*, also having a purplish brown folium.

Neriene peltata (Wider, 1834)

Plate 235; Text Fig. 85b

Length: ♀: 2.8–3.7mm; ♂: 2.2–3.5mm. TmI 0.18–0.22

Female as illustrated; male similar but abdomen narrower, and folium relatively broader and less dentate.

Neriene furtiva (O. P.-Cambridge, 1871)

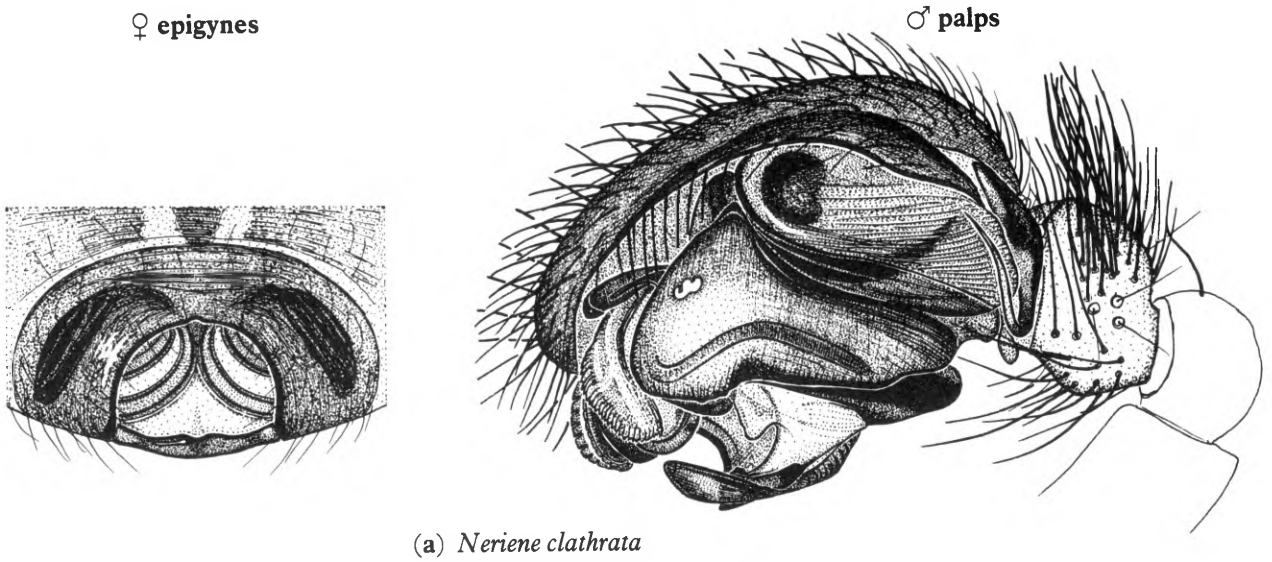
Text Fig. 85c

Length: ♀: 3–4.5mm; ♂: 3.5–4.5mm. TmI 0.2–0.25

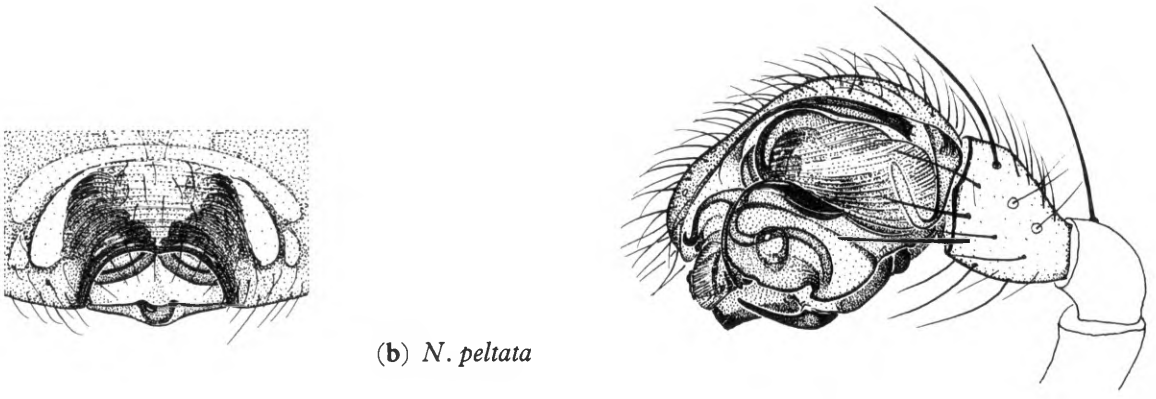
Similar in general appearance to *L. montana* and *L. clathrata*, but abdominal folium a little less distinct.

Text Figure 85

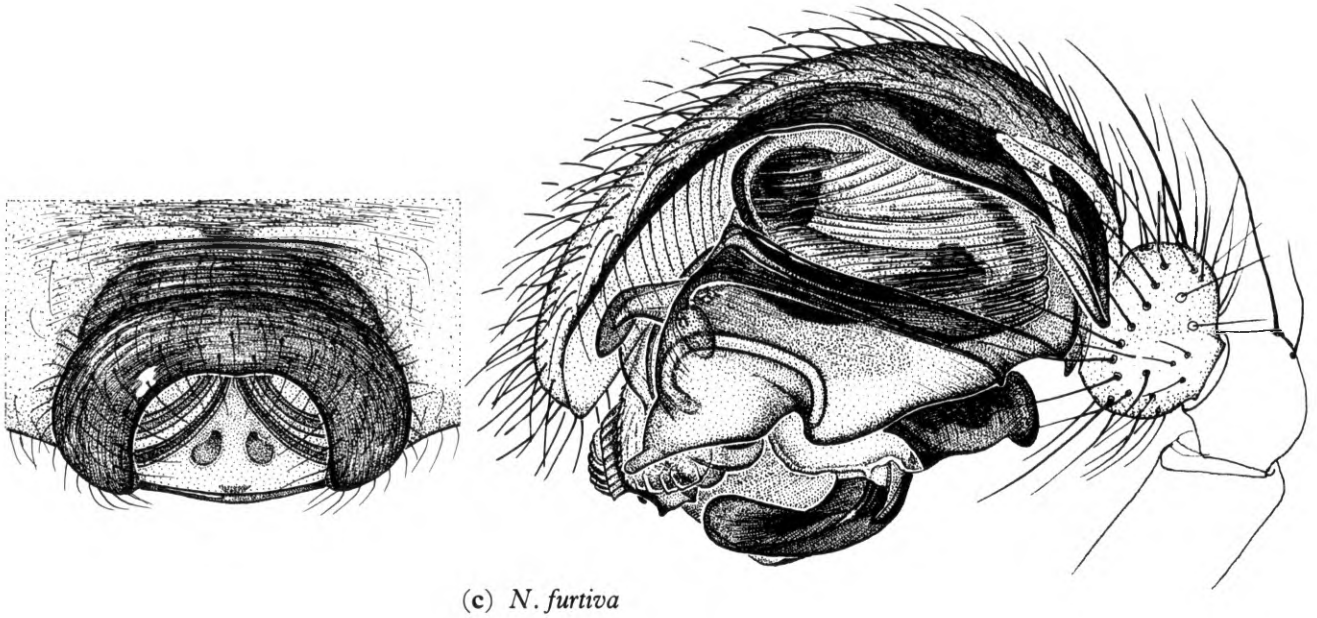
♀ **epigynes** ♂ **palps**



(**a**) *Neriene clathrata*



(**b**) *N. peltata*



(**c**) *N. furtiva*

Neriene radiata (Walckenaer, 1841)
(= *Linyphia (Neriene) marginata* C. L. Koch, 1834 – see Taxonomic Note, p. 159)
Text Fig. 86a

Length: ♀: 3.5–6.5mm; ♂: 3.5–5.5mm. TmI 0.12–0.16

Abdominal pattern somewhat like that of *N. peltata*, but markings clear, dark brown to black on yellow-white background; a dark midline area in anterior two-thirds contains four to six pairs of white patches; following this are two broad brown-black transverse bands. Carapace with pale, distinctly swollen or rolled edges; thoracic part of carapace brownish and this extends to sides of head; between this and the thickened margins are light pigment patches. The femora are all spineless.

DISTINGUISHING THE SPECIES

N. peltata has a fairly distinctive general appearance and genitalia, as also does *N. radiata*. *N. montana*, *N. clathrata* and *N. furtiva* are similar to one another in general appearance and genitalia. The male palps (Text Figs 84c, 85a,c) exhibit differences in the palpal organs, paracymbia, tibial hairs and overall size. The epigyne of *N. montana* is much larger than that of *N. clathrata* or *N. furtiva*; the opening is almost 0.5mm across (Text Fig. 83c) and, even if absolute measurements cannot be made, the epigyne of the commonly collected *L. triangularis* (Text Fig. 83a) provides a useful comparative structure! The width of the epigyne opening is 0.2–0.3mm in *N. clathrata* and 0.28–0.36mm in *N. furtiva*. The opening is relatively smaller, compared to the overall width of epigyne, in *N. clathrata* (Text Fig. 85a) than in *N. furtiva* (Text Fig. 85c). The posterior lip is fairly thick in *N. clathrata* and the epigyne does not protrude very much. In *N. furtiva* the posterior lip is much thinner, and the whole epigyne protrudes conspicuously.

DISTRIBUTION

N. montana, *N. clathrata* and *N. peltata* are common and widespread throughout the British Isles, occurring on bushes and other low vegetation. *N. furtiva* is a generally rare species, recorded from the Midlands, East Anglia and South Wales, but common on heathland in parts of southern England. *N. radiata* has been recorded only from a few localities in Scotland.

Genus *Microlinyphia* Gerhardt, 1928

TmI 0.16–0.25; TmIV absent; tibial spines 2–2–2–2; with several additional spines on femora, patellae, tibiae and metatarsi.

The two British species in this genus have previously been included in the genus *Linyphia* (see Taxonomic Note, p. 159). Males do not have the head elevated to form a lobe, but have a narrow, blackish abdomen, often marked with a pair of white patches anterolaterally.

Microlinyphia pusilla (Sundevall, 1829)
Plates 232d, 236; Text Fig. 86b

Length: ♀: 3–5mm; ♂: 3–4mm. TmI 0.16–0.25

Note the sexual dimorphism; the male has a narrow, cylindrical, black abdomen with a pair of white patches, and chelicerae which point backwards and are not visible from above.

Microlinyphia impigra (O. P.-Cambridge, 1871)
Text Fig. 86c

Lenth: ♀: 3.6–5.4mm; ♂: 3.5–4mm. TmI 0.16–0.25

Similar in general appearance to *M. pusilla*, except that male abdomen lacks the pair of white anterolateral patches.

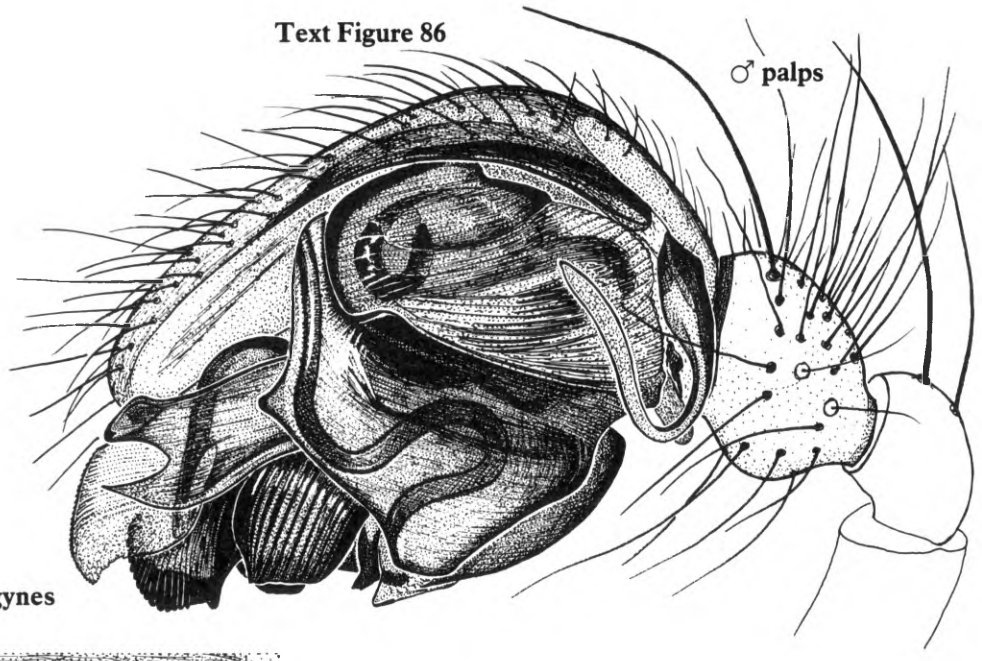
DISTINGUISHING THE SPECIES

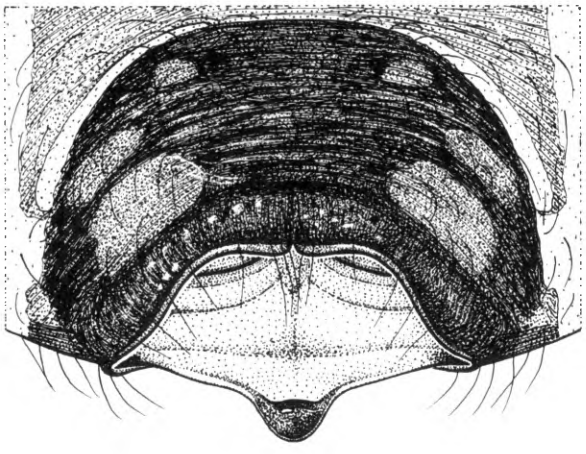
Epigynes of both species small, indistinct and rather variable. *M. pusilla* has the posterior margin of the epigyne forming an angular arch, behind which protrudes a small, pale, rounded scape containing a small socket. In *M. impigra* there is a scape-like extension from the posterior margin of the epigyne, and a pair of bulges is visible behind the margin, one on each side of the scape. The male palps are highly variable in both species. The embolus is long and whip-like, and its tip may be found lying either ectally or mesally in both species – in the illustrations it lies ectally in *M. pusilla* (Text Fig. 86b), and mesally in *M. impigra* (Text Fig. 86c); occasionally the tip lies ventral to the palpal organs. The embolus is relatively longer in *M. pusilla*, and the palpal organs narrower dorso-ventrally. The structures at the palpal tip, near the origin of the embolus, are characteristic in *M. impigra*. The male of *M. impigra* also has a uniformly dark abdomen which lacks the white patches present in *M. pusilla*.

DISTRIBUTION

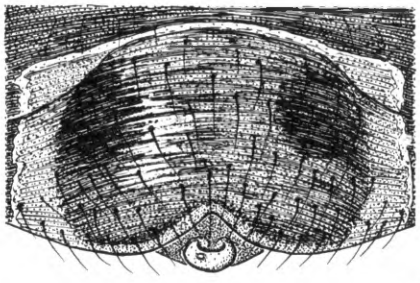
M. pusilla is widespread and common throughout the British Isles, occurring in grass and other low vegetation. *M. impigra* is much less common, usually occurring on vegetation in wet habitats, but probably has a fairly widespread distribution.

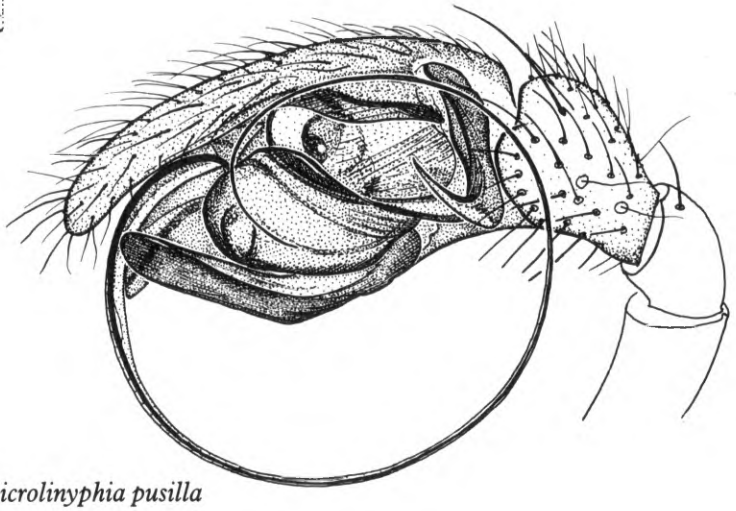
Text Figure 86



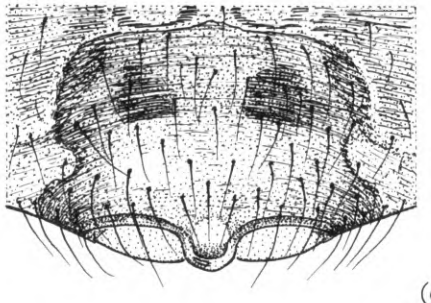


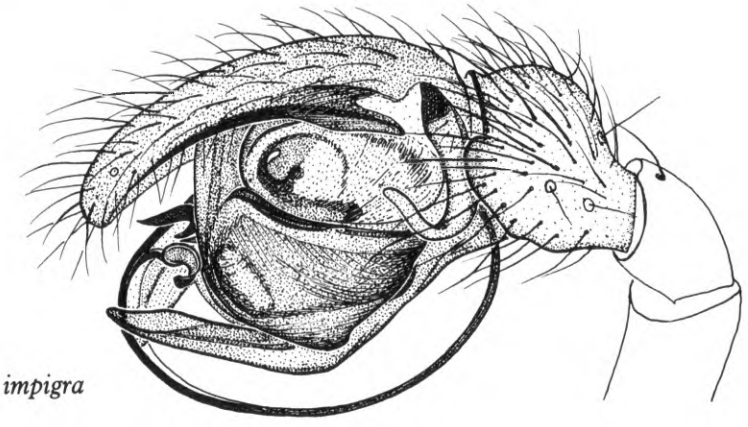
(**a**) *Neriene radiata*





(**b**) *Microlinyphia pusilla*





(**c**) *M. impigra*

Genus *Allomengea* Strand, 1912

TmI 0.7–0.8; TmIV present; tibial spines 2–2–2–2; with several additional spines on tibiae and metatarsi. *A. scopigera* has two or three additional small trichobothria along all metatarsi.

There are two British species in this genus, the males of which do not have the head elevated into a lobe.

TAXONOMIC NOTE

The species *Allomengea warburtoni* (O. P.-Cambridge, 1889) was synonymized with *Linyphia vidua* L. Koch, 1879 by Holm (1973) as noted by van Helsdingen (1974). The species therefore now becomes *Allomengea vidua* (L. Koch).

Allomengea scopigera (Grube, 1859)

Plate 237; Text Fig. 87a,c

Lenth: ♀: 4–5.5mm; ♂: 4–4.4mm. TmI 0.75–0.8

Female similar to male illustrated. Two or three small trichobothria are present on each metatarsus in addition to the main one.

Allomengea vidua (L. Koch, 1879)

Text Fig. 87b,d

Length: ♀: 3.5–5mm; ♂: 3–3.7mm. TmI 0.7–0.73

Similar in general appearance to *A. scopigera*. Metatarsi with only one trichobothrium each.

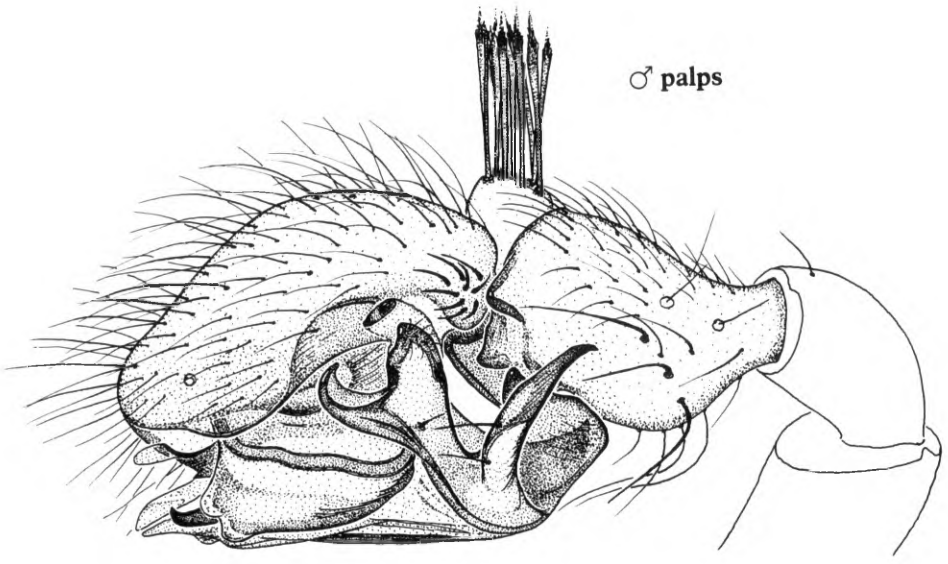
DISTINGUISHING THE SPECIES

The male palps have a distinctive appearance, and differ in their cymbial projections, the paracymbia and palpal organs. Epigynes rather variable, but nevertheless characteristic.

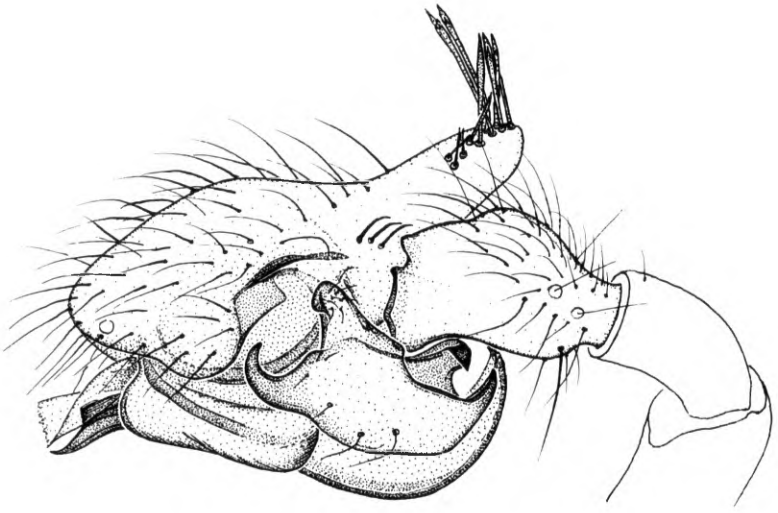
DISTRIBUTION

Both species probably have a fairly widespread distribution, but *A. vidua* has not been recorded from south-west England. *A. scopigera* occurs in wet habitats, grassland and on higher ground, and is commoner in the north. *A. vidua* is much less common, but appears also to occur in a variety of usually wet habitats.

Text Figure 87

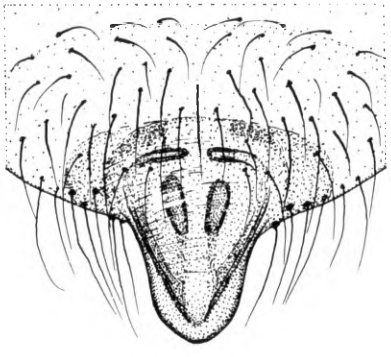


(**a**) *Allomengea scopigera*

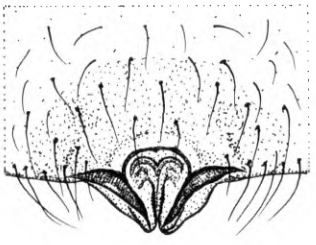


(**b**) *A. vidua*

♀ **epigynes**



(**c**) *A. scopigera*



(**d**) *A. vidua*

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ADDENDA to Volume 1

During the preparation of Volumes 1 and 2 of this work several European species have been found which are new to Britain. The descriptions of six of these species belong in Volume 1, as follows:

Family DICTYNIDAE (Vol. 1, p. 48)
Lathys nielseni (Schenkel, 1932)

Family ZODARIIDAE (new British family, to follow PHOLCIDAE, Vol. 1, p. 64)
Zodarion italicum (Canestrini, 1868)

Family GNAPHOSIDAE (Vol. 1, p. 64)
Zelotes subterraneus (C. L. Koch, 1833)

Family CLUBIONIDAE

Subfamily Liocraninae (Vol. 1, p. 88)
Apostenus fuscus Westring, 1851

Family AGELENIDAE (Vol. 1, p. 156)
Tegenaria picta Simon, 1870

Family THERIDIIDAE (Vol. 1, p. 172)
Enoplognatha latimana Hippa & Oksala, 1982

The Addenda also contains a note on palpal variation in male spiders, with special reference to:

Family ARANEIDAE (Vol. 1, p. 206)
Araneus diadematus Clerck 1757

Family DICTYNIDAE

Genus *Lathys* Simon, 1884

Another species of *Lathys*, close to *L. humilis* (Blackwall) has recently been discovered in Britain by R. Jones, to whom I am indebted for the loan of specimens.

Lathys nielseni (Schenkel, 1932)
Plate B, p. 171; Text Fig. 88a
Length: ♀♂: 1.6–2mm

Male as illustrated (Plate B); sometimes a little darker in colour and occasionally the abdomen is more or less uniformly dark brown. Note the pale legs which have only faint annulations on the *distal* ends of each segment. Females similar, but usually somewhat lighter in colour, and sometimes lack well-defined chevrons on the dorsal surface of the abdomen. Epigyne, adnexae, male palp and palpal tibia as illustrated (Text Fig. 88a).

DISTINGUISHING THE SPECIES

L. nielseni resembles small or recently moulted specimens of *L. humilis* (Blackwall) (Plate 8) (see also Vol. 1, p. 52 (Text Fig. 15d)), and may previously have been overlooked in British collections. The abdominal pattern in *L. humilis* is usually distinctly different and marked clearly with black and white. In non-gravid females and males of *L. humilis*, guanin globules are packed closer together, making an even more distinct pattern than in the gravid female illustrated. These guanin globules are usually absent, or present only as minute specks, in *L. nielseni*. The legs of *L. humilis* are usually very distinctly annulated at both proximal and distal ends of each segment. In *L. nielseni* the annulations are much fainter (or absent) and are present only on the distal ends of each segment. Illustrations of the genitalia of both species are given here for ease of comparison (Text Figs 88a,b). Epigynes of both species a little variable, but nevertheless distinct. If the epigyne is detached and viewed from behind, the adnexae are seen to be distinctly different. A little more care is needed in distinguishing the male palps. In ectal view, note the pointed patellar apophysis and also the pointed process projecting dorsally between tibia and cymbium; both of these are shorter in *L. nielseni* than in *L. humilis*, and of slightly different shape. There are minor differences in the shape of the patella and tibia, and the ventrolateral cymbial hairs were a little longer in those specimens of *L. nielseni* examined. Viewed dorsally, the palpal patella and patellar apophysis differ considerably in the two species.

DISTRIBUTION

L. nielseni has so far been found in moist habitats at ground level – under stones, detritus, grass tussocks – and has been recorded from three sites in southern England (Jones, 1984a; Murphy & Jones (in prep.)). There appears to be no reason why the species should be confined to southern England, and it may well have hitherto been overlooked.

Text Figure 88

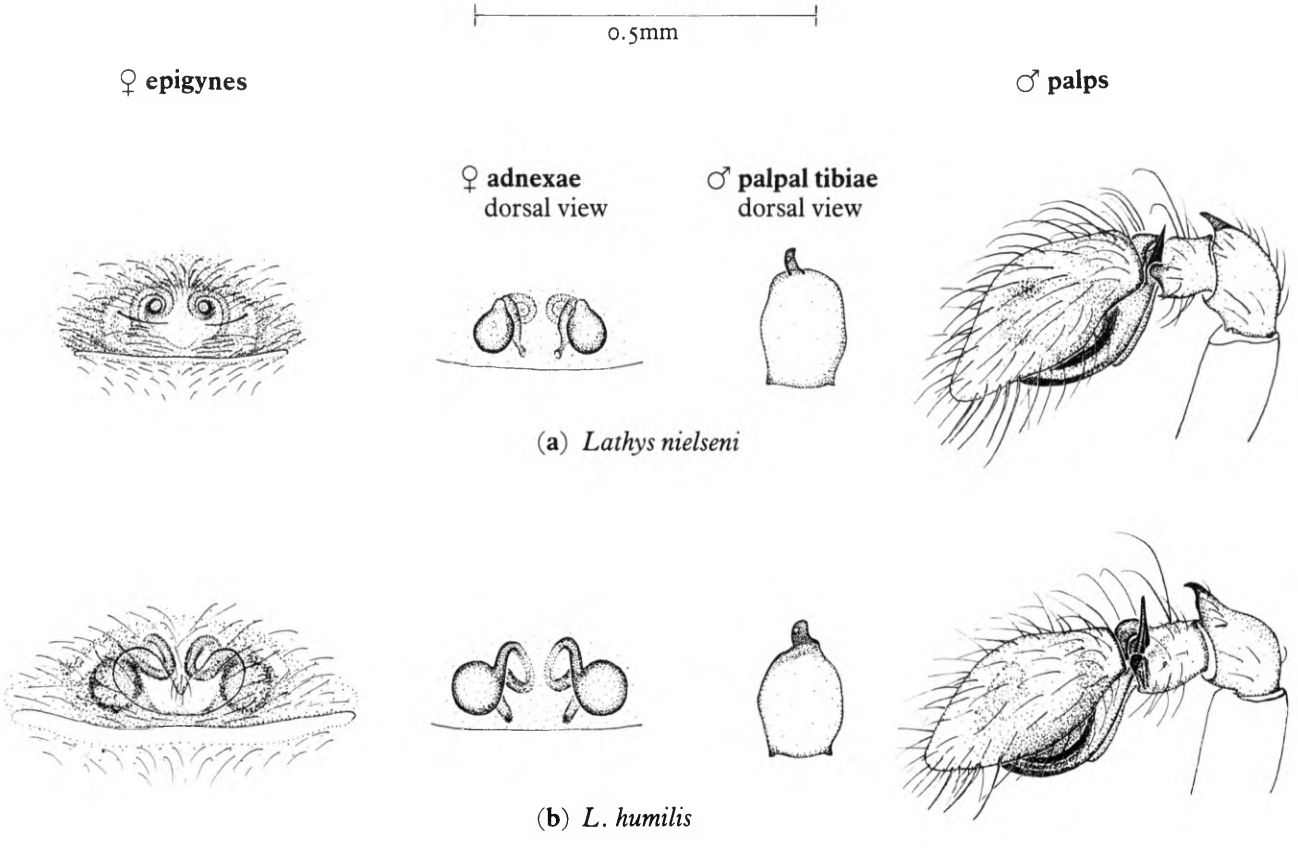
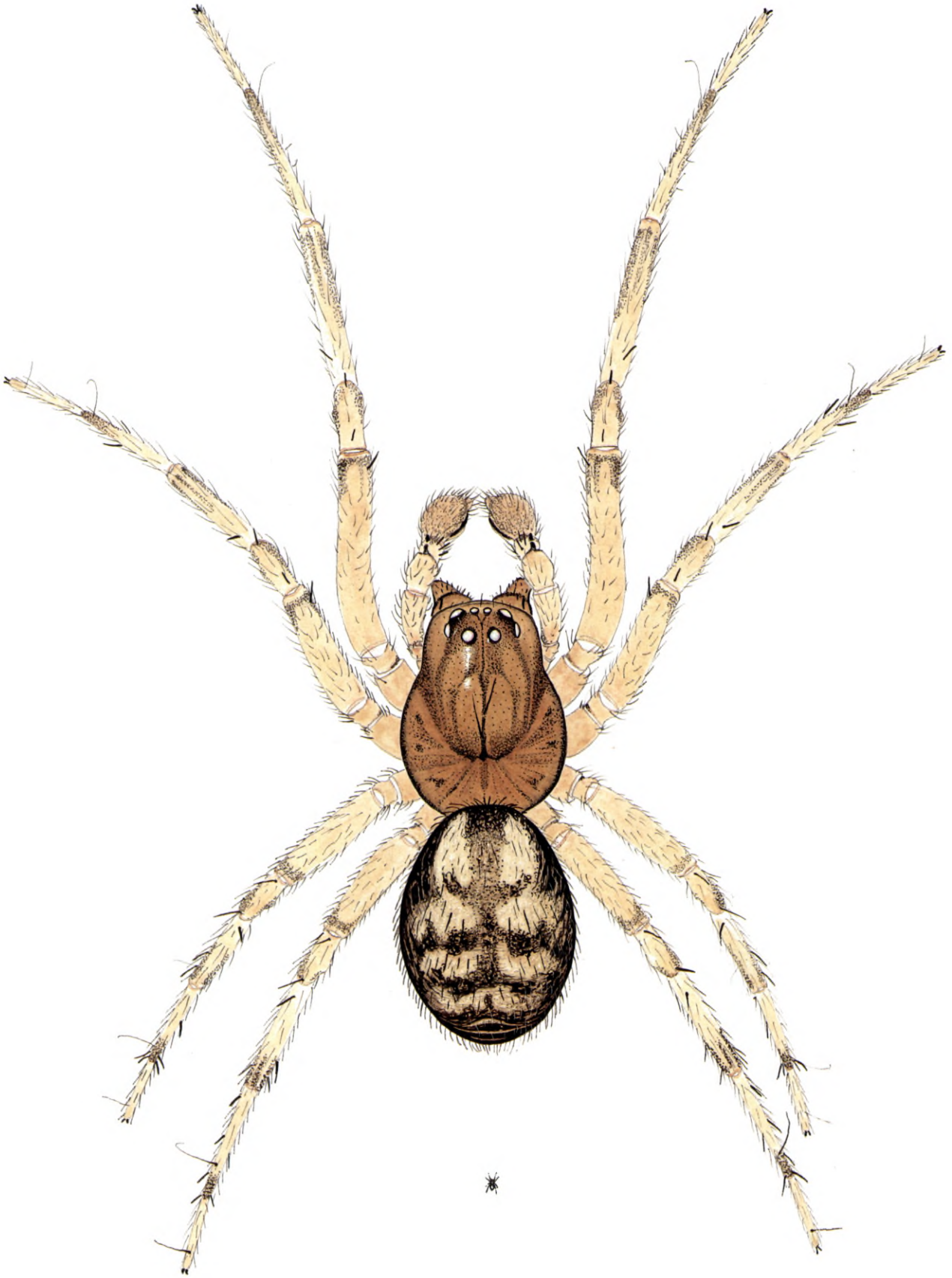


Plate B



Lathys nielseni (Schenkel) ♂

Family ZODARIIDAE

The Zodariidae are eight-eyed hunting spiders. A single representative of the family, in the genus *Zodarion*, was discovered in Britain in 1985 by P. R. Harvey, to whom I am indebted for the loan of specimens.

Genus *Zodarion* Walckenaer, 1847

Spiders of this genus have an unmistakable appearance. The eyes are characteristic, the anterior medians being circular and larger and darker than the rest. The posterior and median spinners are very much reduced in size, so that there appears to be only one pair of (anterior) spinners. The legs are almost completely spineless. *Zodarion* species are usually found running near ants, upon which they feed.

Zodarion italicum (Canestrini, 1868)

Plate C, p. 173; Text Fig. 89

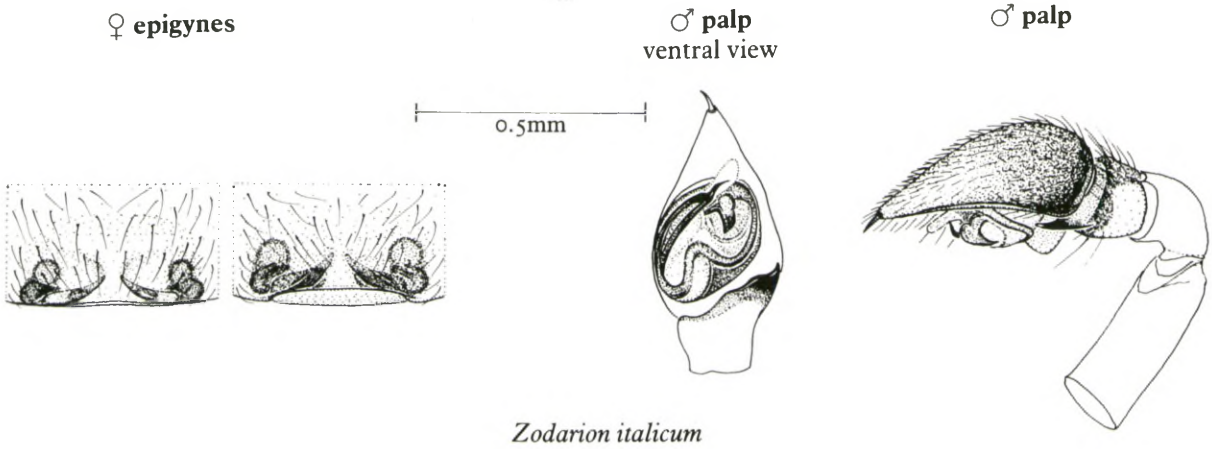
Length: ♀: 2.6–3mm; ♂: 2–2.4mm

Female as illustrated; abdomen uniform pale yellowish ventrally. Dark markings on carapace and femora rather variable, and occasionally absent altogether. A single dorsal spine is present on femora I and II – not easily seen when femora darkened. Legs furnished with numerous long trichobothria. At higher magnification the leg hairs appear distinctly squamiform. Male similar to female in general appearance. Epigyne rather variable but characteristic, as is male palp (Text Fig. 89).

DISTRIBUTION

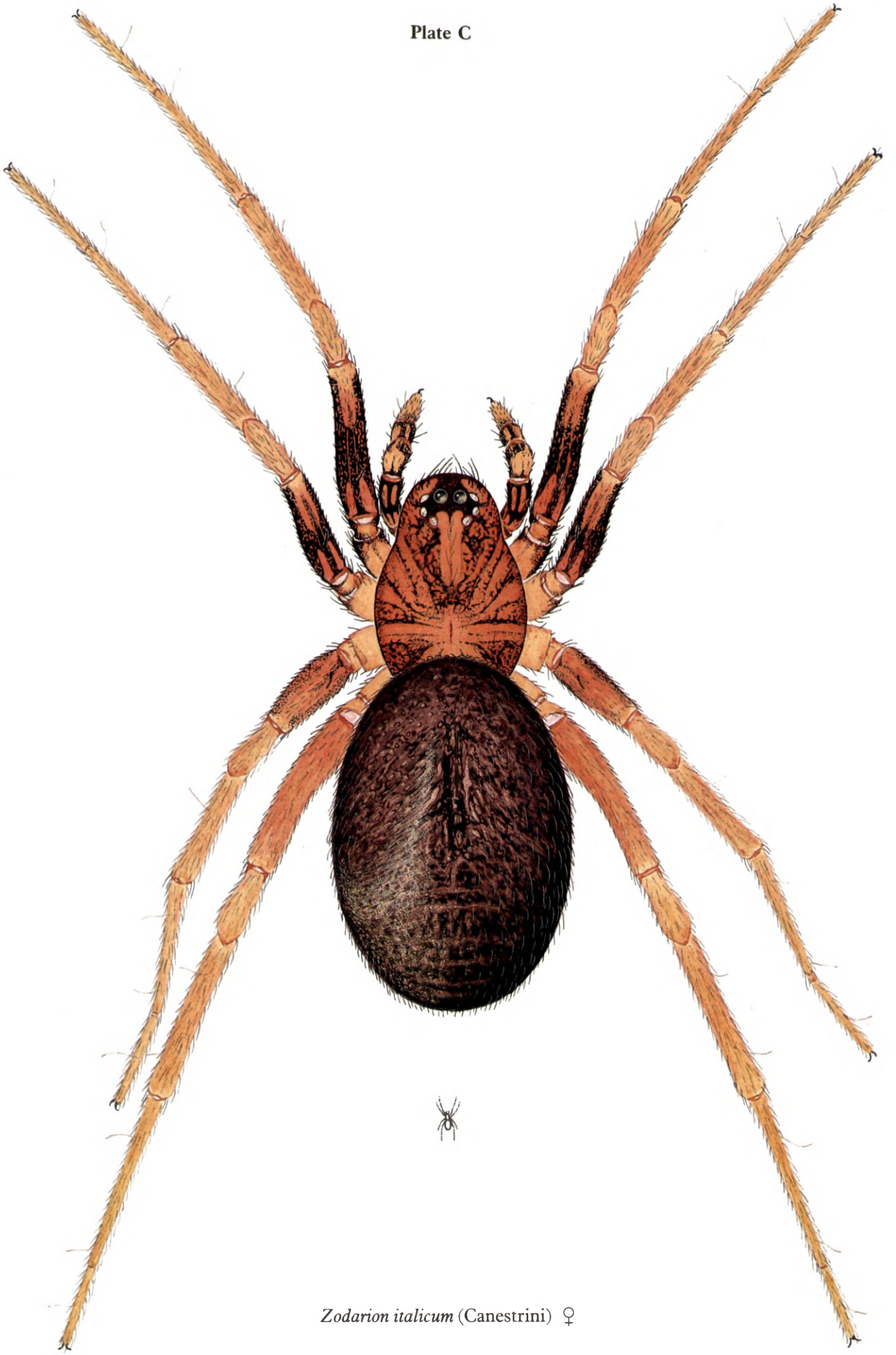
Z. italicum is apparently widespread in the Grays area of Essex. It occurs, often with the ant, *Lasius niger* (L.), on the undersides of breeze-block debris and chalk in old quarries, and under bricks and concrete debris on waste ground (Harvey & Murphy, 1985).

Text Figure 89



Zodarion italicum

Plate C



Zodarion italicum (Canestrini) ♀

Family GNAPHOSIDAE

Genus *Zelotes* Gistel, 1848

The occurrence in the British Isles of *Z. subterraneus* (C. L. Koch) has recently been established by Murphy & Platnick (1986). The species is closely similar to *Z. apricorum* (L. Koch) (Vol. 1, p. 74 (Text Fig. 27b)) with which it has previously been confused. Murphy & Platnick (*loc. cit.*) suggest that some hybridization may occur, but all specimens examined were clearly assignable to one or other species. (I interpret their Banffshire specimen (*loc. cit.*: Figs 12,13) as typical *Z. subterraneus* but with a maldeveloped left hemiepigyne; such asymmetry is not uncommon.)

Zelotes subterraneus (C. L. Koch, 1833)

Text Fig. 90a

Length: ♀: 6.5–9mm; ♂: 5–6mm

Similar in general appearance to *Z. latreillei* (Plate 25a). Genitalia closely similar to those of *Z. apricorum* (Text Fig. 90b). Male palps distinguished by the form of the embolus which is curved, narrow and tapering in *Z. subterraneus*, but provided with broad, blunt dorsal apophysis in *Z. apricorum*. Epigynes distinguished by the shape of the central area anterior to the seminal receptacles; in *Z. subterraneus* the widest part of this is relatively closer to the posterior margin than in *Z. apricorum* (*cf.* Text Figs 90a and 90b); the dark lateral margins curve fairly smoothly anteromedially in *Z. subterraneus*, but in *Z. apricorum* curve rather more abruptly towards the midline anteriorly. The shape of the posterior margin is variable in both species. The adnexae show considerable intraspecific variation, as illustrated by Murphy & Platnick (*loc. cit.*).

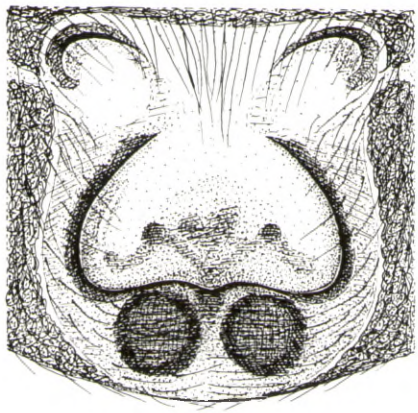
DISTRIBUTION

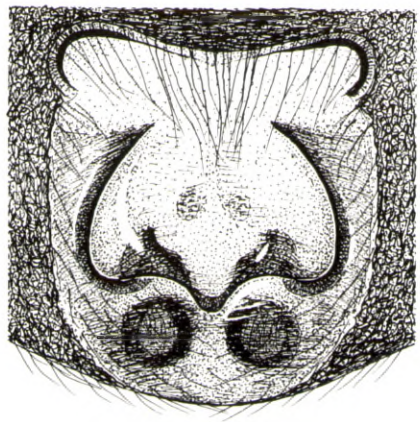
Z. subterraneus has so far been recorded from the coast in East Anglia and Suffolk and from several sites in Scotland. Until recently, these specimens had been recorded as *Z. apricorum*. As both species are rather scarce, it will take time for their relative distribution to be known.

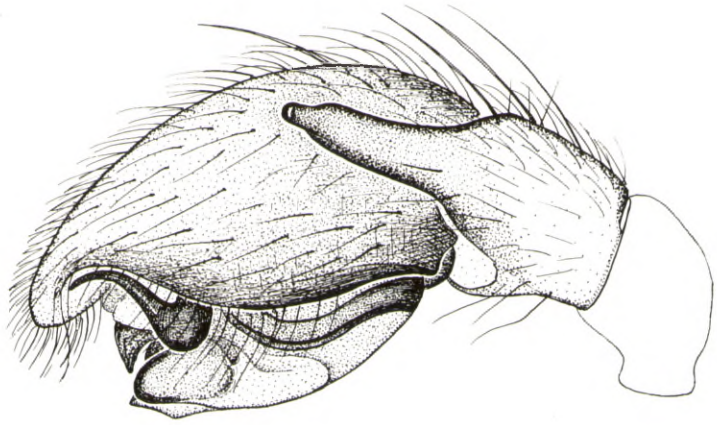
Text Figure 90

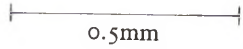
♀ epigynes

♂ palps

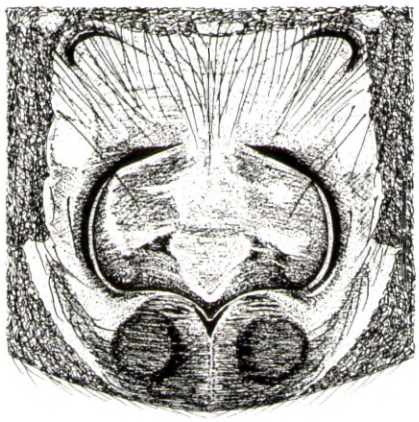


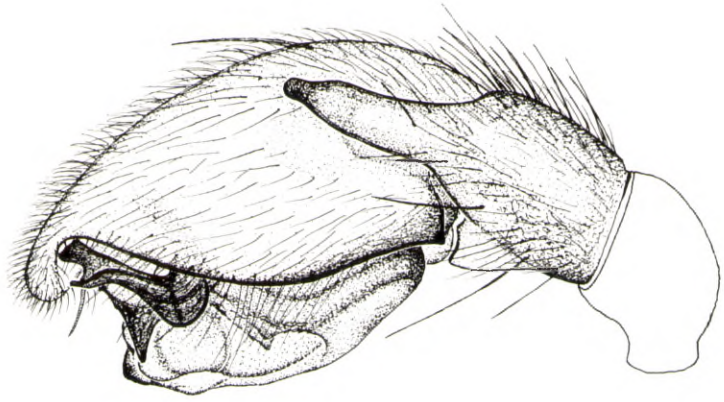






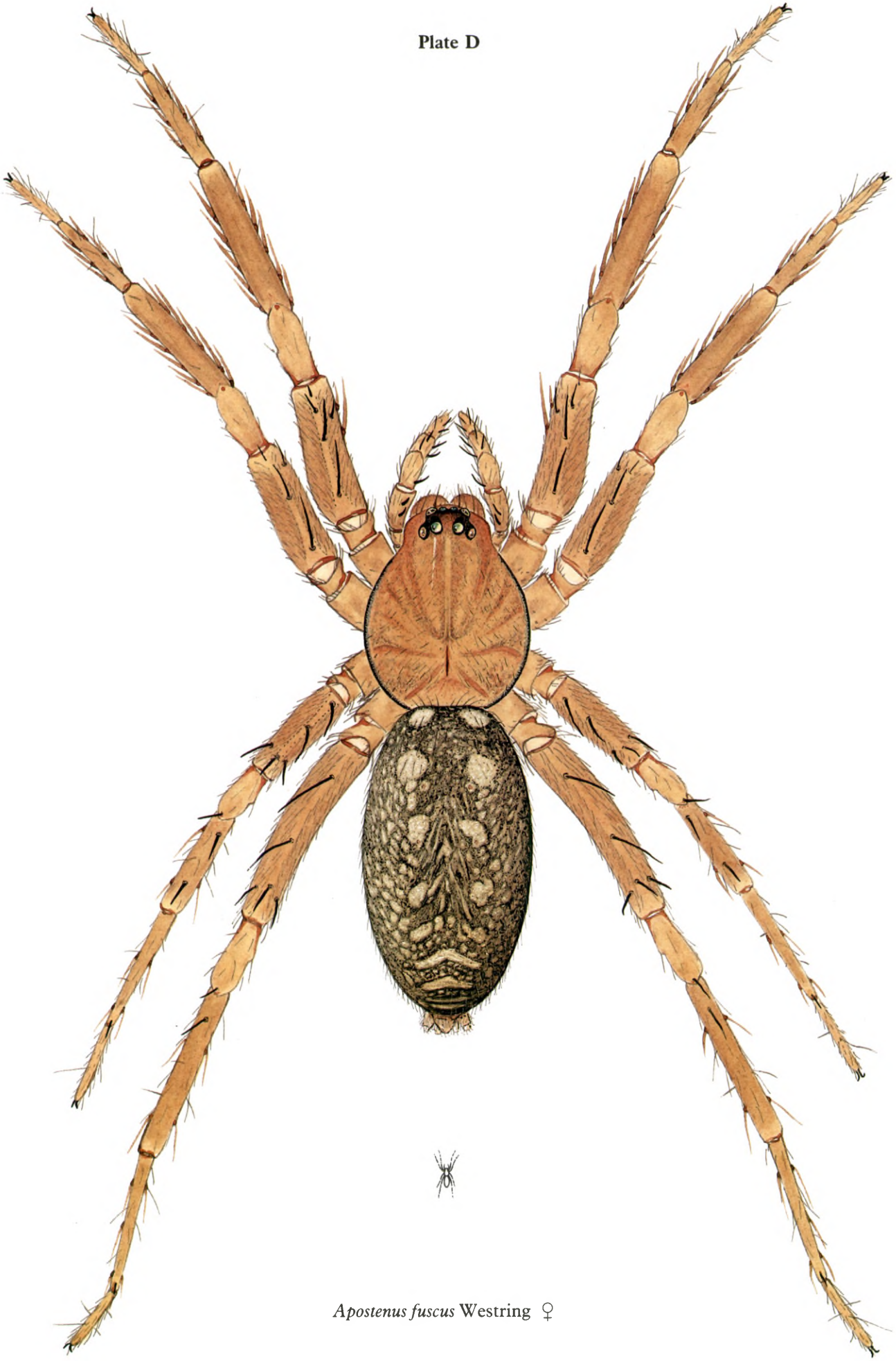
(**a**) *Zelotes subterraneus*





(**b**) *Z. apricorum*

Plate D



Apostenus fuscus Westring ♀

Family CLUBIONIDAE

Subfamily LIOCRANINAE

Genus *Apostenus* Westring, 1851

The single British species is similar, in general appearance and genitalia, to the genera *Agroeca*, *Scotina* and *Liocranum* (Vol. 1, pp. 88–93 (Text Figs 34d–36c)). Both rows of eyes are *recurved* (also *recurved* in *Liocranum*, but *procurved* in *Agroeca* and *Scotina*). Five pairs of ventral spines are present on tibiae I and II and three pairs on metatarsi I and II (*Liocranum* has four pairs of ventral spines on tibiae I and II, and only one pair on metatarsi I and II). The Key to Subfamilies and Genera of the Clubionidae (Vol. 1, p. 80) should be amended as follows:

3(1) Posterior row of eyes procurved or straight 4
– Posterior row of eyes recurved 6

and later, after couplet 5:

6(3) Tibia I with four pairs of ventral spines; metatarsus I with three pairs of ventral spines .... *Liocranum* (p. 92)
– Tibia I with five pairs of ventral spines; metatarsus I with three pairs of ventral spines ..... *Apostenus* (Vol. 2, p. 177)

Apostenus fuscus Westring, 1851

Plate D, p. 176; Text Fig. 91

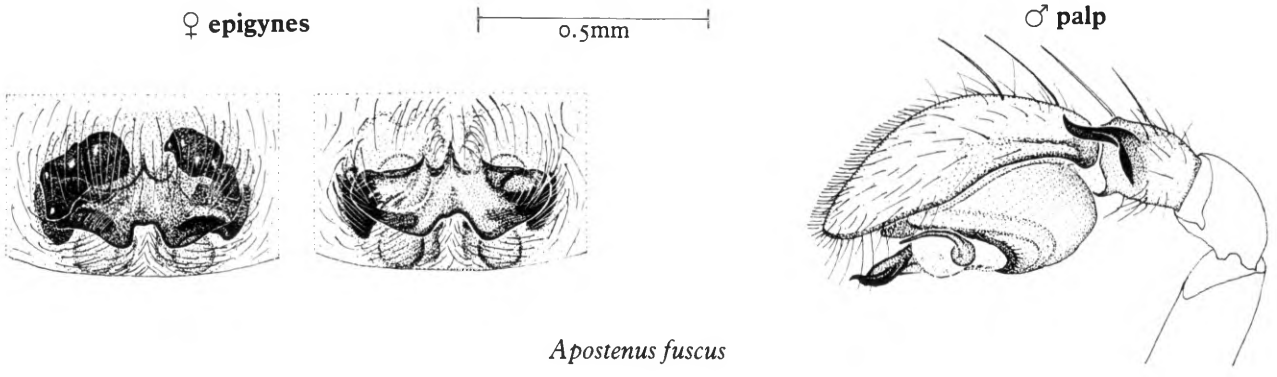
Length: ♀: 3–4mm; ♂: 2.8–3.7mm

Appearance of female highly characteristic, as illustrated (Plate D). Male similar, but carapace appears slightly broader in the thoracic part and narrower anteriorly. A few white hairs are present behind the eyes and on the margins of the male carapace. Male abdomen slimmer with a few white hairs present on the paler spots and chevrons; an indistinct pale brown dorsal scutum is present on the anterior quarter to one-third of abdomen. Epigyne characteristic, but the anterior part is usually obscured by a dark brown irregular exudate (as illustrated on epigyne on the left of Text Fig. 91). These exudates can often be removed fairly easily with a needle, and in some specimens are absent (as illustrated on right hand epigyne of Text Fig. 91). Similar exudates occur in the epigynes of *Agroeca* (Vol. 1, p. 90 (Text Figs 34e, 35c)), but are less readily dislodged. Male palp characteristic.

DISTRIBUTION

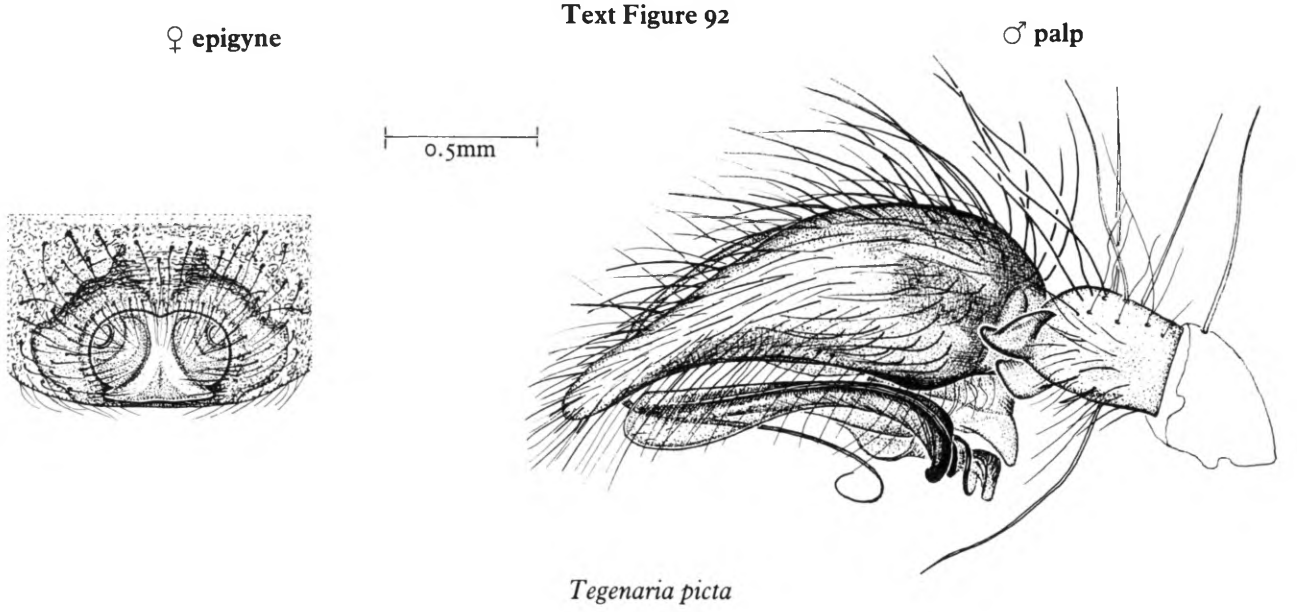
Both sexes of this species were discovered in Kent by pitfall trapping on shingle in 1981 (Williams & Locket, 1982). *A. fuscus* has a widespread distribution in Europe, and it seems likely that the species occurs elsewhere in the British Isles.

Text Figure 91



Apostenus fuscus

Text Figure 92



Tegenaria picta

Family AGELENIDAE

Genus *Tegenaria* Latreille, 1804

Another species of *Tegenaria* was discovered in Britain in 1982 by R. Jones, to whom I am indebted for the loan of specimens. (See also Vol. 1, pp. 158–163 (Text Figs 69–72).)

Tegenaria picta Simon, 1870

Text Fig. 92

Length: ♀: 6–7mm; ♂: 5.5–6mm

Similar in general appearance to *T. duellica* (Plates 91, 96c), but much smaller and with the abdominal pattern only very faintly marked. The central paler abdominal markings, when present, have a slightly reddish brown tinge. The posterior spinners are rather longer and more conspicuous in *T. picta* than in other British *Tegenaria*. Epigyne and male palp highly characteristic (Text Fig. 92).

DISTRIBUTION

This species has so far been found only in an abandoned chalk pit in West Sussex. There it spins its sheet web under chalk boulders (Jones, 1984b). It is widespread and common in Continental Europe, occurring both in woodland and in mountainous habitats.

Family THERIDIIDAE

Genus *Enoplognatha* Pavesi, 1880

The new species *E. latimana* was described by Hippa & Oksala (1982) in their revision of the *Enoplognatha ovata* (Clerck) group. Snazell (1983) subsequently recorded the species from the British Isles.

Enoplognatha latimana Hippa & Oksala, 1982

Text Figs 93a,c

Length: ♀: 4–6mm; ♂: 3–5mm

Very similar in general appearance to *E. ovata* (Plates 122b, 123). The degree of colour polymorphism in *E. latimana* is unknown, as all the studies so far have been done on preserved material in which any red pigment would have washed out, but is likely to be similar to that exhibited by *E. ovata*. Snazell (pers. comm.) has seen numerous fresh specimens of *E. latimana*, collected mainly in Dorset, and finds that few have red markings and very few have black spots.

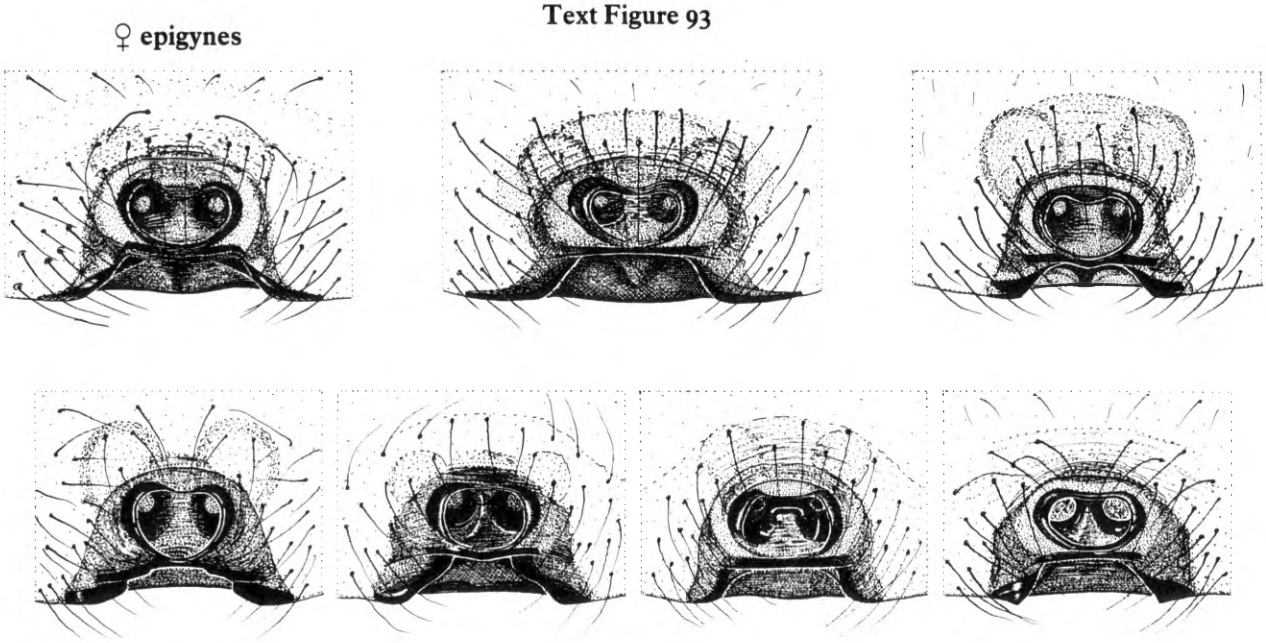
DISTINGUISHING THE SPECIES

Males of *E. ovata* and *E. latimana* are easily distinguished by their palps, which show several constant differences; in lateral view the tip of the conductor is directed dorsally in *E. latimana* (Text Fig. 93c) and ventrally in *E. ovata* (Text Fig. 93d). Females are also easily distinguished by their epigynes, but the latter exhibit considerable variation in *E. latimana* (Text Fig. 93a). Such variation occurs within as well as between populations, and all the illustrations are of specimens collected in south-east England. The epigyne of *E. latimana* always has a clearly modified posterior margin, with a pair of highly sclerotized ridges laterally. The epigyne of *E. ovata* (Text Fig. 93b) is usually smaller, less sclerotized, and lacks the definite posterolateral ridges. Of the *E. ovata* epigynes examined, the closest to *E. latimana* seen is illustrated on the extreme right of Text Fig. 93b.

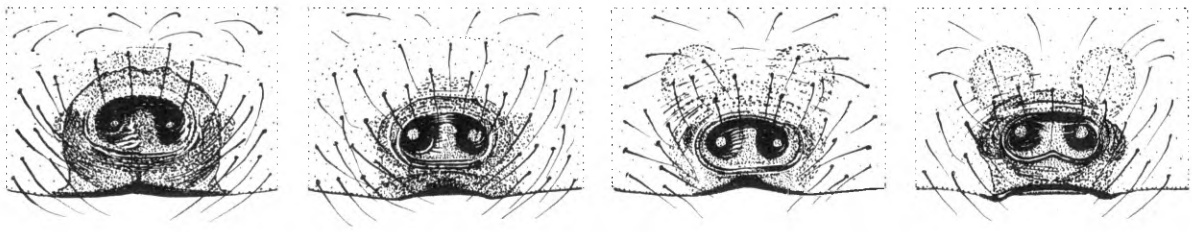
DISTRIBUTION

The distribution of *E. latimana* in Britain is so far unknown. Snazell (*loc. cit.*) checked various museum and private collections of *E. ovata* and found no *E. latimana*, and I found none in collections from the Midlands, North Wales, Yorkshire and Humberside. It appears therefore to be an uncommon species, perhaps restricted to the more southern parts of England and Wales.

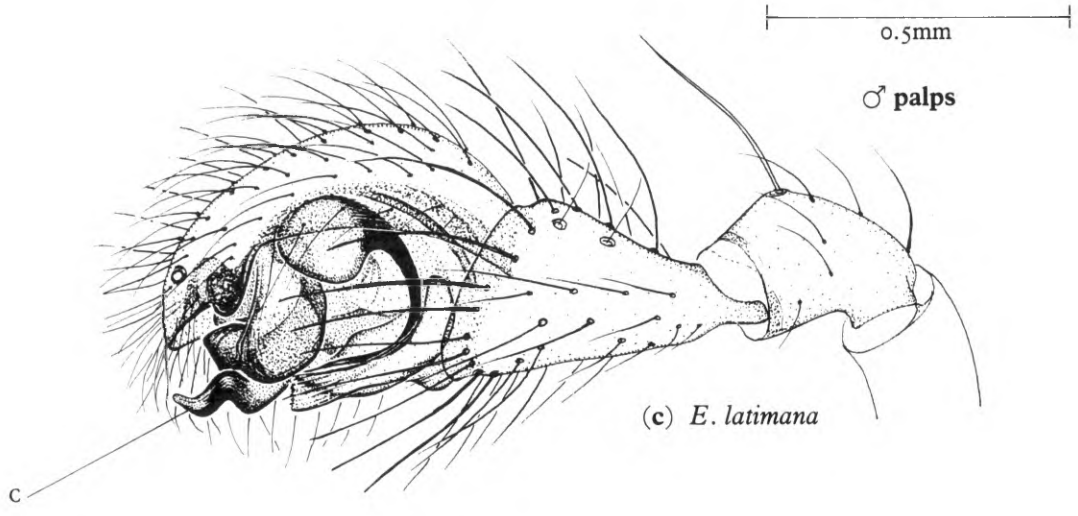
Text Figure 93



(**a**) *Enoplognatha latimana*

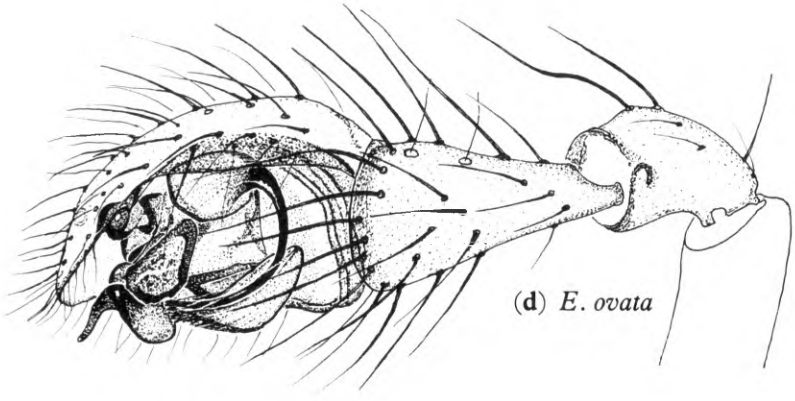


(**b**) *E. ovata*



(**c**) *E. latimana*

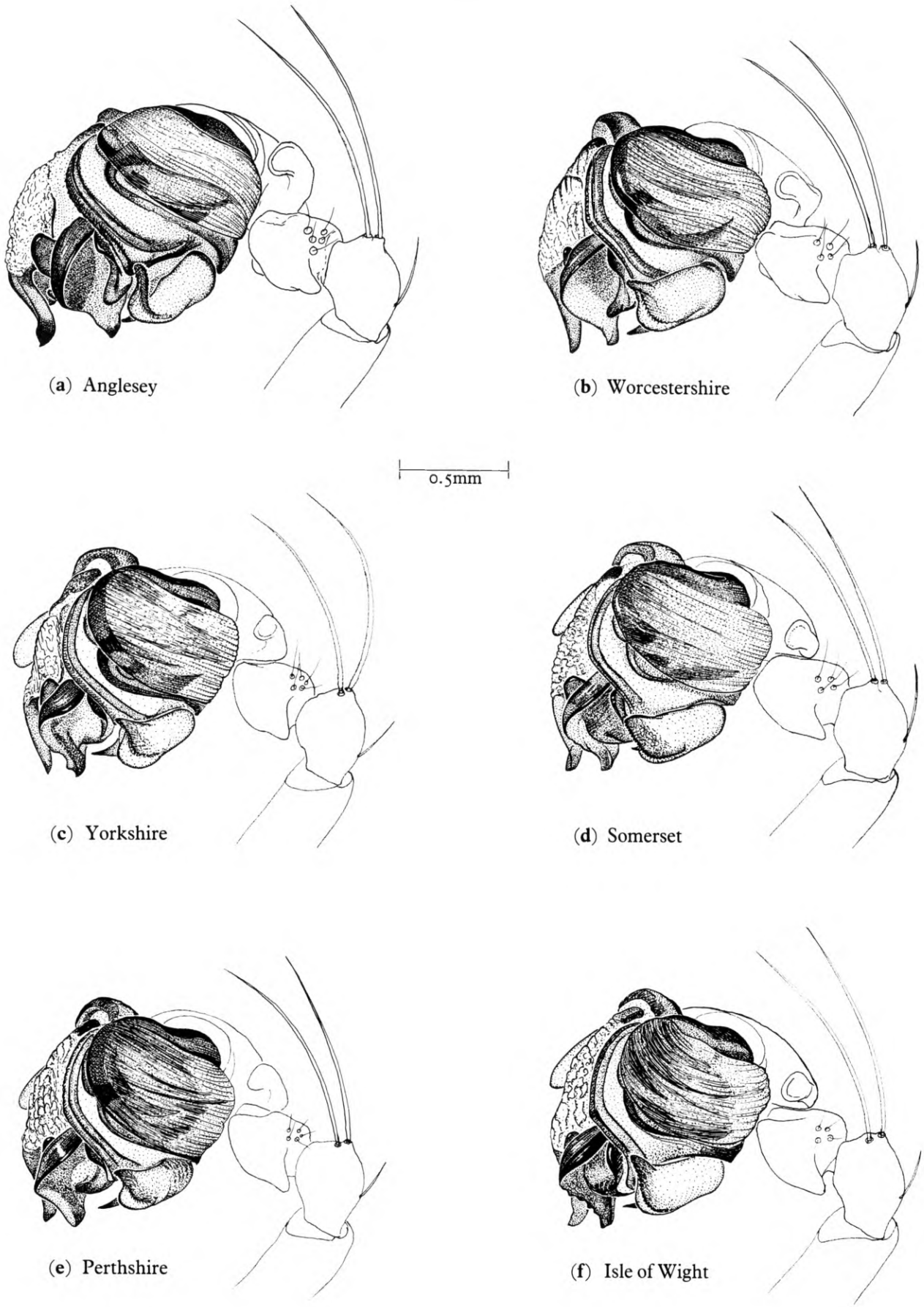
c = conductor



(**d**) *E. ovata*

Text Figure 94

Araneus diadematus **variability of ♂ palps**



Family ARANEIDAE

Genus *Araneus* Clerck, 1757

Araneus diadematus Clerck, 1757
Text Figs 94a–f

NOTE ON VARIATION IN MALE PALPS

The epigynes and male palps of all spiders show some intraspecific variation which can sometimes be considerable; it would be impracticable to illustrate this for all species. The overall complexity of male palps generally allows easy identification using a combination of features. Epigynes are usually less complex and in a number of cases, particularly in the Linyphiidae, it has been necessary to illustrate a series of specimens.

For some time I had thought that *Araneus diadematus* might comprise two or more closely related species (*cf.* Text Figs 94a and 94e). The chances of overlooking such species are very great since *A. diadematus* is common, distinctively marked and 'not worth collecting'; perhaps few arachnologists even bother examining the palps and epigynes. However, examination of a series of male palps suggests that there is only one, extremely variable species. The variation occurs both within and between populations; the localities given (Text Figs 94a–f) do not imply the exclusive occurrence of a palpal form in those areas. In the relatively small sample examined, I was unable to detect any distinct cline. The epigynes are similarly variable. (See also Vol. **1**, p. 208 (Text Fig. 93a).)

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II. GLOSSARY

(See also Vol. 1: 16–26, Text Figs 2–11.)

abdomen (adj. **abdominal**) – the posterior of the two major divisions of the body of a spider; often called the opisthosoma.

accessory claws – serrated and greatly thickened hairs near the true tarsal claws in some spiders.

adnexae – a collective term for the spermathecae and ducts forming the internal reproductive organs of female spiders; sometimes variously referred to as the 'vulva', 'internal genitalia', 'internal epigyne' or 'dorsal epigyne', all of which are either misleading or cumbersome. (See also *dorsal* and *vulva*)

alveolus – the hollowed-out part of the cymbium, or male palpal tarsus, which the palpal bulb arises from and is partially contained within.

anal tubercle – a small process, dorsal to the spinners, carrying the anal opening.

annulation(s) – ring(s) of pigmentation around leg segments.

anterior – nearer the front or head end. May be used in combination, e.g. *anterolateral*, *anteroventral*, *anterodorsal*.

apophysis (pl. **apophyses**) – usually applied to the type of chitinized process arising from the tibia and patella of male palps and from palpal sclerites, but may occur elsewhere on the limbs and body.

arthrodial membrane – flexible membranes connecting adjacent body sclerites, and joints of limbs and other appendages.

axis – a central line of symmetry of an organ or organism.

ballooning – the aeronautical activity of spiders, achieved when long strands of silk, produced by the spinners, are caught by air currents; spiders may thus travel through the air, often at great height and over large distances.

bifid – forked, or evenly divided into two lobes by a cleft.

book lung – an air-filled cavity, containing thin vascular lamellae arranged like book leaves, opening on the ventral side of the abdomen.

boss – a smooth, rounded or slightly conical prominence.

branchial operculum (pl. **branchial opercula**) – A chitinized plate covering the book lung.

calamistrum (pl. **calamistra**) – a comb- or brush-like series of hairs on metatarsus IV of cribellate spiders.

carapace – the exoskeletal shield covering the dorsal surface of the cephalothorax or prosoma.

cardiac mark – a lanceolate midline mark on the abdomen, anterodorsally, over the heart.

catalepsy – the action of 'feigning death' induced by sudden disturbance.

caudal – pertaining to the posterior end of the abdomen – the 'tail'.

cavernicolous – living in caves or subterranean passages.

cephalothoracic junction – a furrow extending forwards and to the sides from the centre of the carapace, marking the junction of head and thoracic regions; sometimes called the cervical groove.

cephalothorax – the anterior of the two major divisions of the body of a spider; often called the prosoma.

chaetotaxy – the arrangement of the leg spines, particularly in relation to classification.

chelicerae – a pair of jaws, each comprising a large basal portion and a fang.

chitinized – hardened or horny; not flexible or membranous. See also *sclerotized*.

clavate – club-shaped.

claw – a strong, curved, sharp-pointed process (often toothed) on the distal extremity of a leg and, sometimes, the female palp.

claw tuft – a bunch of hairs at the tip of the leg tarsus in those spiders with only two claws.

cline – a graded sequence of character expression (morphological or behavioural) across a series of neighbouring populations. Sometimes used in combination, e.g. ecocline, morphocline.

clypeus (adj. **clypeal**) – the area between the anterior row of eyes and the anterior edge of the carapace.

colulus – a small midline appendage or tubercle arising from just in front of the anterior spinners in some spiders.

conductor – a sclerite in the male palp which, when functional, serves to support and guide the embolus in copulation.

condyle – a smooth, rounded protuberance sometimes present laterally near the base of the chelicera.

contralateral – on the opposite side. See also *ipsilateral*.

coriaceous – leathery in texture.

coxa (pl. **coxae**; adj. **coxal**) – the segment of leg (or palp) nearest the body.

cribellum – a spinning organ in the form of a transverse plate, just in front of the spinners in some (cribellate) spiders.

cymbium – (pl. **cymbia**; adj. **cymbial**) – the broadened, hollowed-out tarsus of the male palp to which the palpal bulb is attached.

distal – pertaining to or situated at the outer end; that part of a limb/limb segment/appendage which is farthest away from the body or its attachment (cf. *proximal*).

dorsal view – viewed from above. May be used in combination e.g. *dorsolateral view*. (NB, epigyne normally viewed ventrally, with spider on its back; if detached and viewed from 'behind', this is a dorsal view. However, as the epigyne is an external structure, an unobscured dorsal view of it requires the removal of the adnexae.)

dorsum (adj. **dorsal**) – the back or upper surface.

ecdysis – moulting; the periodic act of casting off the outer layers of integument.

ectal view – the view of a (usually) paired asymmetrical structure (e.g. male palp) from the outside. May be used in combination e.g. *dorsoectal view*. (cf. *lateral* and *mesal*)

embolus (pl. **emboli**; adj. **embolic**) – the structure containing the terminal portion of the ejaculatory duct and its opening in the male palp; it may be insignificant in some species, or a long, coiled or whip-like structure in others.

epigastric fold – a fold and groove separating the region of the book lungs and epigyne from the more posterior portion of the ventral abdomen.

epigyne – (**epigynum**) a more or less sclerotized and modified external structure associated with the reproductive openings of the adult females of most spider species.

ethospecies – species distinguished mainly by behavioural traits.

exudate – a fluid which has, by oozing, escaped from or been secreted by certain tissues or organs of the body. Such fluid, often a mixture of protein and cells, frequently dries or coagulates to form a solid, irregular mass.

exuviae – the outer layers of integument cast at ecdysis.

fang – the claw-like distal segment of the chelicera; near its tip opens the duct from the poison gland.

femur – (pl. **femora**; adj. **femoral**) – the third segment of the leg (or palp) counting from the proximal end.

fertilization ducts – ducts leading from the female's spermathecae, through which stored spermatozoa are passed to fertilize the eggs.

flocculent – woolly.

folium – a pattern of pigment on the dorsum of the abdomen which is often leaf-shaped.

form (or **morph**) (abbr. **f.**) – a recognizable minor variant of a population or species, e.g. *Oedothorax gibbosus* f. *tuberosus*.

fovea (pl. **foveae**; adj. **foveal**) – a short median groove on the thoracic part of the carapace, situated just above the internal attachment of the gastric muscles.

gossamer – a light, gauzy film of spiders' silken threads, often enhanced by dew, which may sometimes be spread over considerable areas; also silken threads, singly or in groups, as seen (or felt) floating in the air.

guanin, guanine – fatty tissue, chalky in appearance, associated with the intestinal diverticula; sometimes very abundant subcutaneously in the abdomen, especially dorsally, and showing through unpigmented cuticle as conspicuous white markings (e.g. Plate 138). Such white areas comprise numerous discrete 'cells'. Occasionally also visible through the carapace (e.g. Plate 153a).

gynandromorph – a spider exhibiting gynandry (*q.v.*).

gynandry – an abnormal state, in an adult spider, in which parts of the body and genitalia are female and parts male, and in which the male and female components are themselves normally developed. (cf. *intersexuality*)

haematodocha – a balloon of elastic connective tissue, between groups of sclerites in the male palp, which distends with blood during copulation causing the palpal sclerites to separate and rotate. There may be up to three haematodochae – referred to as proximal, middle and distal, separating three groups of sclerites. See also *palpal bulb*.

head – that part of the cephalothorax anterior to the cephalothoracic junction.

integument – The covering layer of tissue, including the cuticle (skin) and exoskeleton.

intersex – A spider exhibiting intersexuality (*q.v.*).

intersexuality – An abnormal state, in an adult spider, in which parts of the body and genitalia are predominantly female and parts predominantly male, but in which the male and female components are themselves not fully expressed or developed (cf. *gynandry*).

ipsilateral – on the same side. See also *contralateral*.

labium (pl. **labia**; adj. **labial**) – the lip, ventral to the mouth opening, lying between the maxillae and attached to the anterior border of the sternum.

lamella (pl. **lamellae**) – any thin, flattened process or leaf-like plate; as present in the male palps of some spiders and in the book lungs.

lateral view – the view of a bilaterally symmetrical structure (e.g. spider body) from the side. May also be used in combination e.g. *dorsolateral*, *ventrolateral*, (cf. *ectal* and *mesal*).

maxillae (adj. **maxillary**) – the mouthparts ventral to the mouth opening and lateral to the labium, which are the modified coxae of the palps.

median – in the middle or midline.

median apophysis – a sclerite arising from, or associated with, the tegulum and forming part of the middle division of the palpal bulb.

mesal view – the view of a (usually) paired asymmetrical structure (e.g. male palp) from the inside. May also be used in combination e.g. *anteromesal*, *mesoventral*, (cf. *ectal* and *lateral*).

metatarsus (pl. **metatarsi**; adj. **metatarsal**) – the sixth segment of the leg, counting from the proximal end; absent in palps.

morphospecies – species distinguished mainly by morphological characters.

myrmecophilous – thriving in association with ants.

opisthosoma – the posterior of the two major divisions of the body of a spider; usually referred to as the abdomen.

palp (**palpus**) – the second appendage of the cephalothorax, originating behind the chelicerae but in front of the legs; its coxa also forms the maxilla; it lacks a metatarsal segment. In adult male spiders it is modified, often greatly, for sperm transfer.

palpal bulb (or **genital bulb**) – a collective term for the structures comprising the male palpal organ, arising from and partially contained within the alveolus of the palpal cymbium. In its most complete form it comprises three groups of sclerites separated from each other and the cymbium by three haematodochae. The structures are basically arranged in the following order, beginning at the attachment to the cymbium: *proximal haematodocha*; *subtegulum*; *middle haematodocha*; *tegulum* and *median apophysis*; *distal haematodocha*; *apical division*, comprising *embolus* and *conductor*. In many species, some or even most of these structures may be secondarily reduced, fused or absent. See also *haematodocha*.

paracymbium (pl. **paracymbia**; adj. **paracymbial**) – a structure branching from, or attached loosely to, the cymbium. In Theridiidae it comprises a small hook on distal margin of cymbium; in Nesticidae, Tetragnathidae and Araneidae it takes the form of a distinct branch or knob; in Linyphiidae it is a separate sclerite attached by a transparent membrane.

patella (pl. **patellae**; adj. **patellar**) – the fourth segment of the leg or palp, counting from the proximal end.

pedicel – the narrow stalk connecting cephalothorax and abdomen.

pheromone (adj. **pheromonal**) – a chemical, secreted in minute amounts, the release of which affects the behaviour of another animal, generally the opposite sex of the same species.

plumose – feathery.

procurved – curved as an arc having its ends anterior to its centre.

prolateral – of leg spines – on the side, directed forwards; in an imaginary state of the legs straight out to the sides, at right angles to the long axis of the body. See also *retrolateral*.

prosoma – the anterior of the two major divisions of the body of a spider. Usually referred to as the cephalothorax.

proximal – pertaining to or situated at the inner end; that part of a limb/limb segment/appendage closest to the body or its attachment. Sometimes used in combination e.g. *proximolaterally* (cf. *distal*).

race – an intraspecific unit the members of which exhibit common biological, ecological, physiological or geographical characteristics which differ slightly from other members of the species.

recurved – curved as an arc having its ends posterior to its centre.

retrolateral – of leg spines – on the side, directed backwards; in an imaginary state of the legs straight out to the sides, at right angles to the long axis of the body. See also *prolateral*.

rugose – having a wrinkled surface.

scape – a finger-, tongue- or lip-like appendage, free at one end, arising from the midline of the female epigyne.

sclerite – a discrete sclerotized structure, varied in shape, several of which may be present, and interconnected by membranes, in the male palpal organs or elsewhere on the spider's body.

sclerotized – hardened or horny; not flexible or membranous. See also *chitinized*.

scopula (pl. **scopulae**) – a brush of hairs on the ventral aspect of the tarsus and metatarsus in some spiders.

scutum (pl. **scuta**) – a sclerotized plate occurring on the abdomen of some spiders.

seminal receptacles – paired sacs, forming part of the internal female genitalia, which receive and store spermatozoa until required for fertilization of the eggs.

septum – a partition separating two cavities or parts.

serrated – saw-like.

sigillum (pl. **sigilla**) – an impressed, sclerotized spot, usually reddish-brown in colour, pairs of which are often present on the abdomen.

somatic – pertaining to the soma or body of the animal as distinct from the genitalia.

spatulate – flattened club-shape.

spermatheca (pl. **spermathecae**) – a sac or cavity in female spiders, used for the reception and storage of spermatozoa.

spiderling – the nymphal or immature stage of a spider, resembling the adult in general form but smaller; able to move about and feed and no longer dependent on the yolk for nourishment.

spigot – a spinning tube, projecting from the tip of the spinner, through which the silk is extruded from the silk glands. Some spiders may have as many as a hundred spigots over the surface of the tip of each spinner.

spinners – paired appendages at the posterior end of the abdomen, below the anal tubercle, through the spigots of which silk strands are extruded.

spiracle – the opening of the tracheae on the ventral side of the abdomen.

squamiform – scale-like.

sternum (adj. **sternal**) – the heart-shaped or oval exoskeletal shield covering the ventral surface of the cephalothorax, lying posterior to the labium and between the leg coxae.

striae – linear marks, streaks, ridges or furrows; usually applied to such marks radiating from the central fovea on the carapace to its margin, or as part of a stridulating organ (*q.v.*).

stridulating organ – an area with numerous sclerotized, parallel striae which is rubbed by hairs or a tooth on an opposing structure thus creating a sound; such 'file-and-scraper' apparatus may be variously located on chelicerae, palps, legs, abdomen and carapace.

subadult – almost adult.

subcutaneous – situated just below the cuticle or skin.

subtegulum – the sclerite that forms the most proximal of the three divisions of the male palpal bulb; often a ring- or cup-like structure, it is attached to the cymbium by the proximal haematodocha. See also *palpal bulb* and *tegulum*.

sulcus (pl. **sulci**) – a groove or furrow.

tarsus (pl. **tarsi**; adj. **tarsal**) – the most distal segment of the leg or palp.

tegulum (pl. **tegula**; adj. **tegular**) – the sclerite that forms, with the median apophysis, the middle of the three divisions of the male palpal bulb; often a broad ring-like structure. See also *palpal bulb* and *subtegulum*.

thorax (adj. **thoracic**) – that part of the cephalothorax posterior to the cephalothoracic junction.

tibia (pl. **tibiae**) – the fifth segment of the leg or palp, counting from the proximal end.

tibial spine formula – indicates the number of dorsal spines (1 or 2) on the tibia of legs I to IV, from front to back (e.g. 2–2–1–1) and is used extensively in identification of the Linyphiidae.

trachea (pl. **tracheae**; adj. **tracheal**) – Tube, usually paired, through which air is carried around the body and which opens at the spiracle(s).

TmI – this represents the relative position of the trichobothrium along the length of metatarsus I expressed as a decimal fraction. This, and the presence or absence of a trichobothrium on the fourth metatarsus (**TmIV**), is used extensively in the identification of the Linyphiidae.

trichobothriotaxy – the arrangement and position of the trichobothria, particularly in relation to classification.

trichobothrium (pl. **trichobothria**) – a long, fine hair rising almost vertically from a hemispherical socket on the leg; the socket appears as a distinct circle on the limb surface. Trichobothria detect air vibration and currents.

trochanter – the second segment of the leg or palp, counting from the proximal end.

venter – the under surface of the body.

ventral view – viewed from below. Sometimes used in combination e.g. *ventrolateral*, *anteroventral*, (cf. *dorsal view*).

vulva (pl. **vulvae**) – sometimes used as a term for the internal genitalia of the female spider. See also *adnexae*.

III. A CHECK LIST OF BRITISH SPIDERS

This check list differs only in minor details from that published by Merrett, Locket & Millidge (1985). Inevitably there will be considerable future changes in classification and nomenclature as taxonomic research progresses. Where appropriate, other names used for the British species (both now and in recent years) are given alongside those adopted in the present work. This is intended only to facilitate reference to other, relatively modern works on British spiders and to published lists of species. For fuller lists of synonyms, the reader should consult Locket & Millidge (1951, 1953) and Locket, Millidge *et al.* (1974) – essential for all British arachnologists – and the taxonomic works listed in Volume **1** (pp. 28–30).

Research continues into courtship behaviour and its function as a species isolating mechanism, particularly in the Lycosidae (see also Vol. **1**, pp. 23, 33, 133). I consider it unwise to list formally such ethospecies; research is at a very early stage and it is likely that a great many (if not most) of our morphospecies could eventually be divided into behavioural sub-units if they were studied in sufficient detail. My present view, lightly held, is that we should consider these behavioural sub-units as intraspecific; certainly ethospecies differ, but I consider them as different *races*, not different *species*.

Family ATYPIDAE
Atypus affinis Eichwald, 1830

Family ERESIDAE
Eresus niger (Petagna, 1787)

Family AMAUROBIIDAE
Amaurobius fenestralis (Stroem, 1768) = *Ciniflo fenestralis* (Stroem)
Amaurobius similis (Blackwall, 1845) = *Ciniflo similis* Blackwall
Amaurobius ferox (Walckenaer, 1825) = *Ciniflo ferox* (Walckenaer)

Family DICTYNIDAE
Dictyna arundinacea (Linnaeus, 1758)
Dictyna pusilla Thorell, 1856
Dictyna major Menge, 1869
Dictyna uncinata Thorell, 1856
Dictyna latens (Fabricius, 1775) = *Brigittea latens* (Fabricius)
Nigma puella (Simon, 1870) = *Heterodictyna puella* (Simon)
= *Dictyna puella* Simon
Nigma flavescens (Walckenaer, 1825) = *Heterodictyna flavescens* (Walckenaer)
= *Dictyna flavescens* (Walckenaer)
Nigma walckenaeri (Roewer, 1951) = *Heterodictyna walckenaeri* Roewer
= *Dictyna viridissima* (Walckenaer)

Lathys humilis (Blackwall, 1855)
Lathys nielseni (Schenkel, 1932)
Lathys stigmatisata (Menge, 1869)
Argenna subnigra (O. P.-Cambridge, 1861)
Argenna patula (Simon, 1874) = *Protadia patula* (Simon)
Altella lucida (Simon, 1874)

Family ULOBORIDAE
Uloborus walckenaerius Latreille, 1806
Hyptiotes paradoxus (C. L. Koch, 1834)

Family OONOPIDAE
Oonops pulcher Templeton, 1835
Oonops domesticus de Dalmas, 1916

Family SCYTODIDAE
Scytodes thoracica Latreille, 1804

Family DYSDERIDAE
Dysdera erythrina (Walckenaer, 1802)
Dysdera crocata C. L. Koch, 1838
(listed as C. L. Koch, 1839 in Vol. 1 – see Brignoli, 1985)
Harpactea hombergi (Scopoli, 1763)

Family SEGESTRIIDAE
Segestria senoculata (Linnaeus, 1758)
Segestria bavarica C. L. Koch, 1843
Segestria florentina (Rossi, 1790)

Family PHOLCIDAE
Pholcus phalangioides (Fuesslin, 1775)
Psilochorus simoni (Berland, 1911) = *Physocyclus simoni* Berland

Family ZODARIIDAE
Zodarion italicum (Canestrini, 1868)

Family GNAPHOSIDAE
Drassodes lapidosus (Walckenaer, 1802)
Drassodes cupreus (Blackwall, 1834) = *Drassodes lapidosus cupreus* (Blackwall)
= *Drassodes lapidosus macer* (Thorell)

Drassodes pubescens (Thorell, 1856)
Haplodrassus signifer (C. L. Koch, 1839) = *Drassodes signifer* (C. L. Koch)
Haplodrassus dalmatensis (L. Koch, 1866) = *Drassodes dalmatensis* (L. Koch)
Haplodrassus silvestris (Blackwall, 1833) = *Drassodes silvestris* (Blackwall)
Haplodrassus minor (O. P.-Cambridge, 1879) = *Drassodes minor* (O. P.-Cambridge)
Haplodrassus soerenseni (Strand, 1900) = *Drassodes sörenseni* (Strand)
Haplodrassus umbratilis (L. Koch, 1866)
Scotophaeus blackwalli (Thorell, 1873) = *Herpyllus blackwalli* (Thorell)
Phaeocedus braccatus (L. Koch, 1866)
Zelotes pedestris (C. L. Koch, 1839) = *Trachyzelotes pedestris* (C. L. Koch)
Zelotes lutetianus (L. Koch, 1866) = *Drassyllus lutetianus* (L. Koch)
Zelotes pusillus (C. L. Koch, 1833) = *Drassyllus pusillus* (C. L. Koch)
Zelotes rusticus (L. Koch, 1872) = *Urozelotes rusticus* (L. Koch)
Zelotes praeficus (L. Koch, 1867) = *Drassyllus praeficus* (L. Koch)
Zelotes electus (C. L. Koch, 1839)
Zelotes latreillei (Simon, 1878)
Zelotes apricorum (L. Koch, 1876)
Zelotes subterraneus (C. L. Koch, 1833)
Zelotes serotinus (L. Koch, 1867)
Zelotes petrensis (C. L. Koch, 1839)
Gnaphosa lugubris (C. L. Koch, 1839)
Gnaphosa occidentalis Simon, 1878
Gnaphosa leporina (L. Koch, 1866)
Callilepis nocturna (Linnaeus, 1758)
Micaria pulicaria (Sundevall, 1831)
Micaria romana L. Koch, 1866 = *Micaria scintillans* (O. P.-Cambridge)

Micaria alpina L. Koch, 1872
Micaria subopaca Westring 1861
Micaria silesiaca L. Koch, 1875

Family CLUBIONIDAE

Subfamily Clubioninae
Clubiona corticalis (Walckenaer, 1802)
Clubiona reclusa O. P.-Cambridge, 1863
Clubiona subsultans Thorell, 1875
Clubiona stagnatilis Kulczynski, 1897
Clubiona rosserae Locket, 1953
Clubiona norvegica Strand, 1900
Clubiona coerulescens L. Koch, 1867
Clubiona pallidula (Clerck, 1757)
Clubiona phragmitis C. L. Koch, 1843
Clubiona terrestris Westring, 1862
Clubiona neglecta O. P.-Cambridge, 1862
Clubiona similis L. Koch, 1867
Clubiona lutescens Westring, 1851
Clubiona compta C. L. Koch, 1839
Clubiona brevipes Blackwall, 1841
Clubiona trivialis C. L. Koch, 1841
Clubiona juvenis Simon, 1878
Clubiona genevensis L. Koch, 1867
Clubiona diversa O. P.-Cambridge, 1862
Clubiona subtilis L. Koch, 1867
Cheiracanthium erraticum (Walckenaer, 1802)
Cheiracanthium pennyi O. P.-Cambridge, 1873
Cheiracanthium virescens (Sundevall, 1833)

Subfamily Liocraninae
Agroeca brunnea (Blackwall, 1833)
Agroeca lusatica (L. Koch, 1875)
Agroeca proxima (O. P.-Cambridge, 1871)
Agroeca inopina O. P.-Cambridge, 1886
Agroeca cuprea Menge, 1873
Agroeca striata Kulczynski, 1882 = *Agraecina striata* (Kulczynski)
Apostenus fuscus Westring, 1851
Scotina celans (Blackwall, 1841)
Scotina gracilipes (Blackwall, 1859)
Scotina palliardi (L. Koch, 1881)
Liocranum rupicola (Walckenaer, 1825)
Phrurolithus festivus (C. L. Koch, 1835)
Phrurolithus minimus C. L. Koch, 1839

Family ZORIDAE
Zora spinimana (Sundevall, 1833)
Zora armillata Simon, 1878
Zora nemoralis (Blackwall, 1861)
Zora silvestris Kulczynski, 1897

Family ANYPHAENIDAE
Anyphaena accentuata (Walckenaer, 1802)

Family EUSPARASSIDAE
Micrommata virescens (Clerck, 1757)

Family THOMISIDAE

Subfamily Misumeninae

Thomisus onustus Walckenaer, 1806
Diaea dorsata (Fabricius, 1777)
Misumena vatia (Clerck, 1757)
Pistius truncatus (Pallas, 1772)
Xysticus cristatus (Clerck, 1757)
Xysticus audax (Schrank, 1803)
Xysticus kochi Thorell, 1872
Xysticus erraticus (Blackwall, 1834)
Xysticus lanio C. L. Koch, 1824
Xysticus ulmi (Hahn, 1831)
(first described by Hahn in 1831 in *Monographie der Spinnen*, Part 6 (P. Sacher, pers.comm.) – i.e. before *Die Arachniden* – see Brignoli, 1985)
Xysticus bifasciatus C. L. Koch, 1837
Xysticus luctator L. Koch, 1870
Xysticus sabulosus (Hahn, 1832)
(listed as Hahn, 1831 in Vol. 1 – see Brignoli, 1985)
Xysticus luctuosus (Blackwall, 1836)
Xysticus acerbus Thorell, 1872
Xysticus robustus (Hahn, 1832)
(listed as Hahn, 1831 in Vol. 1 – see Brignoli, 1985)
Oxyptila blackwalli Simon, 1875
Oxyptila scabricula (Westring, 1851)
Oxyptila nigrita (Thorell, 1875)
Oxyptila sanctuaria (O. P.-Cambridge, 1871)
Oxyptila praticola (C. L. Koch, 1837)
Oxyptila trux (Blackwall, 1846)
Oxyptila simplex (O. P.-Cambridge, 1862)
Oxyptila atomaria (Panzer, 1810)
Oxyptila brevipes (Hahn, 1826)
(listed as Hahn, 1831 in Vol. 1; first described in 1826 in *Monographie der Spinnen*, Part 4 (P. Sacher, pers. comm.))

Subfamily Philodrominae

Philodromus dispar Walckenaer, 1825
Philodromus aureolus (Clerck, 1757)
Philodromus praedatus O. P.-Cambridge, 1871
Philodromus cespitum (Walckenaer, 1802) = *Philodromus aureolus caespiticolis* (Walckenaer)
Philodromus buxi Simon, 1884
Philodromus collinus C. L. Koch, 1835
Philodromus fallax Sundevall, 1833
Philodromus histrio (Latreille, 1819)
Philodromus emarginatus (Shrank, 1803)
Philodromus rufus Walckenaer, 1825
Philodromus margaritatus (Clerck, 1757)
Thanatus striatus C. L. Koch, 1845
Thanatus formicinus (Clerck, 1757)
Tibellus maritimus (Menge, 1875)
Tibellus oblongus (Walckenaer, 1802)

Family SALTICIDAE

Salticus scenicus (Clerck, 1757)
Salticus cingulatus (Panzer, 1797)
Salticus zebraneus (C. L. Koch, 1837)
Salticus mutabilis Lucas, 1846
Heliophanus cupreus (Walckenaer, 1802)
Heliophanus flavipes (Hahn, 1832)
(listed as described by C. L. Koch, 1848 in Vol. 1)
Heliophanus auratus C. L. Koch, 1835

Heliophanus melinus L. Koch, 1867 = *Heliophanus expers* (O. P.-Cambridge)
Marpissa muscosa (Clerck, 1757)
Marpissa radiata (Grube, 1859) not *Marpissa pomatia* (Walckenaer)
Marpissa nivoyi (Lucas, 1846) = *Hyctia nivoyi* (Lucas)
Bianor aurocinctus (Ohlert, 1865) = *Bianor aenescens* (Simon)
Ballus depressus (Walckenaer, 1802)
Neon reticulatus (Blackwall, 1853)
Neon valentulus Falconer, 1912
Euophrys frontalis (Walckenaer, 1802)
Euophrys herbigrada (Simon, 1871) = *Euophrys molesta* O. P.-Cambridge
Euophrys petrensis C. L. Koch, 1837
Euophrys erratica (Walckenaer, 1825)
Euophrys aequipes (O. P.-Cambridge, 1871)
Euophrys lanigera (Simon, 1871)
Euophrys browningi Millidge & Locket, 1955
Sitticus pubescens (Fabricius, 1775)
Sitticus caricis (Westring, 1861)
Sitticus floricola (C. L. Koch, 1837)
Sitticus rupicola (C. L. Koch, 1837)
Attulus saltator (Simon, 1868)
Evarcha falcata (Clerck, 1757)
Evarcha arcuata (Clerck, 1757)
Aelurillus v-insignitus (Clerck, 1757)
Phlegra fasciata (Hahn, 1826)
Synageles venator (Lucas, 1836)
Myrmarachne formicaria (Degeer, 1778)
Pellenes tripunctatus (Walckenaer, 1802)

Family OXYOPIDAE
Oxyopes heterophthalmus Latreille, 1804

Family LYCOSIDAE
Pardosa agricola (Thorell, 1856) = *Pardosa agricola* (Thorell) + *P. arenicola* (O. P.-Cambridge)
= *Lycosa agricola* Thorell + *L. arenicola* (O. P.-Cambridge)
Pardosa agrestis (Westring, 1861) = *Pardosa agrestis* (Westring) + *P. purbeckensis* (F. O. P.-Cambridge)
= *Lycosa agrestis* Westring + *L. purbeckensis* (F. O. P.-Cambridge)
Pardosa monticola (Clerck, 1757) = *Lycosa monticola* (Clerck)
Pardosa palustris (Linnaeus, 1758) = *Lycosa tarsalis* Thorell
= *Lycosa tarsalis herbigrada* (Blackwall)
Pardosa pullata (Clerck, 1757) = *Lycosa pullata* (Clerck)
Pardosa prativaga (L. Koch, 1870) = *Lycosa prativaga* L. Koch
Pardosa amentata (Clerck, 1757) = *Lycosa amentata* (Clerck)
Pardosa nigriceps (Thorell, 1856) = *Lycosa nigriceps* Thorell
Pardosa lugubris (Walckenaer, 1802) = *Lycosa lugubris* (Walckenaer)
Pardosa hortensis (Thorell, 1872) = *Lycosa hortensis* Thorell
Pardosa proxima (C. L. Koch, 1847) = *Lycosa proxima* C. L. Koch
(listed as 1848 in Vol. 1 – see Brignoli, 1985)
Pardosa trailli (O. P.-Cambridge, 1873) = *Lycosa trailli* O. P.-Cambridge
Pardosa paludicola (Clerck, 1757) = *Lycosa paludicola* (Clerck)
Hygrolycosa rubrofasciata (Ohlert, 1865) = *Lycosa rubrofasciata* (Ohlert)
Xerolycosa nemoralis (Westring, 1861)
Xerolycosa miniata (C. L. Koch, 1834) = *Tarentula pulverulenta* (Clerck)
Alopecosa pulverulenta (Clerck, 1757) = *Tarentula cuneata* (Clerck)
Alopecosa cuneata (Clerck, 1757) = *Tarentula barbipes* (Sundevall)
Alopecosa accentuata (Latreille, 1817)

= *Tarentula fabrilis* (Clerck)

Alopecosa fabrilis (Clerck, 1757)
Trochosa ruricola (Degeer, 1778)
Trochosa robusta (Simon, 1876)
Trochosa terricola Thorell, 1856
Trochosa spinipalpis (F. O. P.-Cambridge, 1895)
= *Trochosa fulvolineata* (Lucas)
Arctosa fulvolineata (Lucas, 1846)
Arctosa perita (Latreille, 1799)
Arctosa leopardus (Sundevall, 1833)
Arctosa cinerea (Fabricius, 1777)
Pirata piscatorius (Clerck, 1757)
Pirata piraticus (Clerck, 1757)
Pirata hygrophilus Thorell, 1872
Pirata uliginosus (Thorell, 1856)
Pirata latitans (Blackwall, 1841)
Pirata tenuitarsis Simon, 1876
= *Arctosa alpigena* (Doleschall)
Tricca alpigena (Doleschall, 1852)
Aulonia albimana (Walckenaer, 1805)

Family PISAURIDAE
Pisaura mirabilis (Clerck, 1757)
Dolomedes fimbriatus (Clerck, 1757)
Dolomedes plantarius (Clerck, 1757)

Family ARGYRONETIDAE
Argyroneta aquatica (Clerck, 1757)

Family AGELENIDAE
Agelena labyrinthica (Clerck, 1757)
Textrix denticulata (Olivier, 1789)
Tegenaria duellica Simon, 1875
= *Tegenaria gigantea* Chamberlin & Ivie
Tegenaria saeva Blackwall, 1844
Tegenaria atrica C. L. Koch, 1843
= *Tegenaria larva* Simon
Tegenaria parietina (Fourcroy, 1785)
Tegenaria agrestis (Walckenaer, 1802)
Tegenaria domestica (Clerck, 1757)
Tegenaria silvestris L. Koch, 1872
Tegenaria picta Simon, 1870
Coelotes atropos (Walckenaer, 1825)
= *Amaurobius atropos* (Walckenaer)
Coelotes terrestris (Wider, 1834)
= *Amaurobius terrestris* (Wider)
Cicurina cicur (Fabricius, 1793)
Tetrilus macrophthalmus (Kulczynski, 1896)
= *Tuberta macrophthalma* Kulczynski
Tetrilus arietinus (Thorell, 1871)
= *Tuberta arietina* (Thorell)
Cryphoeca silvicola (C. L. Koch, 1834)
Tuberta maerens (O. P.-Cambridge, 1863)
= *Tuberta moerens* (O. P.-Cambridge)

Family HAHNIIDAE
Antistea elegans (Blackwall, 1841)
Hahnia montana (Blackwall, 1841)
Hahnia candida Simon, 1875
Hahnia nava (Blackwall, 1841)
Hahnia helveola Simon, 1875
Hahnia pusilla C. L. Koch, 1841
Hahnia microphthalma Snazell & Duffey, 1980

Family MIMETIDAE
Ero cambridgei Kulczynski, 1911
Ero furcata (Villers, 1789)
Ero tuberculata (Degeer, 1778)
Ero aphana (Walckenaer, 1802)

Family THERIDIIDAE

Episinus angulatus (Blackwall, 1836)
Episinus truncatus Latreille, 1809
Episinus maculipes Cavanna, 1876
Euryopis flavomaculata (C. L. Koch, 1836)
Dipoena erythropus (Simon, 1881)
Dipoena prona (Menge, 1868)
Dipoena inornata (O. P.-Cambridge, 1861)
Dipoena tristis (Hahn, 1833)
(listed as Hahn, 1831 in Vol. 1 – see Brignoli, 1985)
Dipoena coracina (C. L. Koch, 1841)
Dipoena melanogaster (C. L. Koch, 1845)
Dipoena torva (Thorell, 1875)
Crustulina guttata (Wider, 1834)
Crustulina sticta (O. P.-Cambridge, 1861)
Steatoda phalerata (Panzer, 1801) = *Asagena phalerata* (Panzer)
Steatoda albomaculata (Degeer, 1778) = *Lithyphantes albomaculatus* (Degeer)
Steatoda bipunctata (Linnaeus, 1758)
Steatoda grossa (C. L. Koch, 1838) = *Teutana grossa* (C. L. Koch)
Anelosimus vittatus (C. L. Koch, 1836) = *Theridion vittatum* C. L. Koch
Anelosimus pulchellus (Walckenaer, 1802) = *Theridion pulchellum* (Walckenaer)
Anelosimus aulicus (C. L. Koch, 1838) = *Theridion aulicum* C. L. Koch
Achaearanea lunata (Clerck, 1757) = *Theridion lunatum* (Clerck)
Achaearanea riparia (Blackwall, 1834) = *Theridion saxatile* C. L. Koch
Achaearanea tepidariorum (C. L. Koch, 1841) = *Theridion tepidariorum* C. L. Koch
Achaeranea tepidariorum simulans (Thorell, 1875) = *Theridion tepidariorum simulans* Thorell
= *Achaearanea simulans* (Thorell)

Achaearanea veruculata (Urquhart, 1885)
Theridion sisyphium (Clerck, 1757)
Theridion impressum L. Koch, 1881
Theridium pictum (Walckenaer, 1802)
Theridion varians Hahn, 1833
(listed as Hahn, 1831 in Vol. 1 – see Brignoli, 1985)
Theridion pinastri L. Koch, 1872
Theridion simile C. L. Koch, 1836
Theridion familiare O. P.-Cambridge, 1871
Theridion melanurum Hahn, 1831 = *Theridion denticulatum* (Walckenaer)
Theridion mystaceum L. Koch, 1870
Theridion blackwalli O. P.-Cambridge, 1871
Theridion tinctum (Walckenaer, 1802)
Theridion instabile O. P.-Cambridge, 1870
Theridion bellicosum Simon, 1873
Theridion bimaculatum (Linnaeus, 1767)
Theridion pallens Blackwall, 1834
Enoplognatha ovata (Clerck, 1757) = *Theridion ovatum* (Clerck)
Enoplognatha latimana Hippa & Oksala, 1982
Enoplognatha thoracica (Hahn, 1833)
(listed as Hahn, 1831 in Vol. 1 – see Brignoli, 1985)
Enoplognatha crucifera (Thorell, 1875) = *Enoplognatha schaufussi* (L. Koch)
Enoplognatha tecta (Keyserling, 1884) = *Enoplognatha caricis* (Fickert)
Enoplognatha oelandica (Thorell, 1875) = *Enoplognatha mandibularis* (Lucas)
Robertus lividus (Blackwall, 1836)
Robertus arundineti (O. P.-Cambridge, 1871)
Robertus neglectus (O. P.-Cambridge, 1871)
Robertus scoticus Jackson, 1914
Robertus insignis O. P.-Cambridge, 1907
Pholcomma gibbum (Westring, 1851)
Theonoe minutissima (O. P.-Cambridge, 1879)

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Family NESTICIDAE
Nesticus cellulanus (Clerck, 1757)

Family TETRAGNATHIDAE
Tetragnatha extensa (Linnaeus, 1758)
(listed as 1785 in Vol. 1)
Tetragnatha pinicola L. Koch, 1870
Tetragnatha montana Simon, 1874
Tetragnatha obtusa C. L. Koch, 1837
Tetragnatha nigrita Lendl, 1886
Tetragnatha striata L. Koch, 1862 = *Eugnatha striata* (L. Koch)
Pachygnatha clercki Sundevall, 1823
Pachygnatha degeeri Sundevall, 1830
Pachygnatha listeri Sundevall, 1830
Meta segmentata (Clerck, 1757) = *Metellina segmentata* (Clerck)
Meta mengei (Blackwall, 1869) = *Metellina mengei* (Blackwall)
= *Meta segmentata mengei* (Blackwall)
Meta merianae (Scopoli, 1763) = *Metellina merianae* (Scopoli)
Meta menardi (Latreille, 1804)
Meta bourneti Simon, 1922

Family ARANEIDAE
Gibbaranea bituberculata (Walckenaer, 1802) = *Araneus bituberculatus* (Walckenaer)
Gibbaranea gibbosa (Walckenaer, 1802) = *Araneus gibbosus* (Walckenaer)
Araneus angulatus Clerck, 1757
Araneus diadematus Clerck, 1757
Araneus quadratus Clerck, 1757
Araneus marmoreus Clerck, 1757
Araneus alsine (Walckenaer, 1802)
Araneus sturmi (Hahn, 1831) = *Atea sturmi* (Hahn)
Araneus triguttatus (Fabricius, 1775) = *Atea triguttata* (Fabricius)
Larinioides cornutus (Clerck, 1757) = *Araneus cornutus* Clerck
Larinioides sclopetarius (Clerck, 1757) = *Araneus sclopetarius* Clerck
Larinioides patagiatus (Clerck, 1757) = *Araneus patagiatus* Clerck
Nuctenea umbratica (Clerck, 1757) = *Araneus umbraticus* Clerck
Agalenatea redii (Scopoli, 1763) = *Araneus redii* (Scopoli)
Neoscona adianta (Walckenaer, 1802) = *Araneus adiantus* (Walckenaer)
Araniella cucurbitina (Clerck, 1757) = *Araneus cucurbitinus* Clerck
Araniella opistographa (Kulczynski, 1905) = *Araneus opistographus* Kulczynski
= *Araneus cucurbitinus opistographus* Kulczynsk
Araniella inconspicua (Simon, 1874) = *Araneus inconspicuus* (Simon)
Araniella alpica (L. Koch, 1869) = *Araneus alpicus* (L. Koch)
Araniella displicata (Hentz, 1847) = *Araneus displicatus* (Hentz)
= *Araneus displicatus westringi* (Thorell)
Zilla diodia (Walckenaer, 1802)
Hypsosinga albovittata (Westring, 1851) = *Singa albovittata* (Westring)
Hypsosinga pygmaea (Sundevall, 1831) = *Singa pygmaea* (Sundevall)
Hypsosinga sanguinea (C. L. Koch, 1844) = *Singa sanguinea* C. L. Koch
(listed as 1845 in Vol. 1 – see Brignoli, 1985)
Hypsosinga heri (Hahn, 1831) = *Singa heri* (Hahn)
Singa hamata (Clerck, 1757)
Cercidia prominens (Westring, 1851)
Zygiella x-notata (Clerck, 1757)
Zygiella atrica (C. L. Koch, 1845)
Zygiella stroemi (Thorell, 1870)
Mangora acalypha (Walckenaer, 1802)
Cyclosa conica (Pallas, 1772)
Argiope bruennichi (Scopoli, 1772)

Family THERIDIOSOMATIDAE
Theridiosoma gemmosum (L. Koch, 1877)

Family LINYPHIIDAE
Ceratinella brevipes (Westring, 1851)
Ceratinella brevis (Wider, 1834)
Ceratinella scabrosa (O. P.-Cambridge, 1871) = *Wideria fugax* (O. P.-Cambridge)
Walckenaeria dysderoides (Wider, 1834) = *Trachynella nudipalpis* (Westring)
Walckenaeria nudipalpis (Westring, 1851) = *Trachynella obtusa* (Blackwall)
Walckenaeria obtusa Blackwall, 1836 = *Cornicularia vigilax* (Blackwall)
Walckenaeria vigilax (Blackwall, 1853)
Walckenaeria stylifrons (O. P.-Cambridge, 1875) = *Wideria antica* (Wider)
Walckenaeria antica (Wider, 1834)
Walckenaeria alticeps (Denis, 1952) = *Wideria cucullata* (C. L. Koch)
Walckenaeria cucullata (C. L. Koch, 1836) = *Wideria nodosa* (O. P.-Cambridge)
Walckenaeria nodosa O. P.-Cambridge, 1873 = *Prosopotheca incisa* (O. P.-Cambridge)
Walckenaeria incisa (O. P.-Cambridge, 1871) = *Wideria polita* (Simon)
= *Cornicularia karpinskii* (O. P.-Cambridge)

Walckenaeria clavicornis (Emerton, 1882)
Walckenaeria mitrata (Menge, 1868) = *Cornicularia cuspidata* (Blackwall)
Walckenaeria cuspidata (Blackwall, 1833) = *Tigellinus furcillatus* (Menge)
Walckenaeria furcillata (Menge, 1869) = *Walckenaera melanocephala* O. P.-Cambridge
Walckenaeria atrotibialis (O. P.-Cambridge, 1878) = *Wideria melanocephala* (O. P.-Cambridge)
= *Wideria capito* (Westring)

Walckenaeria capito (Westring, 1861) = *Cornicularia unicornis* (O. P.-Cambridge)
Walckenaeria unicornis O. P.-Cambridge, 1861 = *Prosopotheca monoceros* (Wider)
Walckenaeria monoceros (Wider, 1834) = *Prosopotheca corniculans* (O. P.-Cambridge)
Walckenaeria corniculans (O. P.-Cambridge, 1875) = *Cornicularia kochi* (O. P.-Cambridge)
Walckenaeria kochi (O. P.-Cambridge, 1872) = *Walckenaera acuminata* Blackwall
Walckenaeria acuminata Blackwall, 1833
Dicymbium nigrum (Blackwall, 1834)
Dicymbium nigrum f. *brevisetosum* Locket, 1962 = *Dicymbium brevisetosum* Locket
Dicymbium tibiale (Blackwall, 1836)
Entelecara acuminata (Wider, 1834)
Entelecara congenera (O. P.-Cambridge, 1879)
Entelecara flavipes (Blackwall, 1834)
Entelecara erythropus (Westring, 1851)
Entelecara errata O. P.-Cambridge, 1913
Entelecara omissa O. P.-Cambridge, 1902
Moebelia penicillata (Westring, 1851)
Hylyphantes graminicola (Sundevall, 1829) = *Erigonidium graminicola* (Sundevall)
Gnathonarium dentatum (Wider, 1834)
Trematocephalus cristatus (Wider, 1834)
Tmeticus affinis (Blackwall, 1855)
Gongylidium rufipes (Sundevall, 1829)
Dismodicus bifrons (Blackwall, 1841)
Dismodicus elevatus (C. L. Koch, 1838)
Hypomma bituberculatum (Wider, 1834)
Hypomma fulvum Bösenberg, 1902
Hypomma cornutum (Blackwall, 1833)
Metopobactrus prominulus (O. P.-Cambridge, 1872)
Hybocoptus decollatus (Simon, 1881)
Baryphyma pratense (Blackwall, 1861) = *Baryphyma pratensis* (Blackwall)
Baryphyma duffeyi (Millidge, 1954) = *Praestigia duffeyi* Millidge
Baryphyma gowerense (Locket, 1965) = *Acanthophyma gowerensis* (Locket)
= *Lasiargus gowerensis* Locket

Baryphyma trifrons (O. P.-Cambridge, 1863) = *Minyrioloides trifrons* (O. P.-Cambridge)
Baryphyma maritimum (Crocker & Parker, 1970) = *Minyrioloides maritimus* Crocker & Parker

Gonatium rubens (Blackwall, 1833)	
Gonatium rubellum (Blackwall, 1841)	
Gonatium paradoxum (L. Koch, 1869)	= *Gonatium corallipes* (O. P.-Cambridge)
Maso sundevalli (Westring, 1851)	
Maso gallicus Simon, 1894	= *Maso gallica* Simon
Peponocranium ludicrum (O. P.-Cambridge, 1861)	
Pocadicnemis pumila (Blackwall, 1841)	
Pocadicnemis juncea Locket & Millidge, 1953	= *Pocadicnemis pumila* var. *juncea* Locket & Millidge
Hypselistes jacksoni (O. P.-Cambridge, 1902)	
Oedothorax gibbosus (Blackwall, 1841)	
Oedothorax gibbosus f. *tuberosus* (Blackwall, 1841)	= *Oedothorax tuberosus* (Blackwall)
Oedothorax fuscus (Blackwall, 1834)	
Oedothorax agrestis (Blackwall, 1853)	
Oedothorax retusus (Westring, 1851)	
Oedothorax apicatus (Blackwall, 1850)	
Trichopterna thorelli (Westring, 1861)	
Trichopterna cito (O. P.-Cambridge, 1872)	
Pelecopsis mengei (Simon, 1884)	= *Trichopterna mengei* (Simon)
Pelecopsis parallela (Wider, 1834)	= *Lophocarenum parallelum* (Wider)
Pelecopsis nemoralis (Blackwall, 1841)	= *Pelecopsis nemoralis* (Blackwall) + *P. mediocris* (Kulczynski) + *P. locketi* Cooke = *Lophocarenum nemorale* (Blackwall) = *Lophocarenum stramineum* (Menge)
Pelecopsis elongata (Wider, 1834)	= *Lophocarenum elongatum* (Wider)
Pelecopsis radicicola (L. Koch, 1875)	= *Lophocarenum radicicola* (L. Koch)
Silometopus elegans (O. P.-Cambridge, 1872)	
Silometopus ambiguus (O. P.-Cambridge, 1905)	= *Silometopus curtus* (Simon, 1926); [non Simon, 1881]
Silometopus incurvatus (O. P.-Cambridge, 1873)	
Silometopus reussi (Thorell, 1871)	= *Silometopus interjectus* (O. P.-Cambridge)
Mecopisthes peusi Wunderlich, 1972	= *Mecopisthes pusillus* (Menge)
Cnephalocotes obscurus (Blackwall, 1834)	
Acartauchenius scurrilis (O. P.-Cambridge, 1872)	
Trichoncus saxicola (O. P.-Cambridge, 1861)	
Trichoncus hackmani Millidge, 1955	
Trichoncus affinis Kulczynski, 1894	
Ceratinopsis romana (O. P.-Cambridge, 1872)	= *Styloctector romanus* (O. P.-Cambridge)
Ceratinopsis stativa (Simon, 1881)	= *Anacotyle stativa* (Simon)
Evansia merens O. P.-Cambridge, 1900	
Tiso vagans (Blackwall, 1834)	
Tiso aestivus (L. Koch, 1872)	
Troxochrus scabriculus (Westring, 1851)	
Troxochrus scabriculus f. *cirrifrons* (O. P.-Cambridge, 1871)	= *Troxochrus cirrifrons* (O. P.-Cambridge)
Minyriolus pusillus (Wider, 1834)	
Tapinocyba praecox (O. P.-Cambridge, 1873)	
Tapinocyba pallens (O. P.-Cambridge, 1872)	
Tapinocyba insecta (L. Koch, 1869)	
Tapinocyba mitis (O. P.-Cambridge, 1882)	
Tapinocyboides pygmaeus (Menge, 1869)	= *Tapinocyboides pymaea* (Menge) = *Tapinocyba antepenultima* (O. P.-Cambridge)
Microctenonyx subitaneus (O. P.-Cambridge, 1875)	= *Aulacocyba subitanea* (O. P.-Cambridge)
Satilatlas britteni (Jackson, 1913)	= *Perimones britteni* (Jackson)
Thyreosthenius parasiticus (Westring, 1851)	
Thyreosthenius biovatus (O. P.-Cambridge, 1875)	
Monocephalus fuscipes (Blackwall, 1836)	
Monocephalus castaneipes (Simon, 1884)	
Lophomma punctatum (Blackwall, 1841)	
Saloca diceros (O. P.-Cambridge, 1871)	
Gongylidiellum vivum (O. P.-Cambridge, 1875)	

Gongylidiellum murcidum Simon, 1884
Gongylidiellum latebricola (O. P.-Cambridge, 1871)
Micrargus herbigradus (Blackwall, 1854)
Micrargus apertus (O. P.-Cambridge, 1870)
Micrargus subaequalis (Westring, 1851)
Micrargus laudatus (O. P.-Cambridge, 1881)
Notioscopus sarcinatus (O. P.-Cambridge, 1872)
Glyphesis cottonae (La Touche, 1945)
Glyphesis servulus (Simon, 1881)
Erigonella hiemalis (Blackwall, 1841)
Erigonella ignobilis (O. P.-Cambridge, 1871)
Savignya frontata (Blackwall, 1833) = *Savignia frontata* (Blackwall)
Diplocephalus cristatus (Blackwall, 1833)
Diplocephalus permixtus (O. P.-Cambridge, 1871)
Diplocephalus latifrons (O. P.-Cambridge, 1863)
Diplocephalus connatus Bertkau, 1889 = *Diplocephalus adjacens* O. P.-Cambridge
Diplocephalus connatus f. *jacksoni* (O. P.-Cambridge, 1903) = *Diplocephalus jacksoni* O. P.-Cambridge
Diplocephalus picinus (Blackwall, 1841)
Diplocephalus protuberans (O. P.-Cambridge, 1875)
Araeoncus humilis (Blackwall, 1841)
Araeoncus crassiceps (Westring, 1861)
Panamomops sulcifrons (Wider, 1834)
Lessertia dentichelis (Simon, 1884)
Scotinotylus evansi (O. P.-Cambridge, 1894) = *Caledonia evansi* O. P.-Cambridge
Typhochrestus digitatus (O. P.-Cambridge, 1872) = *Typhocrestus digitatus* (O. P.-Cambridge)
Typhochrestus simoni de Lessert, 1907
Milleriana inerrans (O. P.-Cambridge, 1884) = *Scotargus inerrans* (O. P.-Cambridge)
Diplocentria bidentata (Emerton, 1882)
Erigone vagans Audouin, 1826
Erigone dentipalpis (Wider, 1834)
Erigone promiscua (O. P.-Cambridge, 1872)
Erigone atra (Blackwall, 1841)
Erigone arctica (White, 1852)
Erigone longipalpis (Sundevall, 1830)
Erigone tirolensis L. Koch, 1872
Erigone capra Simon, 1884
Erigone welchi Jackson, 1911
Erigone psychrophila Thorell, 1871
Erigone aletris Crosby & Bishop, 1928
Rhaebothorax morulus (O. P.-Cambridge, 1873)
Rhaebothorax paetulus (O. P.-Cambridge, 1875)
Latithorax faustus (O. P.-Cambridge, 1900) = *Eboria fausta* (O. P.-Cambridge)
Semljicola caliginosa (Falconer, 1910) = *Eboria caliginosa* Falconer
Donacochara speciosa (Thorell, 1875)
Leptorhoptrum robustum (Westring, 1851)
Drepanotylus uncatus (O. P.-Cambridge, 1873)
Leptothrix hardyi (Blackwall, 1850) = *Phaulothrix hardyi* (Blackwall)
Hilaira excisa (O. P.-Cambridge, 1870)
Hilaira frigida (Thorell, 1872)
Hilaira nubigena Hull, 1911
Hilaira pervicax Hull, 1908
Halorates reprobus (O. P.-Cambridge, 1879)
Halorates distinctus (Simon, 1884) = *Collinsia distincta* (Simon)
Halorates holmgreni (Thorell, 1871) = *Collinsia holmgreni* (Thorell)
Carorita limnaea (Crosby & Bishop, 1927)
Carorita paludosa Duffey, 1971
Wiehlea calcarifera (Simon, 1884)
Mioxena blanda (Simon, 1884)

Caviphantes saxetorum (Hull, 1916)	= *Lessertiella saxetorum* (Hull)
Asthenargus paganus (Simon, 1884)	
Jacksonella falconeri (Jackson, 1908)	= *Asthenargus falconeri* (Jackson)
Pseudomaro aenigmaticus Denis, 1966	
Ostearius melanopygius (O. P.-Cambridge, 1879)	
Aphileta misera (O. P.-Cambridge, 1882)	= *Hillhousia misera* (O. P.-Cambridge)
Porrhomma pygmaeum (Blackwall, 1834)	
Porrhomma convexum (Westring, 1861)	
Porrhomma pallidum Jackson, 1913	
Porrhomma campbelli F. O. P.-Cambridge, 1894	
Porrhomma microphthalmum (O. P.-Cambridge, 1871)	
Porrhomma errans (Blackwall, 1841)	
Porrhomma egeria Simon, 1884	
Porrhomma oblitum (O. P.-Cambridge, 1870)	
Porrhomma montanum Jackson, 1913	
Porrhomma rosenhaueri (L. Koch, 1872)	
Agyneta subtilis (O. P.-Cambridge, 1863)	
Agyneta decora (O. P.-Cambridge, 1870)	
Agyneta cauta (O. P.-Cambridge, 1902)	
Agyneta olivacea (Emerton, 1882)	
Agyneta conigera (O. P.-Cambridge, 1863)	
Agyneta ramosa Jackson, 1912	
Meioneta innotabilis (O. P.-Cambridge, 1863)	= *Syedrula innotabilis* (O. P.-Cambridge)
Meioneta rurestris (C. L. Koch, 1836)	
Meioneta gulosa (L. Koch, 1869)	
Meioneta nigripes (Simon, 1884)	
Meioneta beata (O. P.-Cambridge, 1906)	
Meioneta mollis (O. P.-Cambridge, 1871)	
Meioneta saxatilis (Blackwall, 1844)	
Meioneta simplicitarsis (Simon, 1884)	
Microneta viaria (Blackwall, 1841)	
Maro minutus O. P.-Cambridge, 1906	
Maro sublestus Falconer, 1915	
Maro lepidus Casemir, 1963	
Syedra gracilis (Menge, 1866)	
Centromerus sylvaticus (Blackwall, 1841)	
Centromerus serratus (O. P.-Cambridge, 1875)	
Centromerus albidus Simon, 1929	
Centromerus cavernarum (L. Koch, 1872)	= *Centromerus jacksoni* Denis
Centromerus incilium (L. Koch, 1881)	
Centromerus prudens (O. P.-Cambridge, 1873)	= *Centromerus subacutus* (O. P.-Cambridge) = *Centromerus parkeri* Cooke
Centromerus aequalis (Westring, 1851)	
Centromerus arcanus (O. P.-Cambridge, 1873)	
Centromerus incultus Falconer, 1915	
Centromerus persimilis (O. P.-Cambridge, 1912)	
Centromerus levitarsis (Simon, 1884)	= *Centromerus laevitarsis* (Simon)
Centromerus dilutus (O. P.-Cambridge, 1875)	= *Centromerus tantulus* Parker
Centromerus capucinus (Simon, 1884)	= *Centromerus incultus* Falconer, in part
Tallusia experta (O. P.-Cambridge, 1871)	= *Centromerus expertus* (O. P.-Cambridge)
Centromerita bicolor (Blackwall, 1833)	
Centromerita concinna (Thorell, 1875)	
Sintula cornigera (Blackwall, 1856)	
Oreonetides vaginatus (Thorell, 1872)	
Saaristoa abnormis (Blackwall, 1841)	= *Oreonetides abnormis* (Blackwall)
Saaristoa firma (O. P.-Cambridge, 1901)	= *Oreonetides firmus* (O. P.-Cambridge)
Macrargus rufus (Wider, 1834)	
Macrargus carpenteri (O. P.-Cambridge, 1894)	= *Macrargus rufus carpenteri* (O. P.-Cambridge)
Bathyphantes approximatus (O. P.-Cambridge, 1871)	

Bathyphantes gracilis (Blackwall, 1841)
Bathyphantes parvulus (Westring, 1851)
Bathyphantes nigrinus (Westring, 1851)
Bathyphantes setiger F. O. P.-Cambridge, 1894
Kaestneria dorsalis (Wider, 1834) = *Bathyphantes dorsalis* (Wider)
Kaestneria pullata (O. P.-Cambridge, 1863) = *Bathyphantes pullatus* (O. P.-Cambridge)
Diplostyla concolor (Wider, 1834) = *Bathyphantes concolor* (Wider)
Poeciloneta globosa (Wider, 1834)
Drapetisca socialis (Sundevall, 1832)
Tapinopa longidens (Wider, 1834)
Floronia bucculenta (Clerck, 1757)
Taranucnus setosus (O. P.-Cambridge, 1863)
Labulla thoracica (Wider, 1834)
Stemonyphantes lineatus (Linnaeus, 1758)
Bolyphantes luteolus (Blackwall, 1833)
Bolyphantes alticeps (Sundevall, 1832)
Lepthyphantes nebulosus (Sundevall, 1830)
Lepthyphantes leprosus (Ohlert, 1865)
Lepthyphantes minutus (Blackwall, 1833)
Lepthyphantes alacris (Blackwall, 1853)
Lepthyphantes whymperi F. O. P.-Cambridge, 1894
Lepthyphantes obscurus (Blackwall, 1841)
Lepthyphantes tenuis (Blackwall, 1852)
Lepthyphantes zimmermanni Bertkau, 1890
Lepthyphantes cristatus (Menge, 1866)
Lepthyphantes mengei Kulczynski, 1887
Lepthyphantes flavipes (Blackwall, 1854)
Lepthyphantes tenebricola (Wider, 1834)
Lepthyphantes ericaeus (Blackwall, 1853)
Lepthyphantes pallidus (O. P.-Cambridge, 1871)
Lepthyphantes pinicola Simon, 1884
Lepthyphantes insignis O. P.-Cambridge, 1913
Lepthyphantes angulatus (O. P.-Cambridge, 1881)
Lepthyphantes antroniensis Schenkel, 1933
Lepthyphantes complicatus (Emerton, 1882) = *Lepthyphantes umbraticola* Keyserling
= *Lepthyphantes audax* Sörensen
Lepthyphantes expunctus (O. P.-Cambridge, 1875)
Lepthyphantes midas Simon, 1884 = *Lepthyphantes carri* Jackson
Helophora insignis (Blackwall, 1841)
Pityohyphantes phrygianus (C. L. Koch, 1836)
Linyphia triangularis (Clerck, 1757)
Linyphia hortensis Sundevall, 1829
Neriene montana (Clerck, 1757) = *Linyphia montana* (Clerck)
= *Linyphia* (*Neriene*) *montana* (Clerck)
Neriene clathrata (Sundevall, 1829) = *Linyphia clathrata* Sundevall
= *Linyphia* (*Neriene*) *clathrata* Sundevall
Neriene peltata (Wider, 1834) = *Linyphia peltata* Wider
= *Linyphia* (*Neriene*) *peltata* Wider
Neriene furtiva (O. P.-Cambridge, 1871) = *Linyphia furtiva* O. P.-Cambridge
= *Linyphia* (*Neriene*) *furtiva* O. P.-Cambridge
Neriene radiata (Walckenaer, 1841) = *Linyphia marginata* C. L. Koch
= *Linyphia* (*Neriene*) *marginata* C. L. Koch
Microlinyphia pusilla (Sundevall, 1829) = *Linyphia pusilla* Sundevall
Microlinyphia impigra (O. P.-Cambridge, 1871) = *Linyphia impigra* O. P.-Cambridge
Allomengea scopigera (Grube, 1859) = *Mengea scopigera* (Grube)
Allomengea vidua (L. Koch, 1879) = *Allomengea warburtoni* (O. P.-Cambridge)
= *Mengea warburtoni* (O. P.-Cambridge)

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(References on next page)

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Notes and Addenda

Notes and Addenda

Index

Principal entries are given in **bold type** followed by references to colour plates 158–237 in Volume 3 shown as (pl. 170). The index also includes references to colour plates A–D and to keys to genera. Species names in Tables A–D of the key to the Linyphiidae (pp. 18–25) and in the Check List (pp. 185–197) are not included.

APPENDIX to Volumes 1 and 2

Corrections, Alterations and Additions

Since this work was first published, a number of minor errors have been discovered; there have also been a number of corrections and alterations to the nomenclature. In addition, several new British species have been discovered; of these, some are completely new to the British Isles and others result from the taxonomic splitting of previously known species. One species has been removed from the British list and a further species is of doubtful status. An index to the Appendix is provided on p. 16.

Volume 1

Page 28, line 19. Details of the British Arachnological Society are now available from the B.A.S. Membership Treasurer, Mr S. H. Hexter, 71 Havant Road, London E17 3JE

Page 37, line 8, for GHAPHOSIDAE read GNAPHOSIDAE

Page 58, line 18, *Oonops domesticus* de Dalmas, 1916 – the author and date should not have brackets.

Page 108, Text Figs 43c & d. When the illustrations of the epigynes of *Philodromus aureolus* and *P. praedatus* were prepared, there were very few specimens of the latter available and my single female unfortunately had a slightly deformed epigyne; the impression given is that the epigynes are more dissimilar than in fact is the case. Many *P. aureolus* are more deeply sclerotized than illustrated and approach the illustration of *P. praedatus*. Accordingly, a new series of epigyne figures have been prepared, (pp. 10, 11, Text Figs 3, 4), based largely on a great deal of new material collected by P. R. Harvey.

Page 153, *Aulonia albimana*, DISTRIBUTION, several specimens of both sexes found on the Isle of Wight (Roberts & Roberts, 1985).

Page 181, Text Figure 80b, *Anelosimus pulchellus*. The description and illustrations of this species were based on French specimens. Since then, I have been able to examine the single British specimen attributed to this species and found it to be an abnormal specimen of *A. vittatus* (Roberts, 1989). *A. pulchellus* should therefore be deleted from the British List.

Page 190, last paragraph. Six specimens of *Theridion pinastri* were collected in 1992, from two localities in Epping Forest, by P. R. Harvey.

Page 194, DISTRIBUTION, another single male of *Robertus insignis* has recently been found, close to the original locality (Proctor, 1990).

Volume 2

In transferring *Pelecopsis mengei* from the genus *Trichopterna*, I failed to indicate that TmIV is **present** in this species (as illustrated in Plate 181, Volume **3**). This should be amended both in the Key to Species and in the descriptive text as follows:

Page 19, TABLE A, insert beneath *Trichopterna cito*,

24c	23g	*Pelecopsis mengei*	,,	,,	1.8–2.3	Pl. 181; ♂ with dorsal abdominal scutum

Page 22, Table B. TmI range 0.81–0.88, delete entry for *Pelecopsis mengei*.

Page 61, line 2, for TmIV absent read TmIV absent in four species, but present in *P. mengei*.

Page 63, to DISTINGUISHING THE SPECIES, add that *P. mengei* distinguished by presence of TmIV.

The presence or absence of TmIV is generally a very reliable feature in linyphiid species, and anomalies seem to be extremely rare. I was therefore interested to see a specimen of *Macrargus rufus*, collected by J. Wright, in which TmIV was clearly present. I could find no other examples despite searching through numerous collections. Nevertheless, the reader might like to add *Macrargus rufus* (TmI 0.4–0.5) to TABLE C, p. 22, and add to p. 136, line 2, that TmIV may very rarely be present in *M. rufus*.

Two further, typographical errors in the Key to Species are:

Page 20, TABLE B, for TmI range 0.49–0.49 read 0.4–0.49

Page 22, TABLE C, for TmI range 0.6–0.07 read 0.6–0.7

Page 183, Glossary, for **exuviae** substitute **exuvium** (pl. **exuvia**).

Page 203, Index, after *Maso* insert:
Mecopisthes **66** (text fig. 27f), 67 (pl. 183b), 69 (text fig. 28a)

Corrections, alterations and additions to the Check List (Volume **2**, pp. 185–197)

A number of amendments to the check list of British spiders have recently been published by Merrett and Millidge (1992). A few of these follow from, and are already included in, the check list in Volume **2**. Others relate to new species, changes in classification, and to minor errors of spelling or dates. These changes are largely followed here except for a few instances where I find myself mildly at variance. In the following list the currently correct species name, author and date are given in the left hand column with that in the Volume **2** checklist alongside. Full details of the changes, including some not adopted here, are given by Merrett and Millidge (1992), and the reader is directed to this publication for a fuller understanding.

Family ERESIDAE	
Eresus cinnaberinus (Olivier, 1789)	*Eresus niger* (Petagna, 1787)
Family AMAUROBIIDAE	
Amaurobius similis (Blackwall, 1861)	*Amaurobius similis* (Blackwall, 1845)
Amaurobius ferox (Walckenaer, 1830)	*Amaurobius ferox* (Walckenaer, 1825)
Family DICTYNIDAE	
Nigma flavescens (Walckenaer, 1830)	*Nigma flavescens* (Walckenaer, 1825) Doubtful status on British list; not recorded since single specimen found in Durham in 1909.
Family DYSDERIDAE	
Harpactea rubicunda (C. L. Koch, 1839)	New to British list; description follows (p. 6, Text Figs 1a–d).
Family ZODARIIDAE	
Zodarion sp.	New to British list; both sexes of this species found in Kent by R. Snazell. The genus *Zodarion* is currently being investigated by R. Bosmans; until this work is completed, it remains difficult to place the new British species and published descriptions must wait.
Family GNAPHOSIDAE	
Scotophaeus blackwalli (Thorell, 1871)	*Scotophaeus blackwalli* (Thorell, 1873)
Scotophaeus scutulatus (L. Koch, 1866)	New to British list; description follows (p. 6, Text Fig. 1b).
Zelotes pedestris (C. L. Koch, 1837)	*Zelotes pedestris* (C. L. Koch, 1839)
Zelotes praeficus (L. Koch, 1866)	*Zelotes praeficus* (L. Koch, 1867)
Zelotes longipes (L. Koch, 1866)	*Zelotes serotinus* (L. Koch, 1867)
Micaria pulicaria (Sundevall, 1832)	*Micaria pulicaria* (Sundevall, 1831)
Family CLUBIONIDAE	
Subfamily Clubioninae	
Clubiona caerulescens L. Koch, 1867	*Clubiona coerulescens* L. Koch 1867
Clubiona terrestris Westring, 1851	*Clubiona terrestris* Westring, 1862
Clubiona comta C. L. Koch, 1839	*Clubiona compta* C. L. Koch, 1839
Clubiona trivialis C. L. Koch, 1843	*Clubiona trivialis* C. L. Koch, 1841
Clubiona genevensis L. Koch, 1866	*Clubiona genevensis* L. Koch, 1867

Subfamily Liocraninae	
Agraecina striata (Kulczynski, 1882)	*Agroeca striata* Kulczynski, 1882
Liocranum rupicola (Walckenaer, 1830)	*Liocranum rupicola* (Walckenaer, 1825)
Family HETEROPODIDAE now considered to be a senior synonym of EUSPARASSIDAE (Platnick, 1989)	
Family THOMISIDAE	
Subfamily Misumeninae	
Xysticus lanio C. L. Koch, 1835	*Xysticus lanio* C. L. Koch, 1824
Ozyptila blackwalli Simon, 1875	*Oxyptila blackwalli* Simon, 1875
Ozyptila scabricula (Westring, 1851)	*Oxyptila scabricula* (Westring, 1851)
Ozyptila nigrita (Thorell, 1875)	*Oxyptila nigrita* (Thorell, 1875)
Ozyptila sanctuaria (O. P.-Cambridge, 1871)	*Oxyptila sanctuaria* (O. P.-Cambridge, 1871)
Ozyptila praticola (C. L. Koch, 1837)	*Oxyptila praticola* (C. L. Koch, 1837)
Ozyptila trux (Blackwall, 1846)	*Oxyptila praticola* (Blackwall, 1846)
Ozyptila simplex (O. P.-Cambridge, 1862)	*Oxyptila simplex* (O. P.-Cambridge, 1862)
Ozyptila atomaria (Panzer, 1801)	*Oxyptila atomaria* (Panzer, 1810)
Ozyptila brevipes (Hahn, 1826)	*Oxyptila brevipes* (Hahn, 1826)
Subfamily Philodrominae	
Philodromus dispar Walckenaer, 1826	*Philodromus dispar* Walckenaer, 1825
Philodromus longipalpis Simon, 1870	New to British list; description follows (p. 8, Text Figs 2c, 3d)
Philodromus rufus Walckenaer, 1826	N.B. Not yet established on British List. Previously confused with *P. albidus* in British literature; descriptions and illustrations in Volume 1 are of *P. albidus* (see below).
Philodromus albidus Kulczynski, 1911	Described and illustrated as *Philodromus rufus*, Walckenaer, 1825 in Volume 1, but described as distinct from *P. rufus* by Segers (1989). Descriptions and new figures for both species follow (p. 8, Text Figs 2a,b, 4c–f).
Family SALTICIDAE	
Heliophanus dampfi Schenkel, 1923	New to British list; description follows (p. 12, Text Fig. 5a).
Ballus chalybeius (Walckenaer, 1802)	*Ballus depressus* (Walckenaer, 1802)
Euophrys erratica (Walckenaer, 1826)	*Euophrys erratica* (Walckenaer, 1825)
Euophrys thorelli Kulczynski, 1891	New to British list; illustrations of genitalia follow (p. 12, Text Fig. 5b).
Evarcha falcata (Clerck, 1757)	A number of recent authors have continued or resurrected the use of *E. flammata* (Clerck) for this species, so I have re-examined Clerck's original descriptions and illustrations (1727). The female described and illustrated as *flammatus* on p. 124 and Pl. 5, Tab. 18 is of very uncertain identity. In contrast to this, the male described and illustrated as *falcatus* on p. 125 and Pl. 5, Tab. 19 is instantly recognizable. The continued use of *falcata* thus appears to be entirely justified.
Family LYCOSIDAE	
Alopecosa barbipes (Sundevall, 1833)	*Alopecosa accentuata* (Latreille, 1817)
Arctosa alpigena (Doleschall, 1852)	*Tricca alpigena* (Doleschall, 1852)
Family AGELENIDAE	
Coelotes atropos (Walckenaer, 1830)	*Coelotes atropos* (Walckenaer, 1825)
Mastigua macrophthalma (Kulczynski, 1897)	*Tetrilus macrophthalmus* (Kulczynski, 1896)
Mastigua arietina (Thorell, 1871)	*Tetrilus arietinus* (Thorell, 1871)

Family THERIDIIDAE	
Dipoena coracina (C. L. Koch, 1837)	*Dipoena coracina* (C. L. Koch, 1841)
Dipoena melanogaster (C. L. Koch, 1837)	*Dipoena melanogaster* (C. L. Koch, 1845)
Steatoda nobilis (Thorell, 1875)	New to British list; description follows (p. 14, Text Fig. 6a).
Anelosimus pulchellus (Walckenaer, 1802)	Deleted from British list. The single British specimen attributed to this species was shown to be an abnormal female of *A. vittatus* (C. L. Koch, 1836) (Roberts, 1989).
Theridion sp.	A new species of *Theridion*, close to *T. pictum* (Walckenaer, 1802), has been discovered in British collections. Investigations are at a very early stage and publication of description must therefore wait.
Theridion instabile O.P.-Cambridge, 1871	*Theridion instabile* O.P.-Cambridge, 1870

NOTE: Wunderlich (1987) transferred *Theridion pallens* Blackwall to the genus *Paidiscura* Archer, 1950 and *Theridion instabile* O. P.-Cambridge and *Theridion bellicosum* Simon to the genus *Rugathodes* Archer, 1950. My inclination is not to follow this; if such narrow criteria for splitting were applied to all theridiids, the result would be a myriad of small genera as, for example, was formerly the case with *Steatoda*. Even within our very limited British fauna one could (arguably with considerably more justification) transfer *Theridion bimaculatum* (Linnaeus, 1767) to *Neottiura* Menge, 1968. Furthermore, one could, again with rather more justification, erect a new genus to include the three British species *Theridion pictum* (Walckenaer, 1802), *Theridion varians* Hahn, 1833 and *Theridion pinastri* L. Koch, 1872 on the basis of relatively large differences in palpal organs, epigynes, male epigastria and reproductive biology. Further to the examples above, if *fully* and *consistently* applied, such splitting would result in the fourteen British species of *Theridion* being divided amongst *nine* genera! My view is that this would obscure rather than clarify relationships, and that broad-brush taxonomy is perhaps more useful. Certainly, in the short term, those out collecting, identifying and recording species should, I believe, be buffered against undue confusion from frequent name changes.

Enoplognatha mordax (Thorell, 1875)	*Enoplognatha crucifera* (Thorell, 1875)
Family TETRAGNATHIDAE	

NOTE: I still consider the family Metidae, used by some authors, to be a junior synonym of Tetragnathidae and the genus *Metellina* to be a junior synonym of *Meta*.

Family ARANEIDAE	
Hypsosinga pygmaea (Sundevall, 1832)	*Hypsosinga pygmaea* (Sundevall, 1831)
Family LINYPHIIDAE	
Walckenaera cuspidata Blackwall, 1833	*Walckenaera cuspidata* (Blackwall, 1833)
Hylyphantes graminicola (Sundevall, 1830)	*Hylyphantes graminicola* (Sundevall, 1829)
Gongylidium rufipes (Linnaeus, 1758)	*Gongylidium rufipes* (Sundevall, 1829)
Hypomma fulvum (Bosenberg, 1902)	*Hypomma fulvum* Bosenberg, 1902
Minicia marginella (Wider, 1834)	New to British list; description follows (p. 14, Text Fig. 6b).
Oedothorax gibbosus (Blackwall, 1841)	NOTE: Breeding experiments have finally proved *O. tuberosus* (Blackwall, 1841) to be a dimorphic male form of *O. gibbosus* (De Keer & Maelfait, 1988).
Pelecopsis nemoralis (Blackwall, 1841)	NOTE: Wunderlich (1985) considered *P. mediocris* (Kulczynski, 1899) and *P. locketi* Cooke, 1967 together as junior synonyms of *P. nemoralioides* (O. P.-Cambridge, 1884) and the latter a species separate from *P. nemoralis* (Blackwall, 1841). I still consider there to be but one species, *P. nemoralis*, for the reasons given in Volume **2**, p. 61, Taxonomic Note.
Pelecopsis radicicola (L. Koch, 1872)	*Pelecopsis radicicola* (L. Koch, 1875)
Micrargus apertus (O. P.-Cambridge, 1871)	*Micrargus apertus* (O. P.-Cambridge, 1870)
Savignia frontata (Blackwall, 1833)	*Savignya frontata* (Blackwall, 1833)
Milleriana inerrans (O. P.-Cambridge, 1885)	*Milleriana inerrans* (O. P.-Cambridge, 1884)
Prinerigone vagans (Audouin, 1826)	*Erigone vagans* Audouin, 1826. See Taxonomic Note, Volume **2**, p. 94; new genus erected by Millidge (1988) following decision by ICZN (1987).

Erigone atra Blackwall, 1833	*Erigone atra* (Blackwall, 1841)
Hilaira excisa (O. P.-Cambridge, 1871)	*Hilaira excisa* (O. P.-Cambridge, 1870)
Porrhomma convexum (Westring, 1851)	*Porrhomma convexum* (Westring, 1861)
Porrhomma oblitum (O. P.-Cambridge, 1871)	*Porrhomma oblitum* (O. P.-Cambridge, 1870)
Porrhomma sp.	New to British list; so far only two females have been found in Sussex (C. J. Topping) and it would seem prudent not to publish a description until more specimens, and males, have been found.
Agyneta decora (O. P.-Cambridge, 1871)	*Agyneta decora* (O. P.-Cambridge, 1870)
Maro lepidus Casemir, 1961	*Maro lepidus* Casemir, 1963
Syedra gracilis (Menge, 1869)	*Syedra gracilis* (Menge, 1866)
Centromerus sp.	New to British list; 12 males of this species have been found by D. Powell near Cambridge (P. Merrett, pers. comm.). The identity of the species is uncertain at present and, until this is resolved and females are found, it would seem wise not to publish a description.
Sintula corniger (Blackwall, 1856)	*Sintula cornigera* (Blackwall, 1856)
Saaristoa firma (O. P.-Cambridge, 1905)	*Saaristoa firma* (O. P.-Cambridge, 1901)
Poeciloneta variegata (Blackwall, 1841)	*Poeciloneta globosa* (Wider, 1834)
Drapetisca socialis (Sundevall, 1833)	*Drapetisca socialis* (Sundevall, 1832)
Bolyphantes alticeps (Sundevall, 1833)	*Bolyphantes alticeps* (Sundevall, 1832)
Lepthyphantes sp.	New to British list; a single female of what appears to be a new species of *Lepthyphantes* has been found in a quarry in Plymouth (P. Merrett, pers. comm.). Publication of description unwise at present, as with *Porrhomma* and *Centromerus* spp., above.
Linyphia hortensis Sundevall, 1830	*Linyphia hortensis* Sundevall, 1829
Neriene clathrata (Sundevall, 1830)	*Neriene clathrata* (Sundevall, 1829)
Microlinyphia pusilla (Sundevall, 1830)	*Microlinyphia pusilla* (Sundevall, 1829)

ADDITIONAL DESCRIPTIONS

Family DYSDERIDAE

Genus *Harpactea* Bristowe, 1939

Another species of *Harpactea* has recently been discovered in Britain by C. Hambler and M. Linfield, to whom I am indebted for the loan of specimens. The species bears a strong resemblance to *Dysdera crocata* and may well have been overlooked in the past.

Harpactea rubicunda (C. L. Koch, 1839)
Text Fig. 1a

Length: ♀: 8–12mm; ♂: 7–8mm.

Very similar in general appearance, coloration and size to *Dysdera crocata* and *D. erythrina* (Volume **3**, Plate 15), but having smaller chelicerae and a carapace shaped more like that of *H. hombergi* (Volume **3**, Plate 16). Carapace with a clear foveal mark, similar to that illustrated on *Scotophaeus blackwalli* (Volume **3**, Plate 22). Legs of more or less uniform colour (as in *Dysdera*) with none of the annulation or darkening of segments which occurs in *H. hombergi*. Dorsal spines on femur IV as illustrated (Text Fig. 1a); slight variation in number of spines present, but always more than in *D. crocata*, *D. erythrina* and *H. hombergi* (cf. Volume **1**, p. 61, Text Fig. 19a,b, and Volume **3**, Plates 15, 16). Tibia IV with two ventral spines and, distally, a pair of ventrolateral spines; additionally there are two prolateral and three retrolateral spines. Coxa IV with two or three dorsal spines. Female has no epigyne but a longitudinal genital mark is usually visible, through the cuticle, anterior to the epigastric fold (Text Fig. 1a); more may be visible if the cuticle is particularly transparent. If cleared, the adnexae appear as illustrated (Text Fig. 1a). Male palp distinctive.

DISTINGUISHING THE SPECIES

Adults larger than *H. hombergi* with a reddish (rather than dark brown) carapace; more likely to be confused with *Dysdera* but having smaller chelicerae. Distinguished from *D. crocata*, *D. erythrina* and *H. hombergi* by the spines on femur IV and by the clear foveal mark on the carapace. Male palp distinctive. Female genital markings rather variable; adnexae quite different from those of *Dysdera* but clearing should not normally be required for identification purposes.

DISTRIBUTION

May have been overlooked in the past. Possibly widespread in parts of southern Essex and found in several sites in the Tilbury area. However, P. R. Harvey reports (pers. comm.) that he has not yet found the species despite extensive pitfall-trapping and fieldwork along the southern Essex area. Usually occurs under stones or debris on hot, dry surfaces, including wasteland and sunny grassland, often in a loose silk cell.

Family GNAPHOSIDAE

Genus *Scotophaeus* Simon, 1893

Another species of *Scotophaeus* has been discovered in Britain by R. Ruffell, to whom I am indebted for the loan of his specimen.

Scotophaeus scutulatus (L. Koch, 1866)
Text Fig. 1b

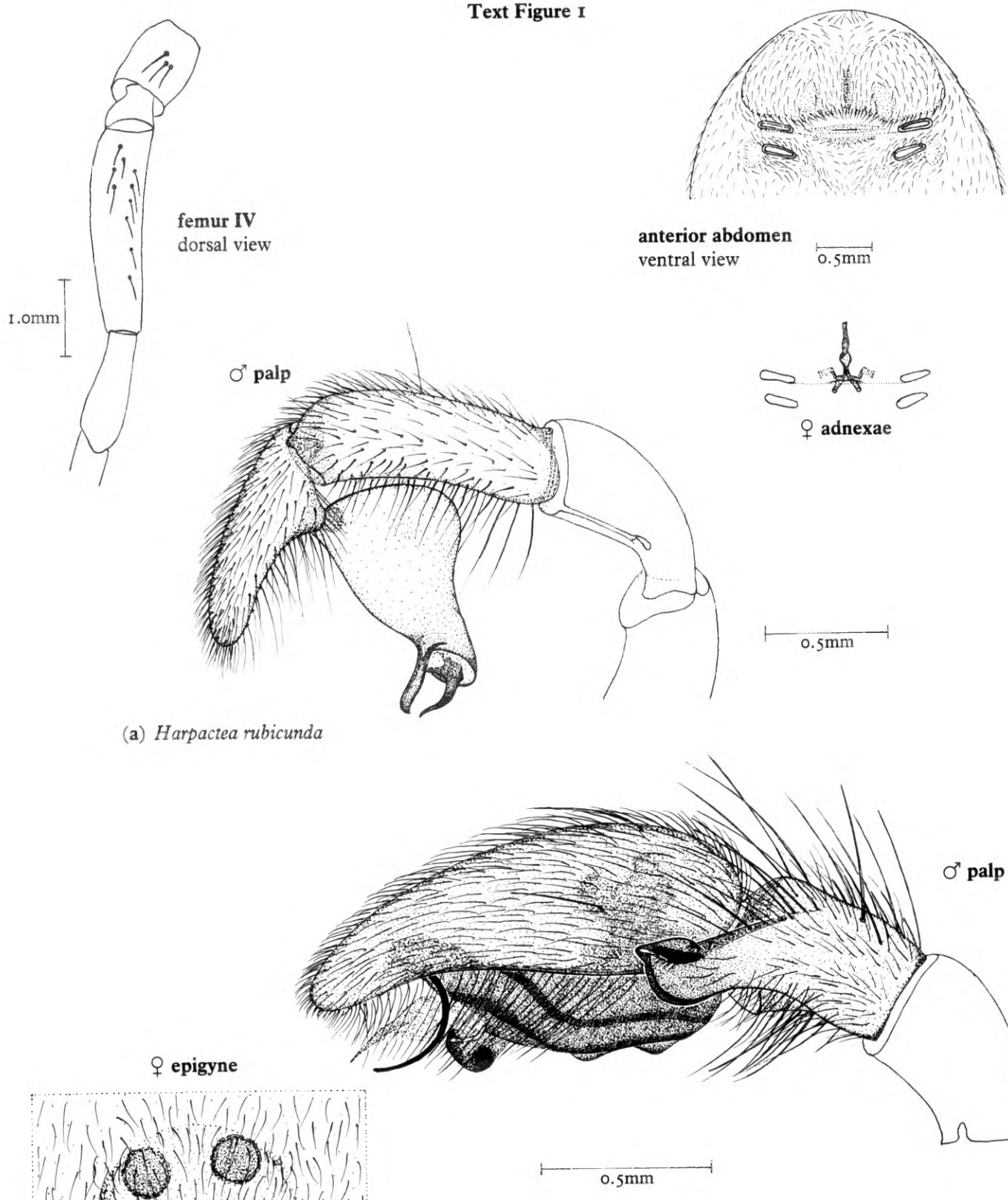
Length: ♀: 8–16mm; ♂: 7–11mm. (British female: 8.5mm)

Very similar in general appearance to *S. blackwalli* (Plate 22, Volume **3**). Male, like *S. blackwalli*, has a small dorsal abdominal scutum; this varies in size in both species and is of no diagnostic value. Epigyne and male palp distinctive (Text Fig. 1b). The epigyne is that of the British specimen; the male palp was drawn from an Austrian specimen.

DISTRIBUTION

A single female of this species, which is widespread throughout Europe, was discovered by Mr R. Ruffell in his house at Colchester in 1989.

Text Figure 1



Family THOMISIDAE

Subfamily PHILODROMINAE

Genus *Philodromus* Walckenaer, 1826

(NOTE: the date of Walckenaer's publication in *Faune francaise* was 1826, not 1825 as given in Volume 1, p. 108.)

Segers (1989) described *Philodromus albidus* Kulczynski as a species distinct from *P. rufus* Walckenaer. So far, all British species previously attributed to *P. rufus* appear to be *P. albidus* and the illustrations in Volume 1 (p. 113, Text Fig. 45a) are also of this latter species. Descriptions and illustrations of both species follow, even though *P. rufus* has not yet been found in the British Isles. More recently, Segers (1992) redescribed *Philodromus longipalpis* Simon as a species close to, but distinct from, *P. aureolus* (Clerck) and *P. cespitum* Walckenaer. *P. longipalpis* does occur in the British Isles and is described below, together with comparative illustrations of *P. aureolus* and *P. cespitum*. When Volume 1 was published, there were very few specimens of *P. praedatus* available. Although males are readily identified by the palps, my single female had a slightly deformed epigyne and the illustrations of *P. aureolus* and *P. praedatus* (Volume 1, p. 109, Text Figs 43c,d) do not convey adequately either the differences or similarities between these two species. Since then, many more specimens of *P. praedatus* have been collected and new, comparative illustrations are given here. I am extremely grateful to P. R. Harvey for the loan of a large number of *Philodromus* specimens.

Philodromus praedatus O.P.-Cambridge, 1871
Text Figs 3b, 4b
(See also Volume 1, pp. 108, 109, Text Fig. 43d)

Very similar in general appearance to *P. aureolus* and *P. cespitum*; usually, but not always, paler. A summary of the differences in general appearance between *P. praedatus* and *P. aureolus* was given by Segers (1990) and, more accurately, by Harvey (1991). However, as Harvey points out, these differences are by no means constant and in any case are largely lost on preservation. Males of *P. praedatus* are readily identifiable by the palpal organs and tibial apophyses (Volume 1, p. 109, Text Fig. 43d). Segers (1990), claims that it is not possible to identify females using the epigyne and does not even illustrate the latter. In fact the female epigyne, close to that of *P. aureolus*, is easily distinguishable in virtually all cases (compare Text Figs 3b, 3a). In both species, the epigyne has a central tongue which, posteriorly, is hairy and, anteriorly, is narrowed and sunken to form an atrium, bounded by antero-lateral arches. In *P. aureolus*, this atrium is largely unmarked and the anterior midline is usually slightly raised to form a very shallow, longitudinal ridge. In *P. praedatus* the atrium is wrinkled transversely to form a number of ridges. The latter are usually convex anteriorly and the atrium is usually smoothly hollowed from side to side with little or no midline ridge. In abnormal specimens, or when the atrium is obscured by concretions, the epigyne should be removed and the adnexae viewed from behind (Text Figs 4b, 4a). In addition to the transverse wrinkling present in *P. praedatus*, the shape of the paired ducts, and the manner in which they curve around to reach the spermathecae, affords reliable identification.

DISTRIBUTION

The distribution of *P. praedatus* remains uncertain, but it is almost certainly widespread in the south of England. It should be sought on the lower branches of trees, particularly oak.

Philodromus longipalpis Simon, 1870
Text Figs 2c, 3d

Length: ♀: 5–6mm; ♂: 3–5.4mm.

Very similar in general appearance to *P. aureolus* and *P. cespitum* but female usually rather paler. Female epigyne similar to that of *P. cespitum* in having the anterior margin of the central tongue clearly separated from the atrium by a sclerotized arch, but distinguished from this species by the size and proportions of the structures (compare Text Figs 3d, 3c). Male palp similar to that of *P. aureolus*, but the palpal organs show a number of differences (compare Text Figs 2c, 2d). All specimens of *P. longipalpis* examined had a small spine projecting from the retrolateral margin of the tegulum. This spine is also present in *P. aureolus*, but is much shorter, does not project beyond the margin of the tegulum, and is not visible in ventral view. The tibial apophyses also appear distinctly different, but it should be noted that the pointed retrolateral apophysis does vary a little (e.g. compare Text Fig. 2d of *P. aureolus* with the specimen illustrated in Volume 1 (Text Fig. 43c).

DISTRIBUTION

So far recorded only from Kent, Essex, Surrey and Somerset, but could be widespread. Undoubtedly overlooked in the past and should be searched for amongst old collections, particularly from the south of England and Wales.

Philodromus albidus Kulczynski, 1911
Text Figs 2a, 4c, 4e and in Volume 1 (as *P. rufus*) p. 113, Text Fig. 45a

Length: ♀: 3.4–5mm; ♂: 3–3.5mm

Philodromus albidus was shown to be distinct from *P. rufus* (below) by Segers (1989). All British specimens so far examined are in fact *P. albidus* and the text and illustrations in Volume 1 relate to *P. albidus*. Similar in general appearance to *P. aureolus* and *P. cespitum* but both sexes paler and smaller. Females usually pale yellow-brown, but sometimes suffused with red.

Philodromus rufus Walckenaer, 1826
Text Figs 2b, 4d, 4f

Length: ♀: 4–6mm; ♂: 3.3–4.6mm (French specimens).

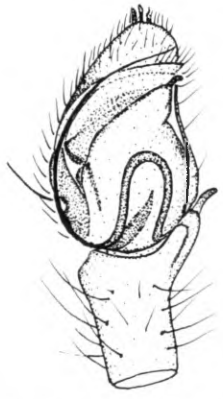
Males of *P. rufus* distinctly reddish in colour and probably distinct, in life, from the rather pale *P. albidus* males. Females usually tinged with red, but not reliably separable from *P. albidus* by colour, which in any case rapidly fades in alcohol.

DISTINGUISHING THE SPECIES

Males are readily distinguished by the palpal organs, viewed ventrally (Text Figs 2a, 2b). In *P. rufus*, the conductor and embolus project well beyond the edge of the cym-

Text Figure 2

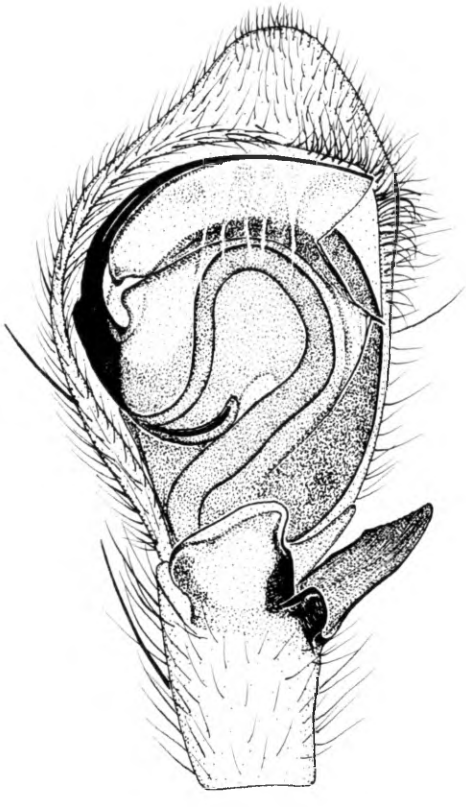
♂ **palps**
ventral view



(**a**) *Philodromus albidus*

(**b**) *P. rufus*

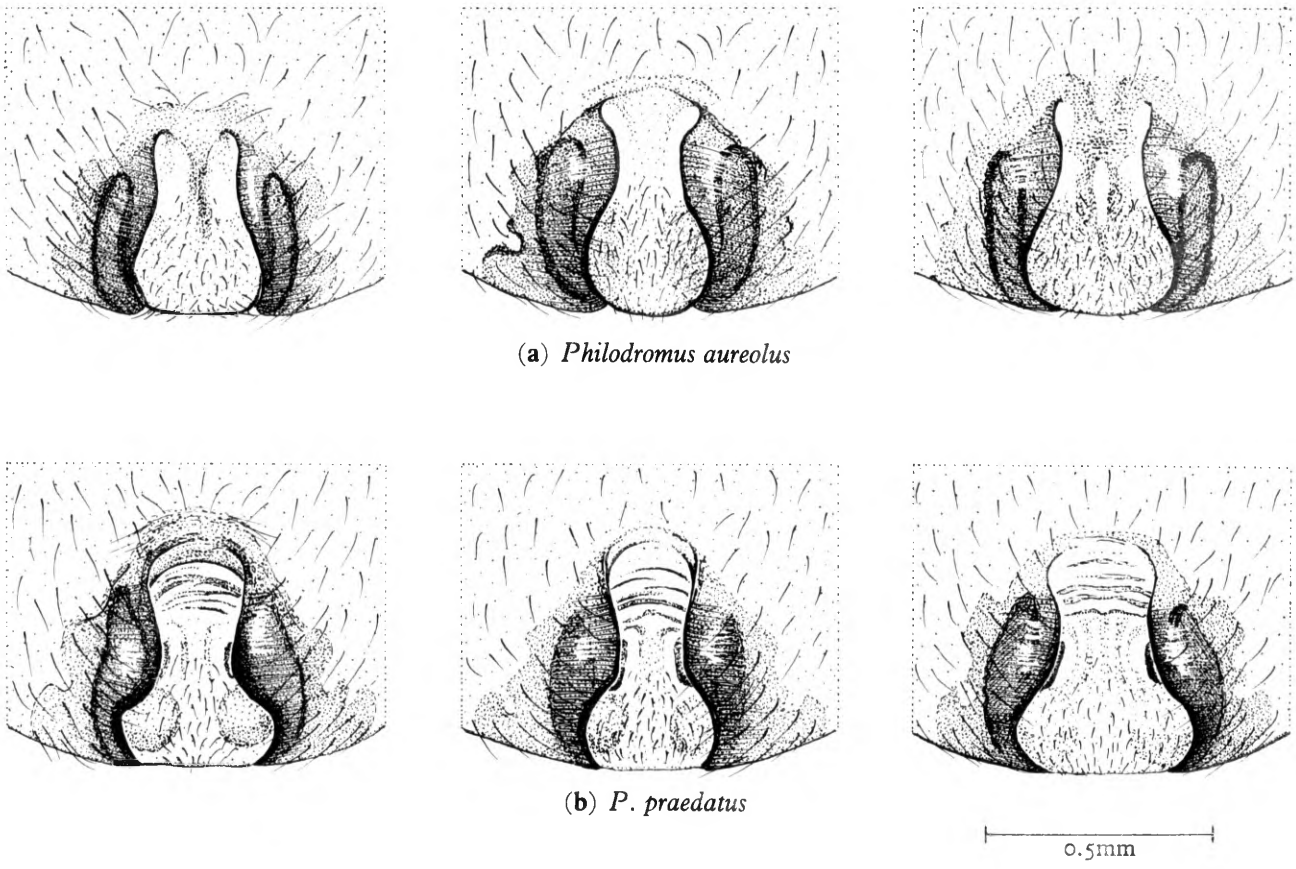
0.5mm



(**c**) *P. longipalpus*

(**d**) *P. aureolus*

Text Figure 3
♀ epigynes



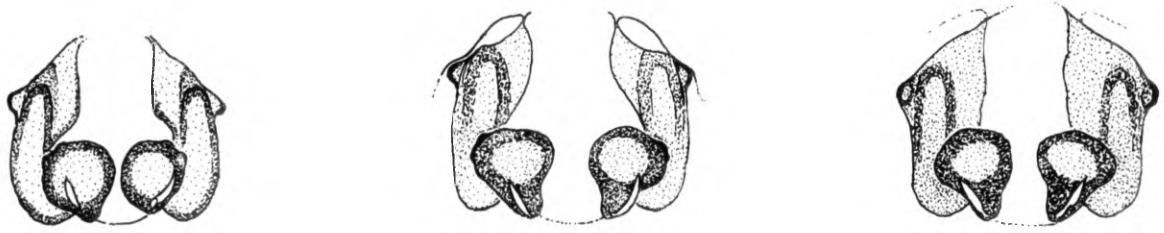
(**a**) *Philodromus aureolus*

(**b**) *P. praedatus*

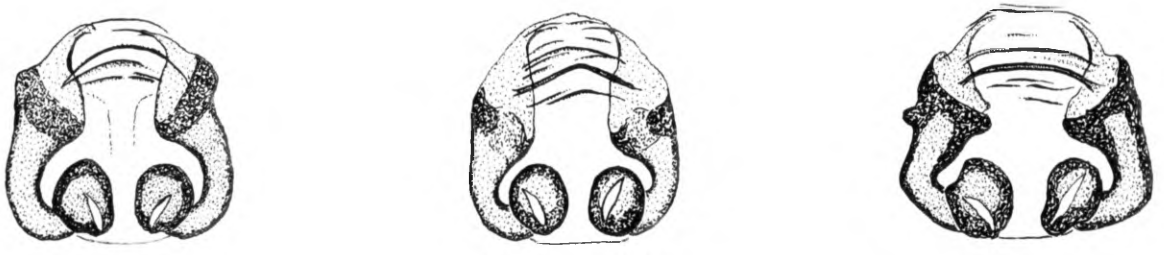
(**c**) *P. cespitum*

(**d**) *P. longipalpis*

Text Figure 4
♀ **adnexae** dorsal view

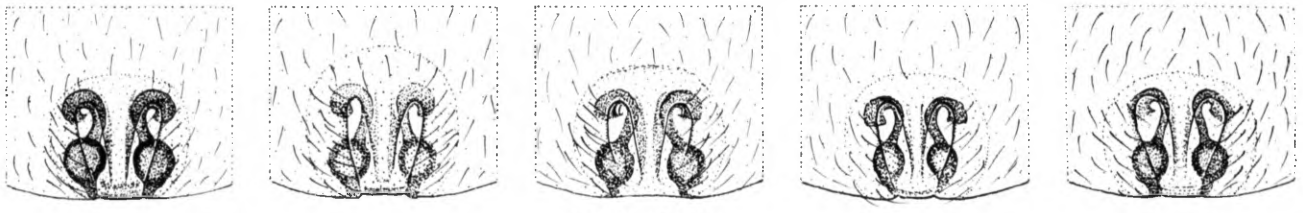


(**a**) *Philodromus aureolus*

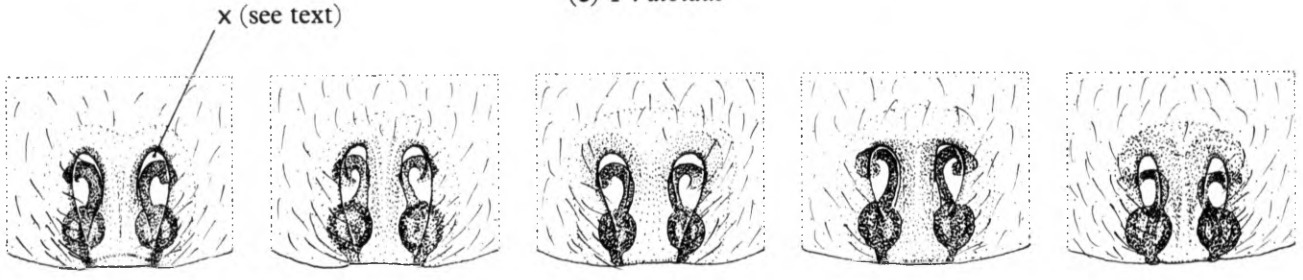


(**b**) *P. praedatus*

♀ **epigynes**



(**c**) *P. albidus*



(**d**) *P. rufus*

♀ **adnexae** dorsal view

(**e**) *P. albidus*

(**f**) *P. rufus*

bium and only just beyond the edge in *P. albidus*. Note that, in either species, the fine tip of the embolus may lie along the conductor or may have become separated (as in the illustrations). In both palps the duct is visible as a distinct loop; in *P. rufus* the 'top' margin of this loop lies about halfway between the base of the palpal organs and the palpal tip, whereas in *P. albidus* it falls considerably short of the halfway mark. The tibial apophyses, viewed ventrally or laterally, are rather variable in both species and, contrary to the opinion expressed by Segers (1989), seem not to be reliable for identification purposes. According to Segers (1989), the female epigynes are indistinguishable and he does not illustrate them. Instead, he concentrates on the spermathecal ducts which are 'elongated and project laterally' in *P. rufus*, and are 'curled over' in *P. albidus*. I could not confirm this, and in fact found great variation in the ducts within the same species, and sometimes on different sides of the same specimen (Text Figs 4f, 4e). Segers' own figures of *P. albidus* also show great variation. The tip of the duct in *P. rufus* usually seems a little swollen and slightly spiralled, but it may point in a variety of directions and that of *P. albidus* may on occasions be very similar. The epigynes are in fact usually quite distinctly different in the two species and, in the comparative series illustrated (Text Figs 4c, 4d), I have included the most difficult pair of *albidus*/*rufus* I could find, as well as the more typical examples. In both species, the spermathecae and ducts are clearly visible through the cuticle. Superficial to this, on each side, is a thin, lightly sclerotized edge which travels anterolaterally from the base of the epigyne, curves around medially to form an arch and then travels posteriorly again. The shallow, broad slits or ovals thus formed are often very lightly sclerotized and the light source may need moving about to find the optimum position for viewing. With the epigyne positioned to give a strictly ventral view, the sclerotized arches extend further anteriorly than the curved ducts in *P. rufus* and there is usually a clear gap between the two (X in Text Fig. 4d). In *P. albidus*, the sclerotized arches more or less overlie the curved ducts in a strictly ventral view. Obviously, if the *P. albidus* epigyne is viewed from behind, the arches may appear anterior to the ducts. In one of the *P. rufus* epigynes illustrated, the arches are only just anterior to the ducts and some difficulty could be experienced. In this situation, turn again to the anterior arches, follow the curve medially and then posteriorly. In *P. albidus* the thin margins converge posteriorly in almost a straight line and each opening takes the form of an incomplete, shallow, broad slit. In *P. rufus* these margins curve around, more or less following the curve of the underlying ducts and each opening takes the form of an incomplete, shallow oval. Interestingly, Tullgren (1944; Pl. XVI, figs 225, 227) clearly illustrated both the male palp and epigyne of *P. rufus* and all the characters described above are well shown.

DISTRIBUTION

Philodromus albidus is a rather rare species and seems confined to the more southern counties of England. It is usually found on bushes and the lower branches of trees. Contrary to some earlier reports, *P. rufus* has not yet been found in the British Isles.

Family SALTICIDAE

Genus *Heliophanus* C. L. Koch, 1833

Another species of *Heliophanus* has been discovered in Britain and I am grateful to S. I. Baldwin, J. A. Stewart and S. A. Williams for the loan of specimens.

Heliophanus dampfi Schenkel, 1923
Text Fig. 5a
Length: ♀: 3.2–5mm; ♂: 3–3.5mm

Female: Similar in general appearance to *H. flavipes* (Volume 3, Plate 56). Coxa IV with solid black marking dorsally, which is usually fairly striking; smaller mark on coxa III. Rest of legs uniform yellow-orange and unmarked except occasionally for a narrow streak of black prolaterally on distal ends of femur I and II and faint marks on dorsum of femur IV. Transverse line of white hairs on anterior end of abdomen which extends laterally and broadens somewhat posteriorly; there is sometimes a break between this and a pair of white patches present posterolaterally. A pair of longitudinal white lines are present ventrally, but dorsal abdomen usually lacks white marks. Male: All legs marked with continuous black streaks prolaterally along femur, patella and tibia; coxa IV and femur III and IV have additional black marks dorsally. Abdomen sometimes with sparse white hairs anterolaterally, but may be uniformly black in other specimens.

Epigyne and male palp distinctive, although the former is a little variable (Text Fig. 5a).

DISTINGUISHING THE SPECIES

H. dampfi is readily distinguished from the other four British *Heliophanus* by the form of the epigyne and male palp.

DISTRIBUTION

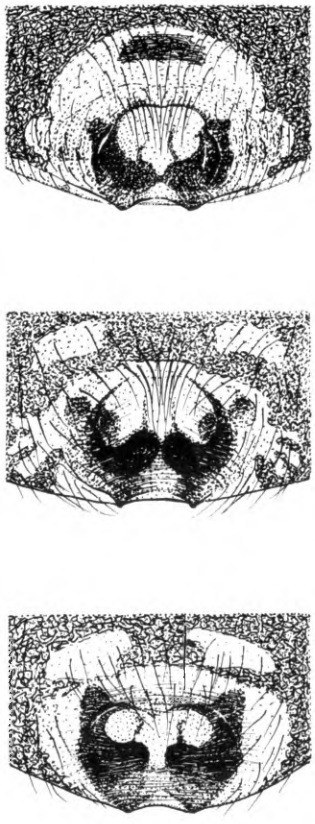
So far the species has been recorded from two raised bogs – Cors Fochno in Cardiganshire (1986 & 1989) and Flanders Moss in Perthshire (1992). It has been found on low vegetation, such as heather and bog myrtle, and also in pitfall traps. It may well have been overlooked in the past and collections of *Heliophanus* from bogs might be worth re-examination.

Genus *Euophrys* C. L. Koch, 1834

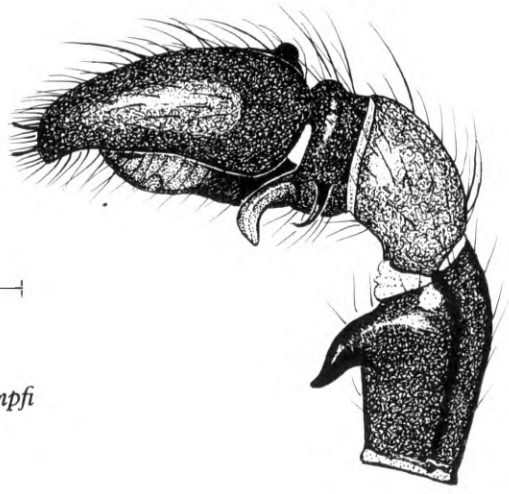
Another species of this genus, *Euophrys thorelli* Kulczynski, 1891, has been discovered in Britain by R. Snazell, to whom I am greatly indebted for the loan of specimens and for permission to illustrate the genitalia (Text Fig. 5b). A full description of the species, based on the British material, is in preparation (Snazell, in prep.).

Text Figure 5

♀ epigynes



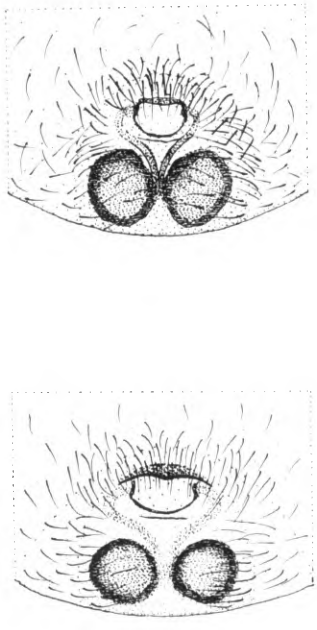
♂ palps

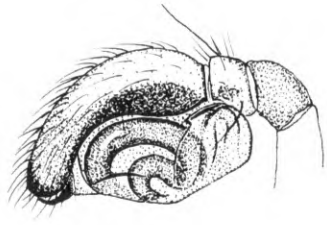


0.5mm

(a) *Heliophanus dampfi*

♀ epigynes





(b) *Euophrys thorelli*

0.5mm

Family THERIDIIDAE

Genus *Steatoda* Sundevall, 1833

Another species of this genus is now clearly established, out of doors, in the south of England and is added to the British list.

Steatoda nobilis (Thorell, 1875)
Text Fig. 6a

Length: ♀: 8.5–14mm; ♂: 7–10mm.

Similar in overall appearance to *S. bipunctata* and *S. grossa* (Volume 3, Plates 107 c,d, 111) but rather larger. Female: carapace orange-brown to dark chestnut brown; abdomen with light band anterolaterally as in *S. bipunctata*, and a narrow light band in anterior midline which is followed by a light rectangular area; a pair of narrow light bands usually extend laterally from this to join the light sides. Male: carapace covered with granulations; abdominal pattern often clearer than in female.

DISTINGUISHING THE SPECIES

Adults generally much larger than other British *Steatoda*. Male palp and epigyne distinctive, although the latter is rather variable, as illustrated.

DISTRIBUTION

S. nobilis has, for well over a century, been repeatedly introduced into this country with bananas from the Canary Islands and Madeira. The occasional appearance of the species out of doors, and the possibility of its survival in Britain, was discussed by Jones (1979). Clearly, this robust and impressive-looking species is now well established out of doors in several places on the south coast; there have also been reports of its biting people. Although a severe and prolonged winter might adversely affect populations living outside, the species is also very well established indoors and in this situation could easily extend its range northwards.

Family LINYPHIIDAE

Genus *Minicia* Thorell, 1875

TmI 0.9; TmIV present; tibial spines 1–1–1–1 (0–0–1–1 in males)

A linyphiid spider of the genus *Minicia* has recently been discovered in Britain (Snazell, 1991, 1992).

Minicia marginella (Wider, 1834)
Text Fig. 6b

Length: ♀: 1.7–1.8mm; ♂: 1.5–1.7mm. TmI 0.9

In both sexes the carapace is pale yellow with narrow, dark margins; abdomen pale yellow-grey with a pair of grey longitudinal bands laterally and ventrally; in addition, there is usually a narrow, grey midline stripe anterodorsally. Legs pale yellow; tibia I and II with two rows of spines ventrally (reduced in males); females additionally have two rows of ventral spines on femur I and II. Male carapace has head raised into an almost spherical lobe (Text Fig. 6b). Epigyne characteristic, although a little variable, as illustrated (Text Fig. 6b). Male palp with a long, curved process arising from the proximal end of the cymbium; additionally the tibia has an almost spatulate dorsal apophysis with a small tooth near its base. Both the cymbial process and the tibial apophysis are somewhat variable; the latter is sometimes broader and shorter and continuous with the small tooth, forming a ridge. The broad, U-shaped paracymbium is, for the most part, thin and transparent (Text Fig. 6b).

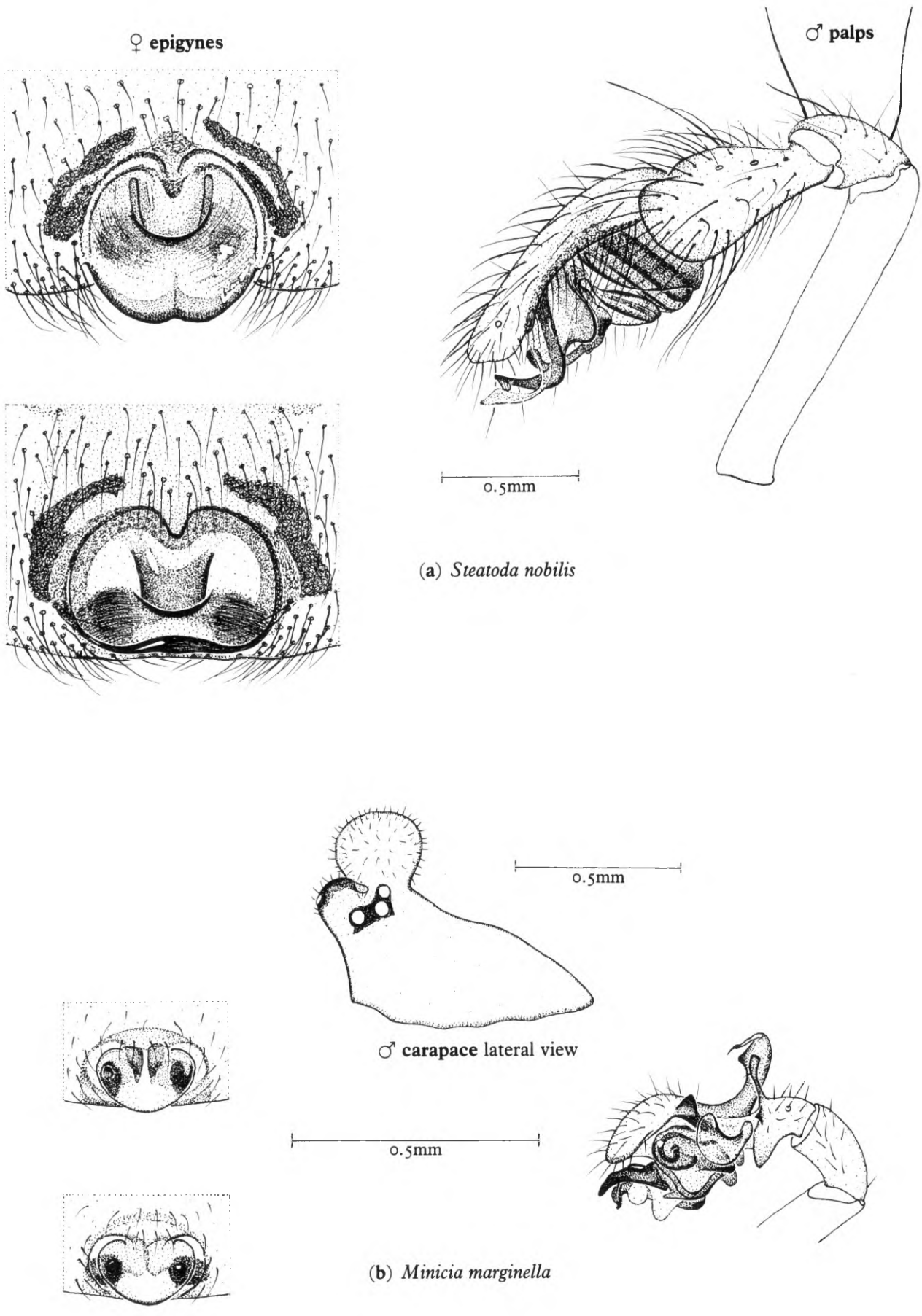
DISTINGUISHING THE SPECIES

This small, pale species with dark grey abdominal stripes also has highly distinctive genitalia which make identification an easy matter.

DISTRIBUTION

One male and one female were taken from an old rockfall at a cliff base near Dover. The species is widespread throughout central and northern Europe in a wide variety of habitats; in some ways it seems surprising that it has not previously been found in the British Isles.

Text Figure 6



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THE SPIDERS OF GREAT BRITAIN AND IRELAND

VOLUME 3

Colour Plates–Atypidae to Linyphiidae

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Volume 2

Description of Species – Linyphiidae; Check list of the British species

Volume 3

The Colour Plates: Atypidae to Linyphiidae

To my Mother

Preface

Work on the colour plates was begun in the late 1960's. I had no particular plans for publication at that time, although I was aware of the need for an illustrated work which might stimulate general interest in spiders. From an early age I had been encouraged in the use of a wide range of media and had tackled a fairly wide range of subjects – from both an artistic and scientific viewpoint. A general interest in natural history became focused more sharply on spiders whilst I was in medical school. As an animal group, they seemed to present a scientific challenge and later this became an illustrative challenge. Preliminary trials led me to consider that any illustrations of whole spiders would need to be at considerable magnification – much as they would appear in spirit under the microscope – to be of intrinsic value in identification. It seemed to me that good photographs might more effectively convey the appearance of spiders in life and this aspect is now admirably catered for by Dick Jones' recently published work, *The Country Life Guide to Spiders of Britain and Northern Europe*.

In those early days, as a medical student, I used a rather ancient monocular microscope and a makeshift lighting system. Later, I acquired a binocular stereo-zoom microscope and better lighting. More intensive work on colour illustrations was done in the late 1970s, when future publication seemed to be a definite possibility. This use of different equipment over different periods of my life, with gradually increasing experience in arachnology and illustrative technique, account for any apparent inconsistencies in style.

Throughout, I have tried to present taxonomic features accurately, mostly in strictly dorsal view, avoiding highlights or shadows, etc., unless these were specifically needed to convey structure. With many spiders it would have been more enjoyable to illustrate artistically and from an unconventional angle, but this would have been less useful scientifically. The majority of spiders can be reliably identified only by using a microscope, and in many cases the student may be working on preserved material collected by someone else – further reasons for portraying the preserved, microscopic appearance. Most spiders have a slight covering of hairs, and when immersed in liquid preservative differ slightly from the dry, living appearance. Some species, for example, of the Salticidae and Lycosidae, are markedly hairy and differ substantially when immersed in liquid. Although it would have been possible to illustrate these in a 'dry' state, the hairs often completely obscure underlying patterns and taxonomic characters. In other species, such as those of the Theridiidae, Tetragnathidae and Araneidae, the abdominal pattern is partly made up of numerous light, pigmented 'cells' of guanin. In preserved specimens these 'cells' often contract, giving a reticulated appearance to the abdomen, the darker abdominal contents showing through the interstices. More superficial pigmentation often adds to the abdominal pattern; greens and reds tend to wash out rapidly in preservative but darker colours usually remain unchanged. Some species show considerable variation in colour and markings, and individuals of all species show variation in the relative size of the abdomen depending on their state of nutrition and gravidity. A large, distended abdomen usually has a less sharply defined pattern than one which is smaller.

All the colour work was done in inks on white line board. It was earlier intended that the originals should be reduced slightly in printing; they are here reproduced full size. Obviously it would be impracticable to illustrate all the British species to the same scale. As a compromise, most species, with legs outstretched, more or less fill the plate. Those species with exceptionally long legs are therefore at somewhat less magnification. In all cases, the overall size of the species is indicated by the small line drawing. I felt this conveyed size better than a line or figures. In

some cases, one can get an idea of near life-sized appearance by holding the illustration upside-down at arms length and viewing it through a ×10 lens held midway between it and the eye. It must be emphasised that the final identification of spiders should always be based on the genitalia all of which are illustrated in volumes 1 and 2.

As a young naturalist, I always thought it a great pleasure, almost adventure, to find a plant or animal in the field and then go home and find an illustration and description of it in a book. There is a real sense of someone having 'been there before' and, in an otherwise rapidly changing world, these small things can sometimes give a sense of stability.

Sheffield — MICHAEL J. ROBERTS
November, 1984

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(**c**) *Lepthyphantes alacris* (Blackwall)
(**d**) *Lepthyphantes obscurus* (Blackwall)
(**e**) *Lepthyphantes cristatus* (Menge)
(**f**) *Lepthyphantes mengei* Kulczynski
(**g**) *Lepthyphantes zimmermanni* Bertkau
(**h**) *Lepthyphantes tenuis* (Blackwall)
(**i**) *Lepthyphantes flavipes* (Blackwall)
(**j**) *Lepthyphantes ericaeus* (Blackwall)

PLATE 230: LINYPHIIDAE
Helophora insignis (Blackwall) ♀

PLATE 231: LINYPHIIDAE
Pityohyphantes phrygianus (C. L. Koch) ♀

PLATE 232: LINYPHIIDAE
(**a**) *Linyphia triangularis* (Clerck) ♂
(**b**) *Labulla thoracica* (Wider) ♂
(**c**) *Neriene montana* (Clerck) ♂
(**d**) *Microlinyphia pusilla* (Sundevall) ♂

PLATE 233: LINYPHIIDAE
Linyphia triangularis (Clerck) ♀

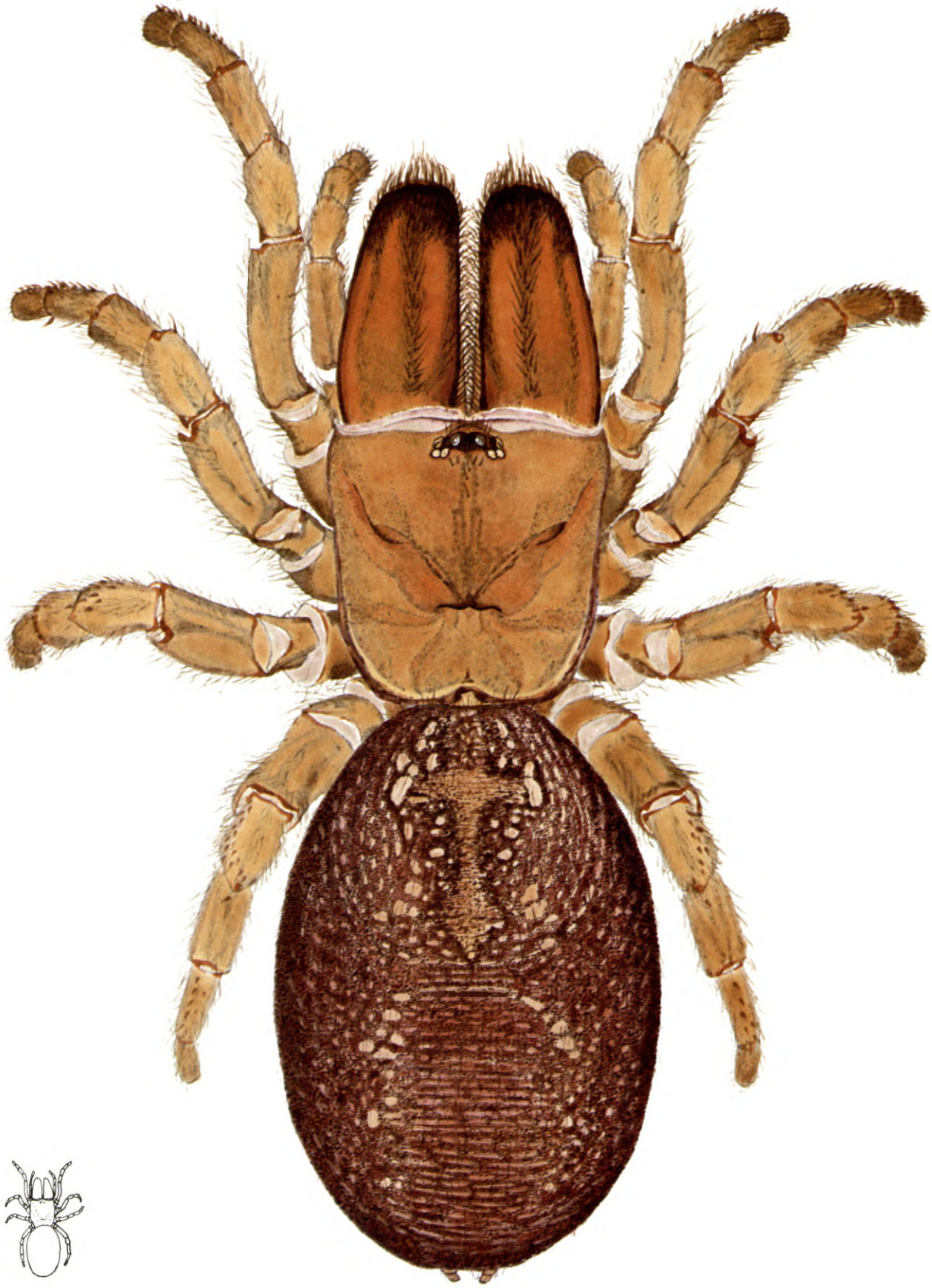
PLATE 234: LINYPHIIDAE
Linyphia hortensis (Sundevall) ♀

PLATE 235: LINYPHIIDAE
Neriene peltata (Wider) ♀

PLATE 236: LINYPHIIDAE
Microlinyphia pusilla (Sundevall) ♀

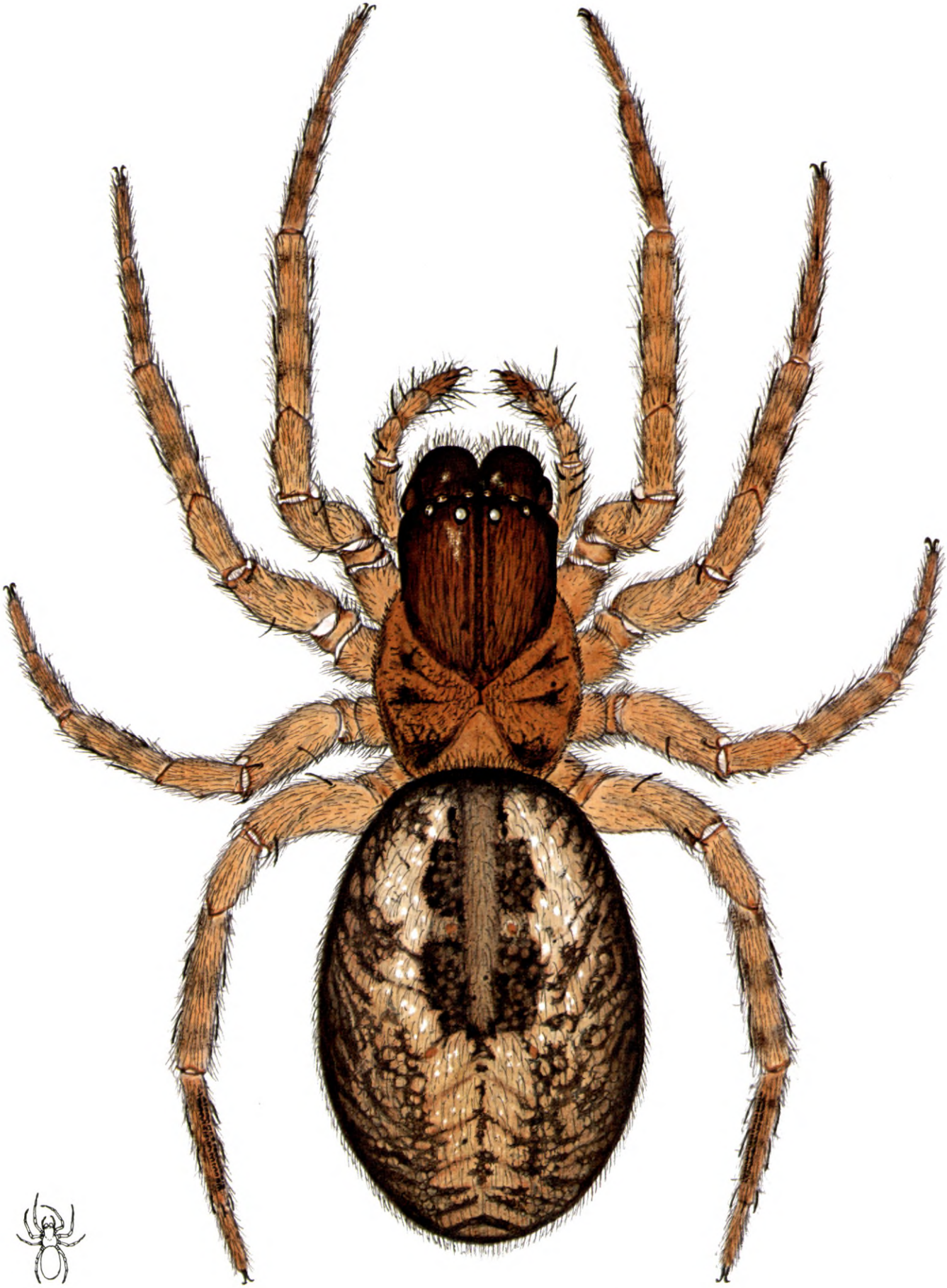
PLATE 237: LINYPHIIDAE
Allomengea scopigera (Grube) ♂

COLOUR PLATES



Atypus affinis Eichwald ♀

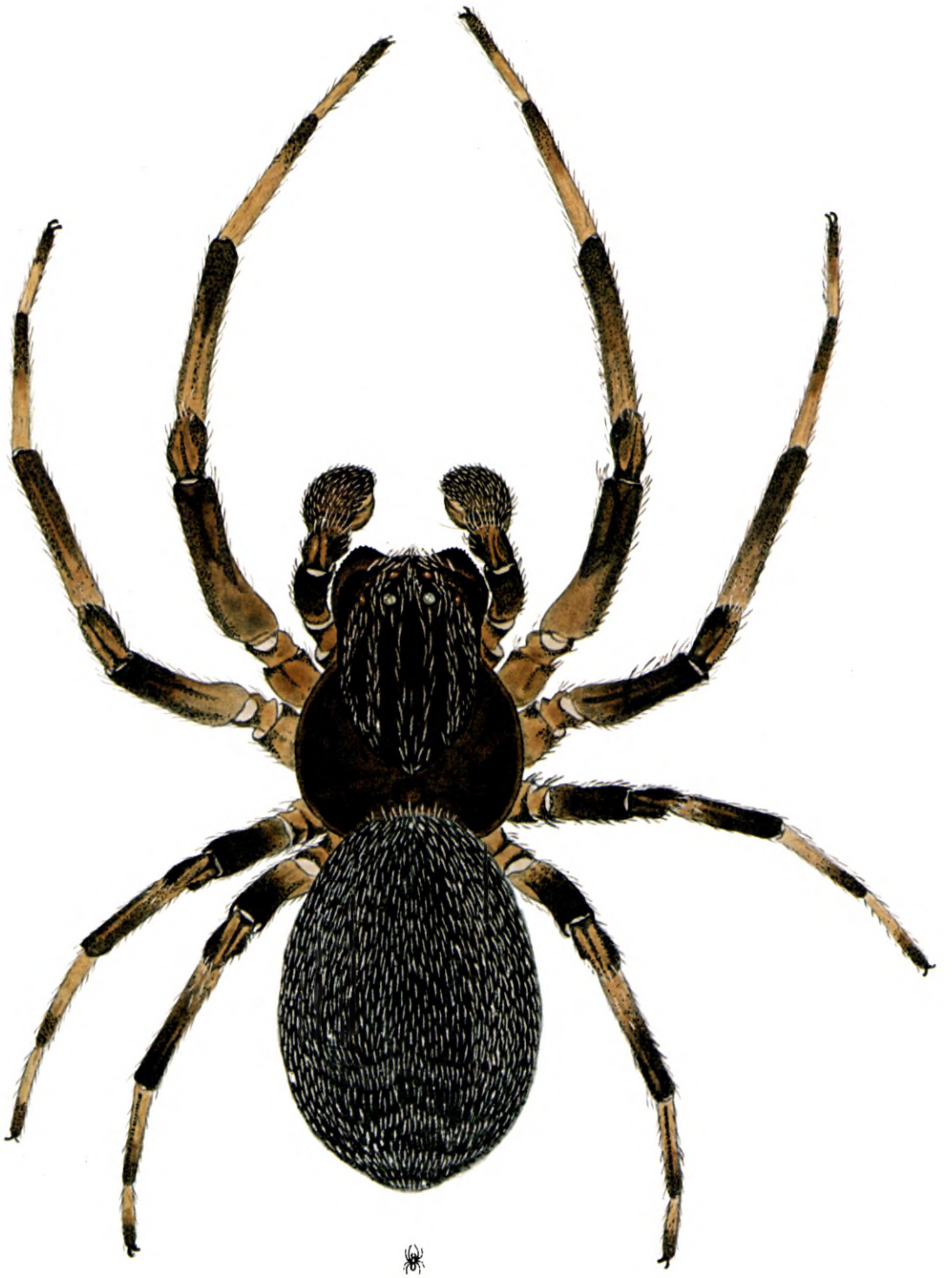
Eresus niger (Petagna) ♂



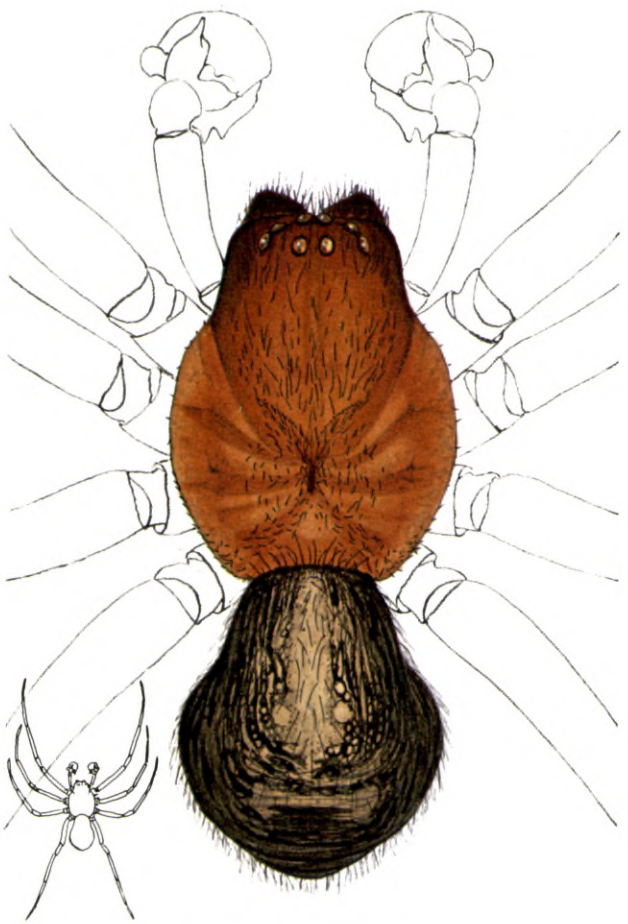
Amaurobius similis (Blackwall) ♀

Dictyna arundinacea (Linnaeus) ♀

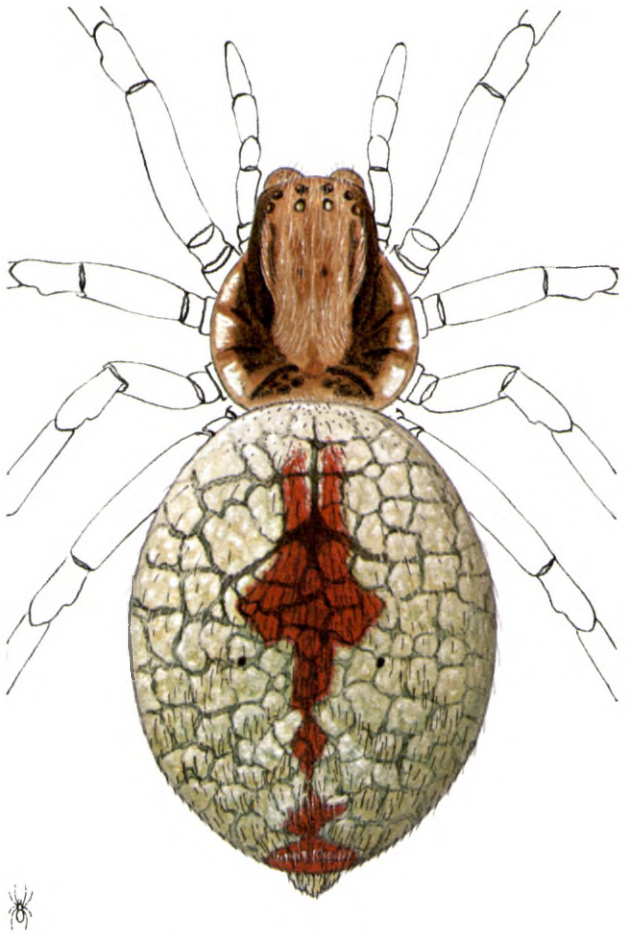
Dictyna uncinata Thorell ♀



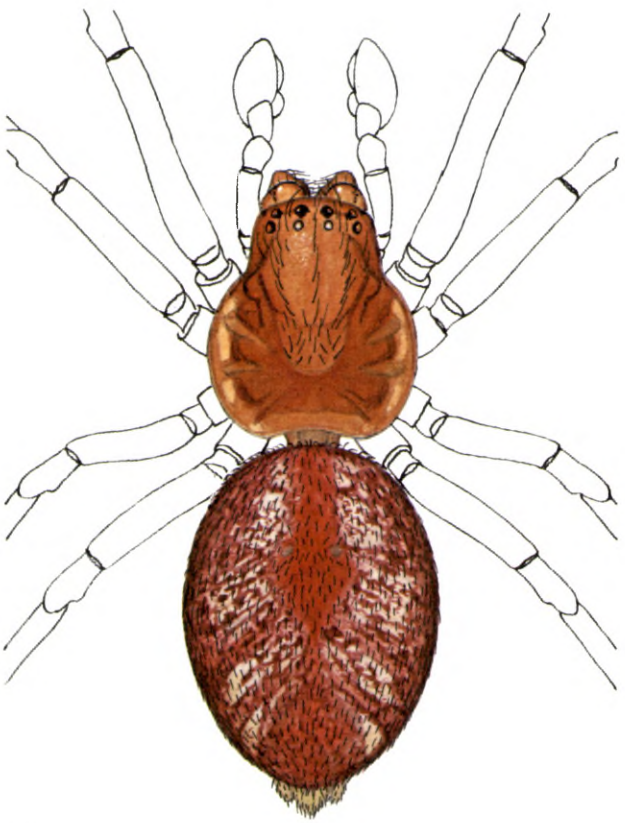
Dictyna latens (Fabricius) ♂



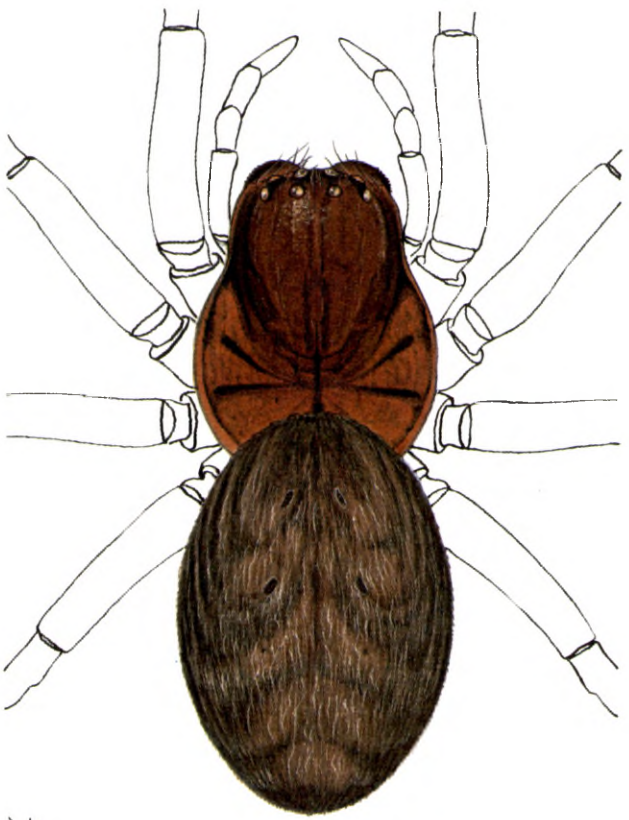
(**a**) *Amaurobius ferox* (Walckenaer) ♂



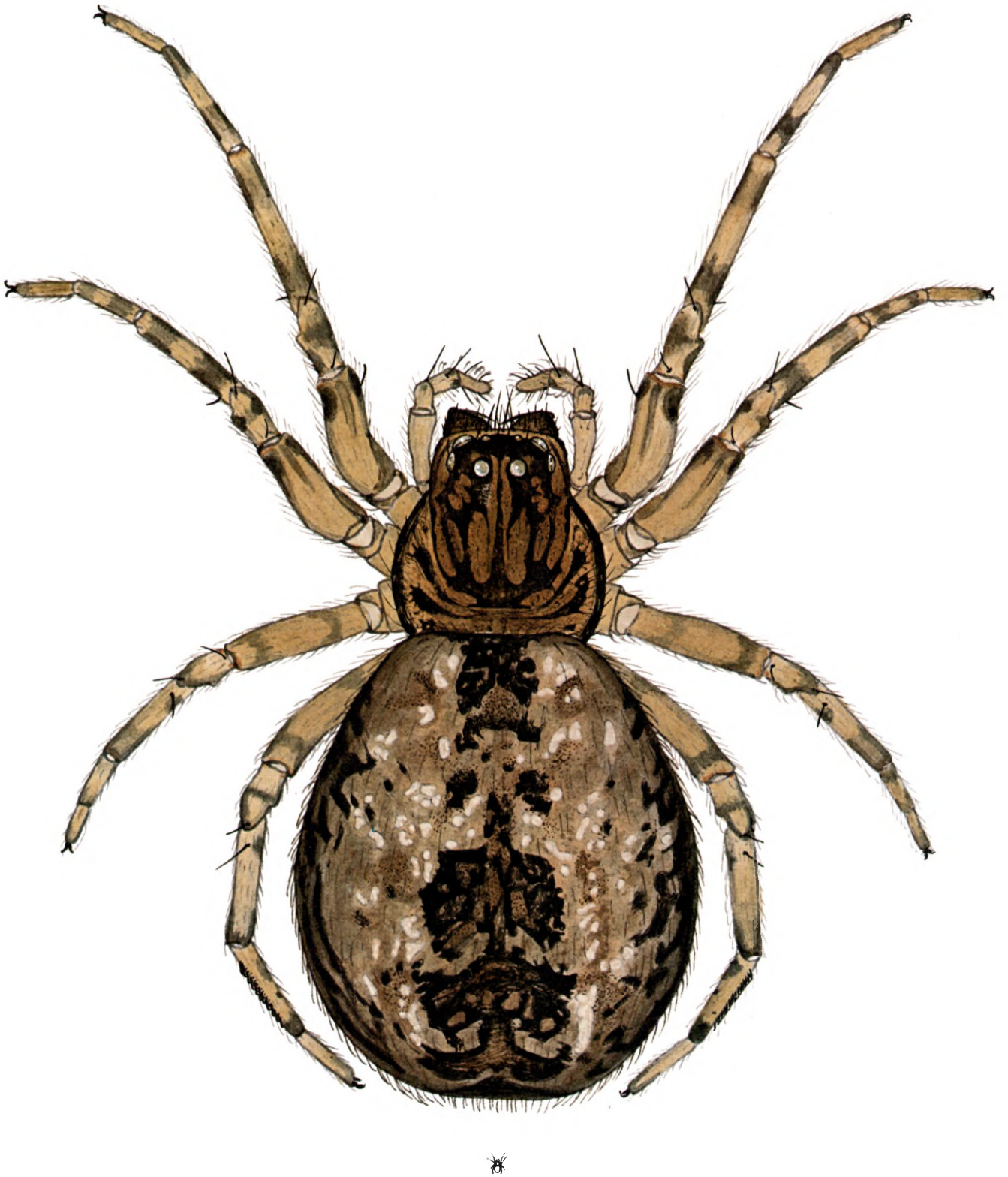
(**b**) *Nigma puella* (Simon) ♀



(**c**) *Nigma puella* (Simon) ♂

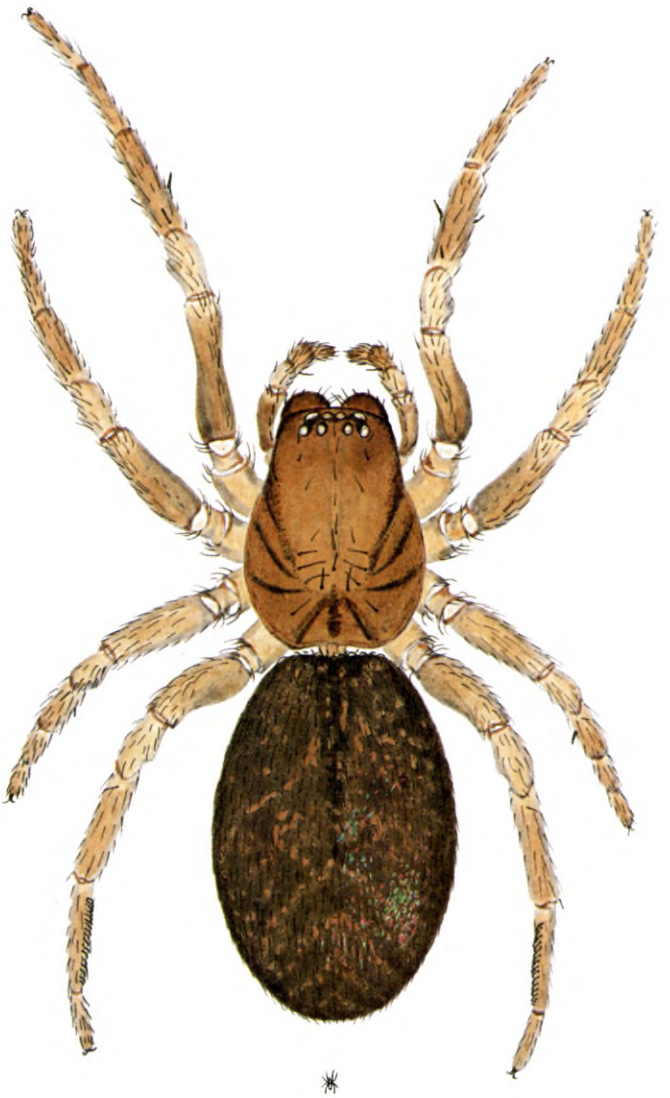


(**d**) *Argenna patula* (Simon) ♀



Lathys humilis (Blackwall) ♀ (gravid)

Argenna subnigra (O. P.-Cambridge) ♀

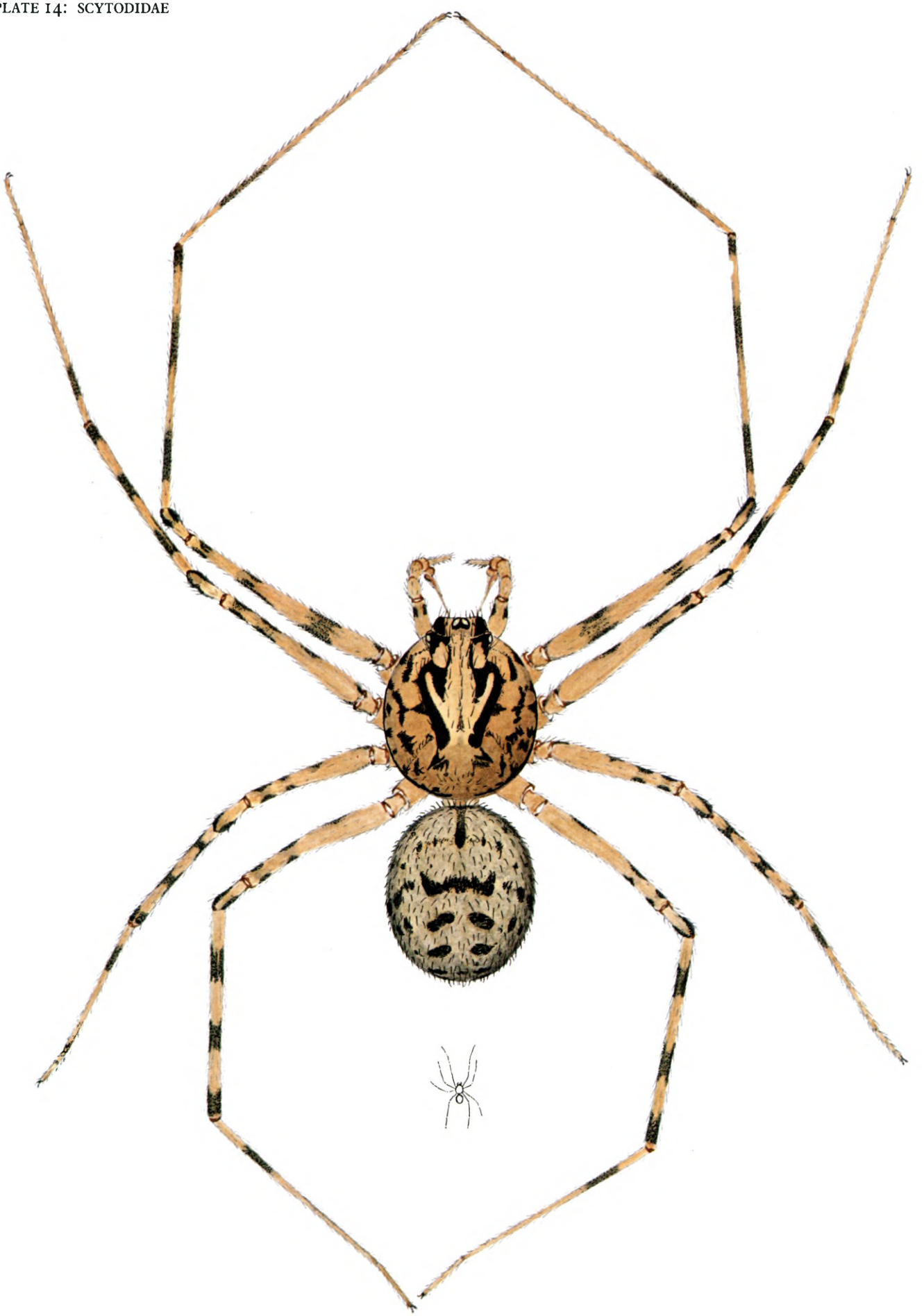


Altella lucida (Simon) ♀

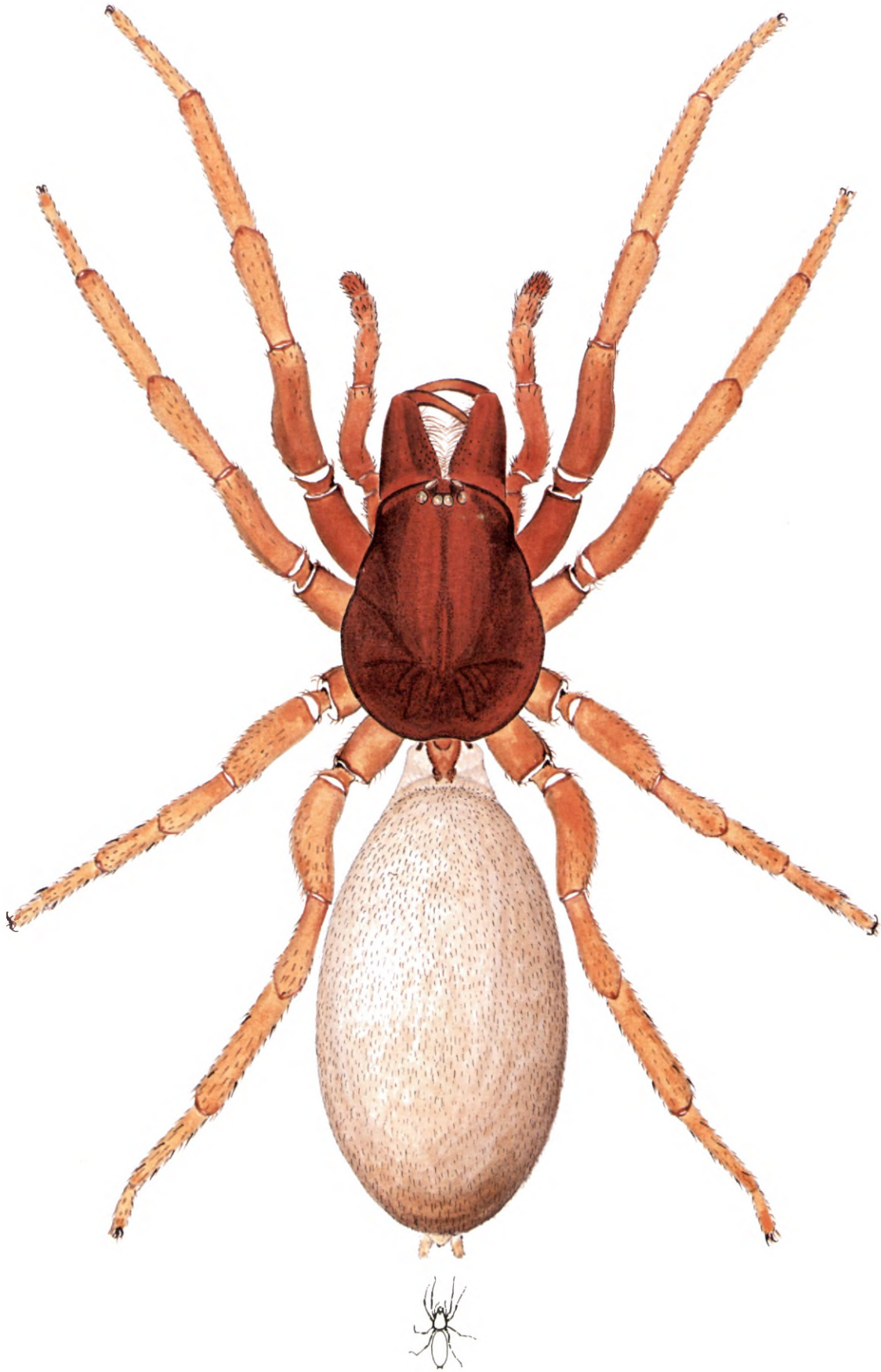
Uloborus walckenaerius Latreille ♂

Hyptiotes paradoxus (C. L. Koch) ♂

Oonops pulcher Templeton ♀



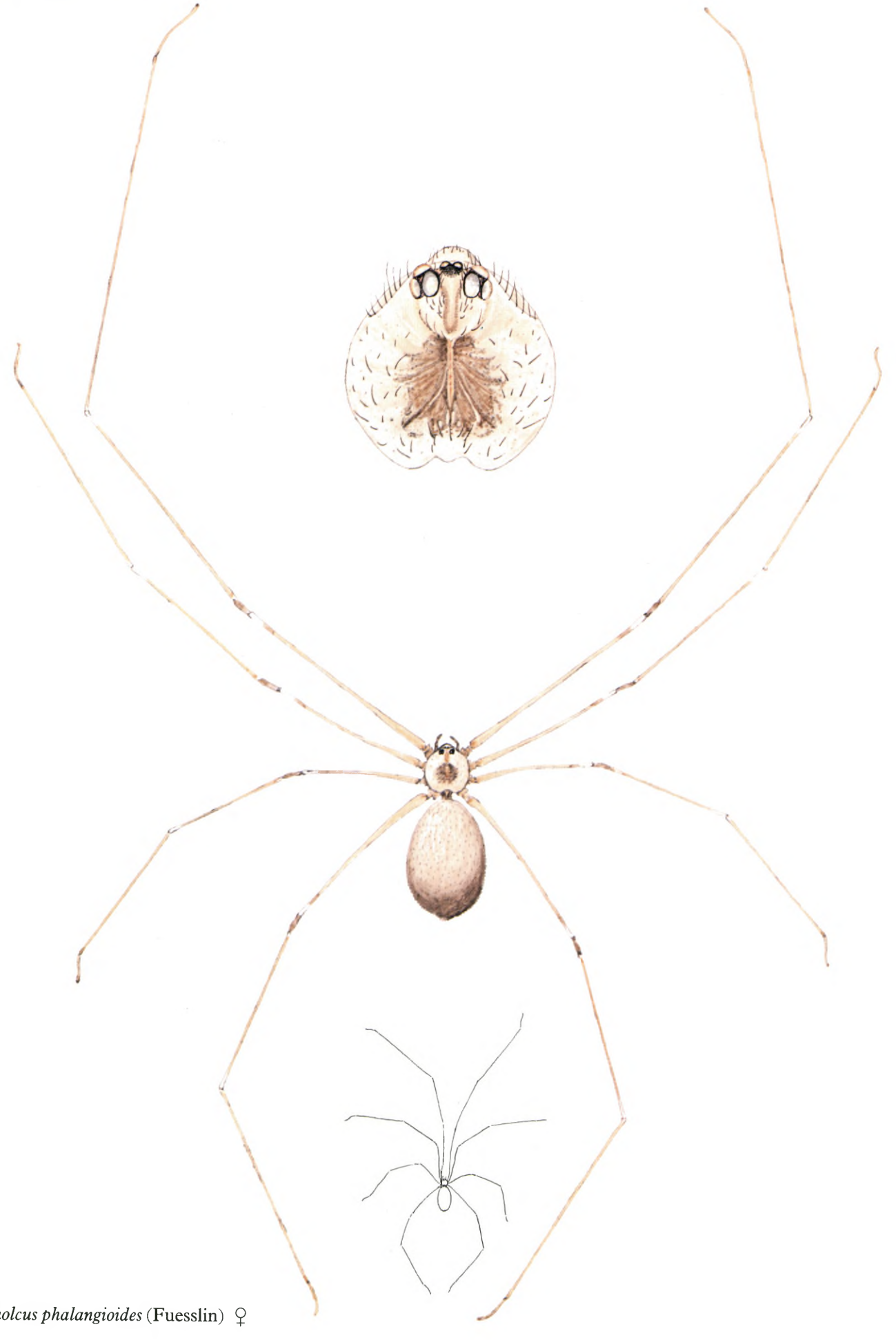
Scytodes thoracica Latreille ♂



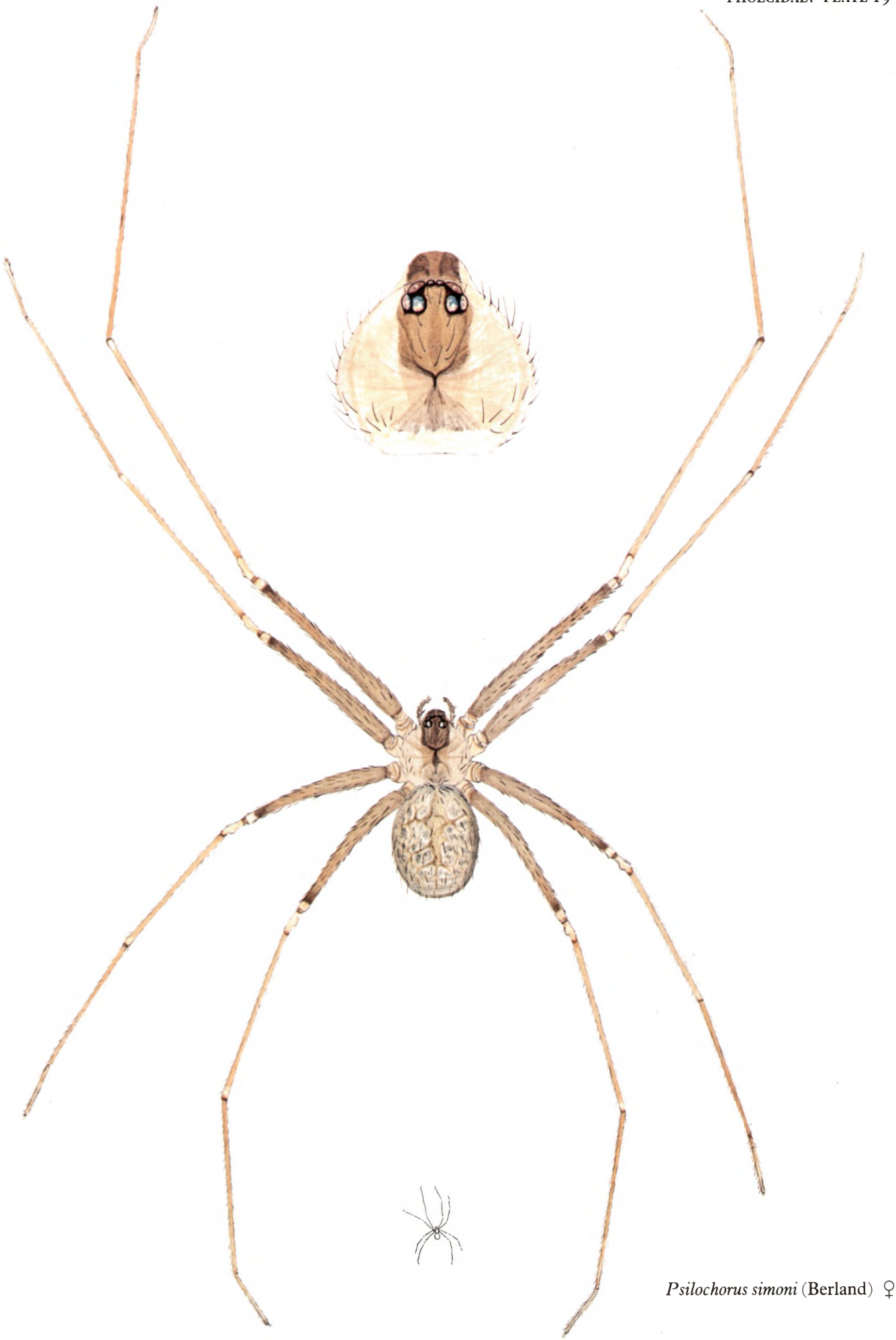
Dysdera erythrina (Walckenaer) ♀

Harpactea hombergi (Scopoli) ♀

Segestria senoculata (Linnaeus) ♀

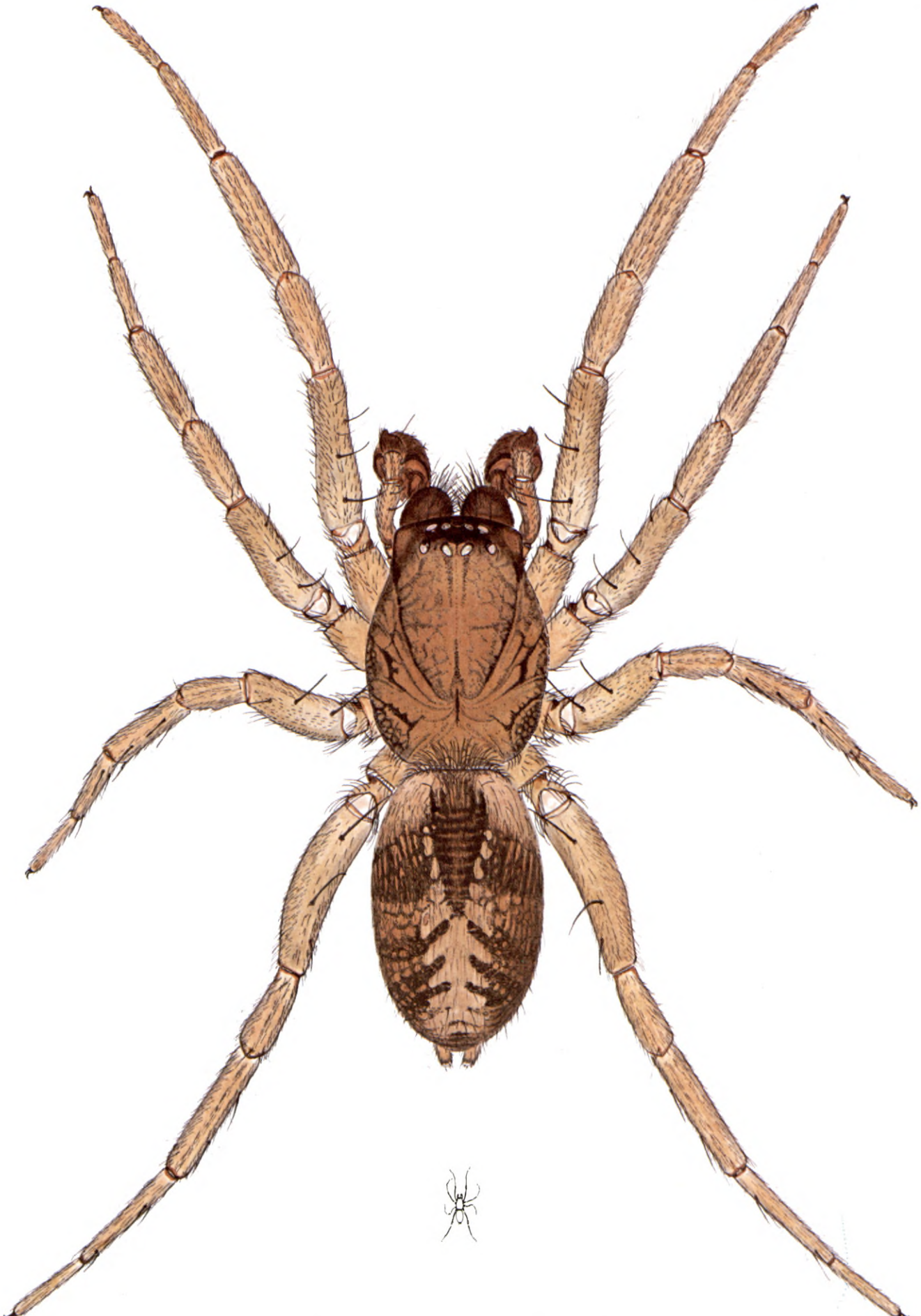


Pholcus phalangioides (Fuesslin) ♀



Psilochorus simoni (Berland) ♀

Drassodes cupreus (Blackwall) ♀

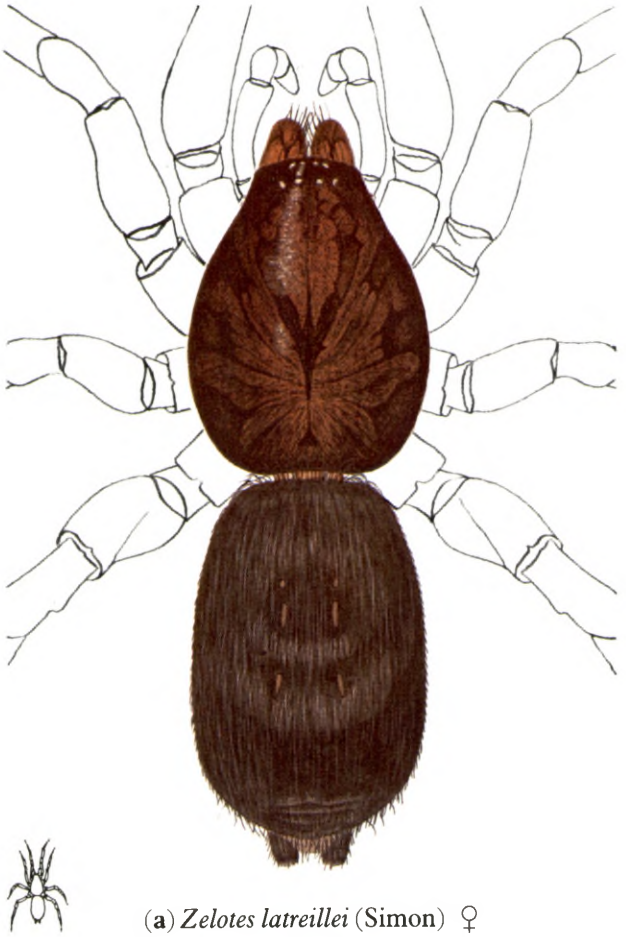


Haplodrassus dalmatensis (L. Koch) ♂

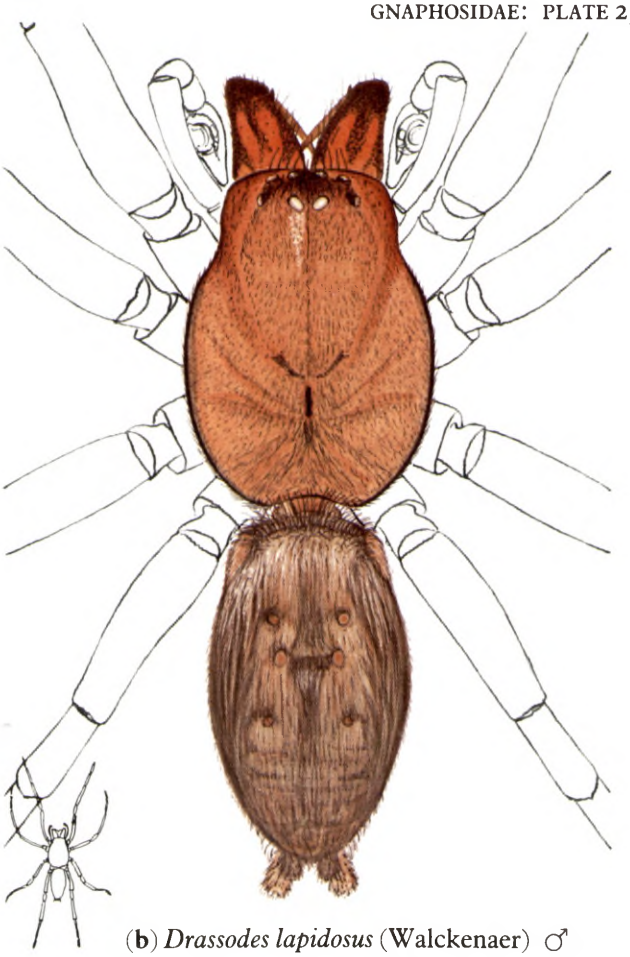
Scotophaeus blackwalli (Thorell) ♀

Phaeocedus braccatus (L. Koch) ♀

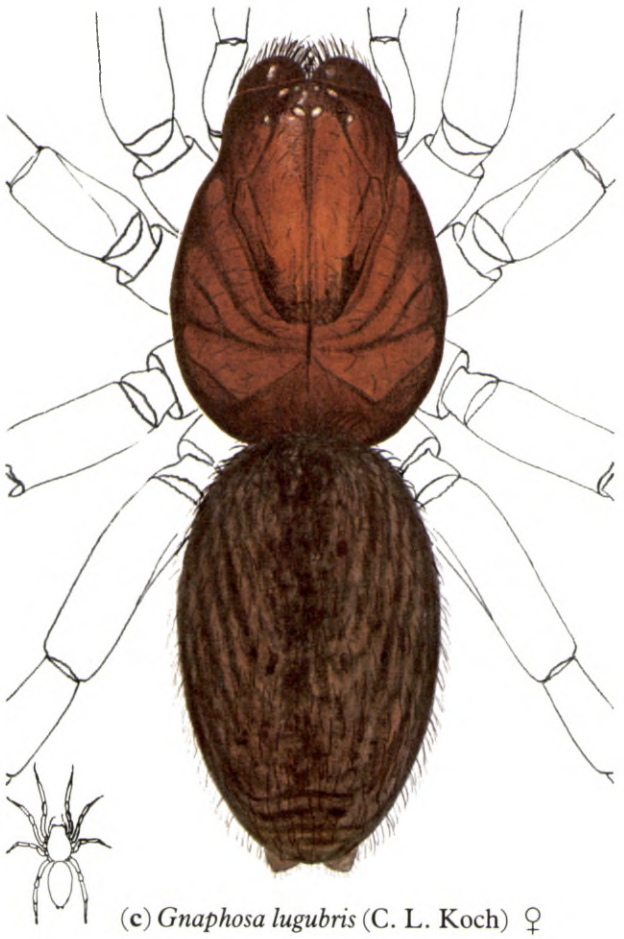
Zelotes pedestris (C. L. Koch) ♀



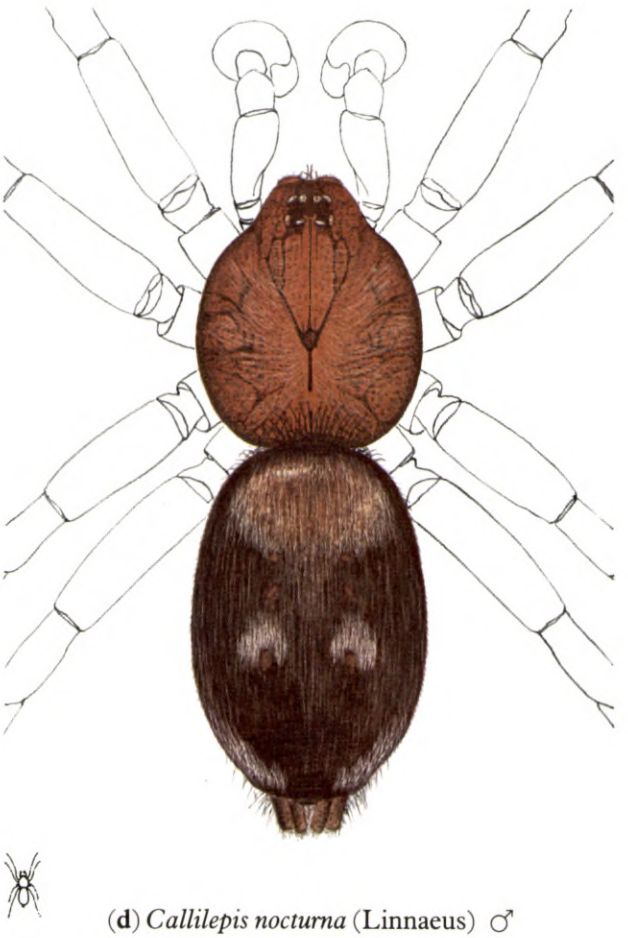
(**a**) *Zelotes latreillei* (Simon) ♀



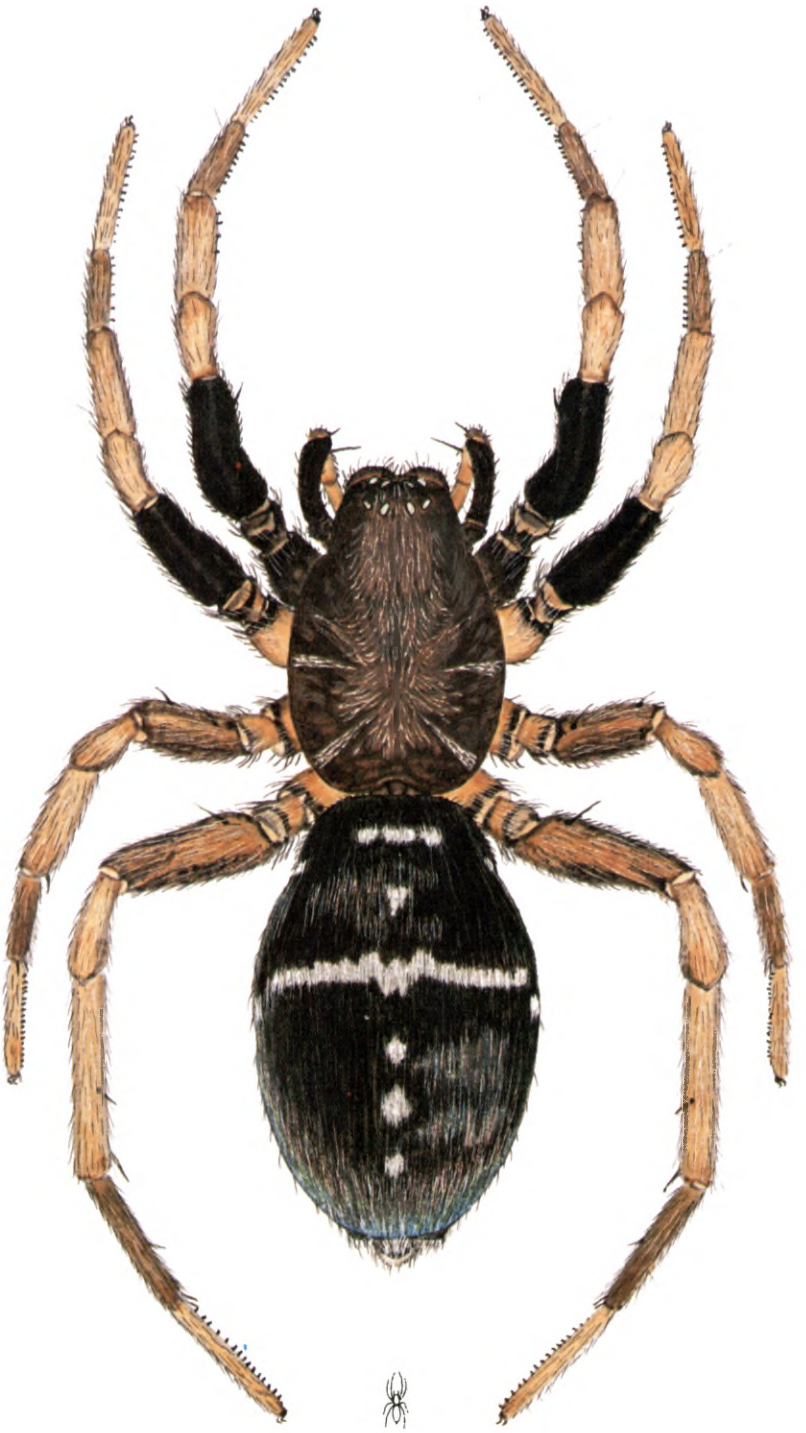
(**b**) *Drassodes lapidosus* (Walckenaer) ♂



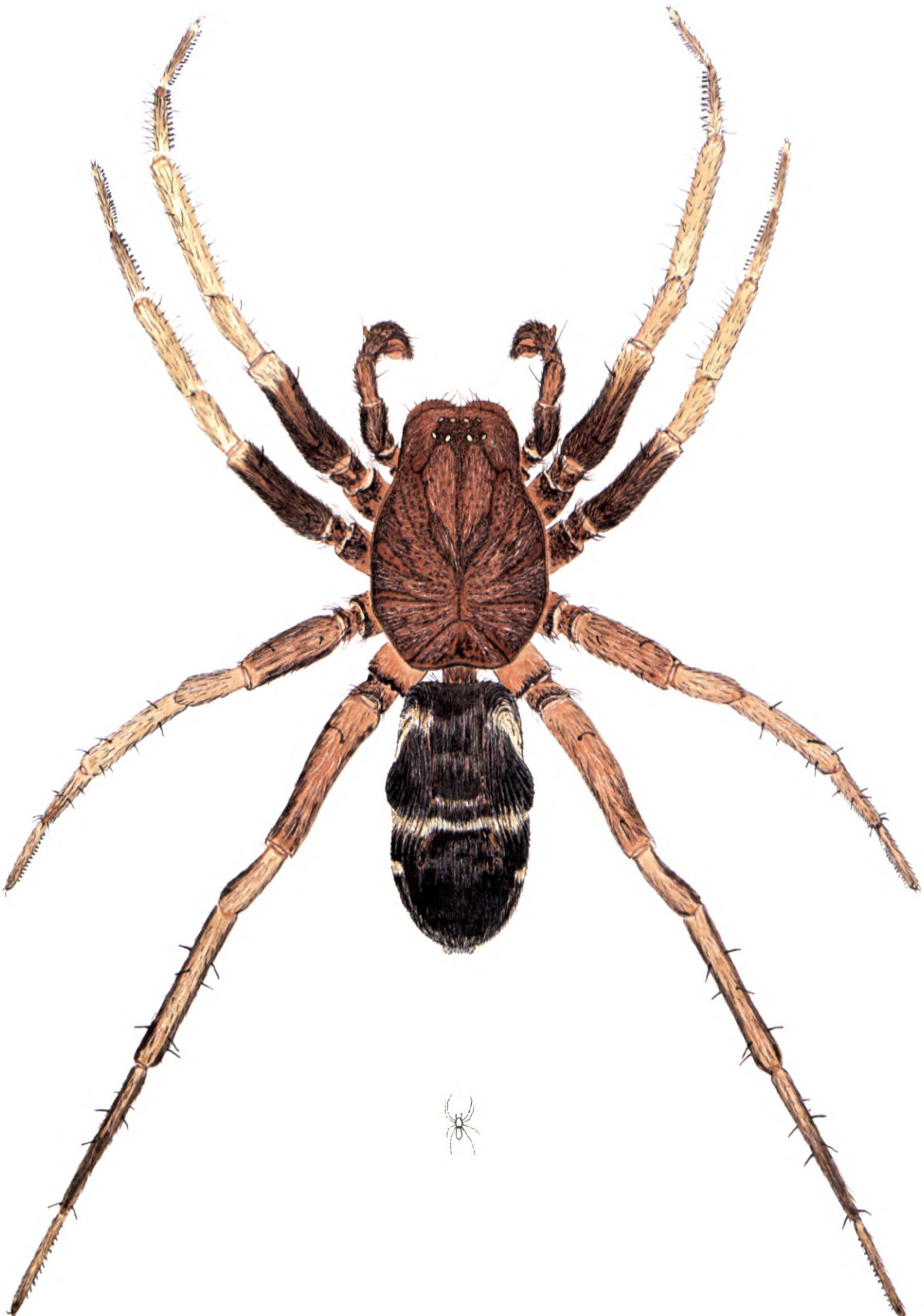
(**c**) *Gnaphosa lugubris* (C. L. Koch) ♀



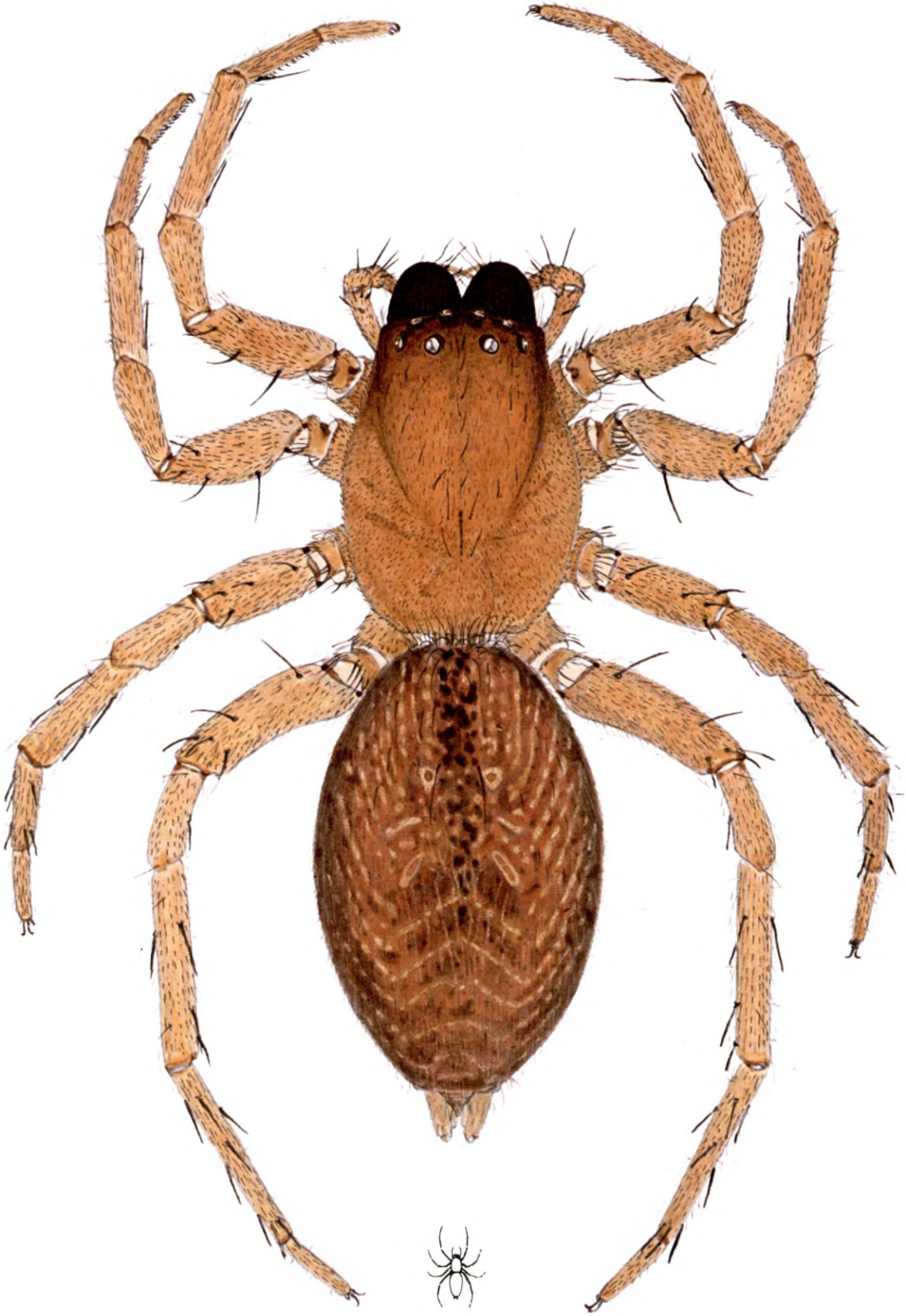
(**d**) *Callilepis nocturna* (Linnaeus) ♂



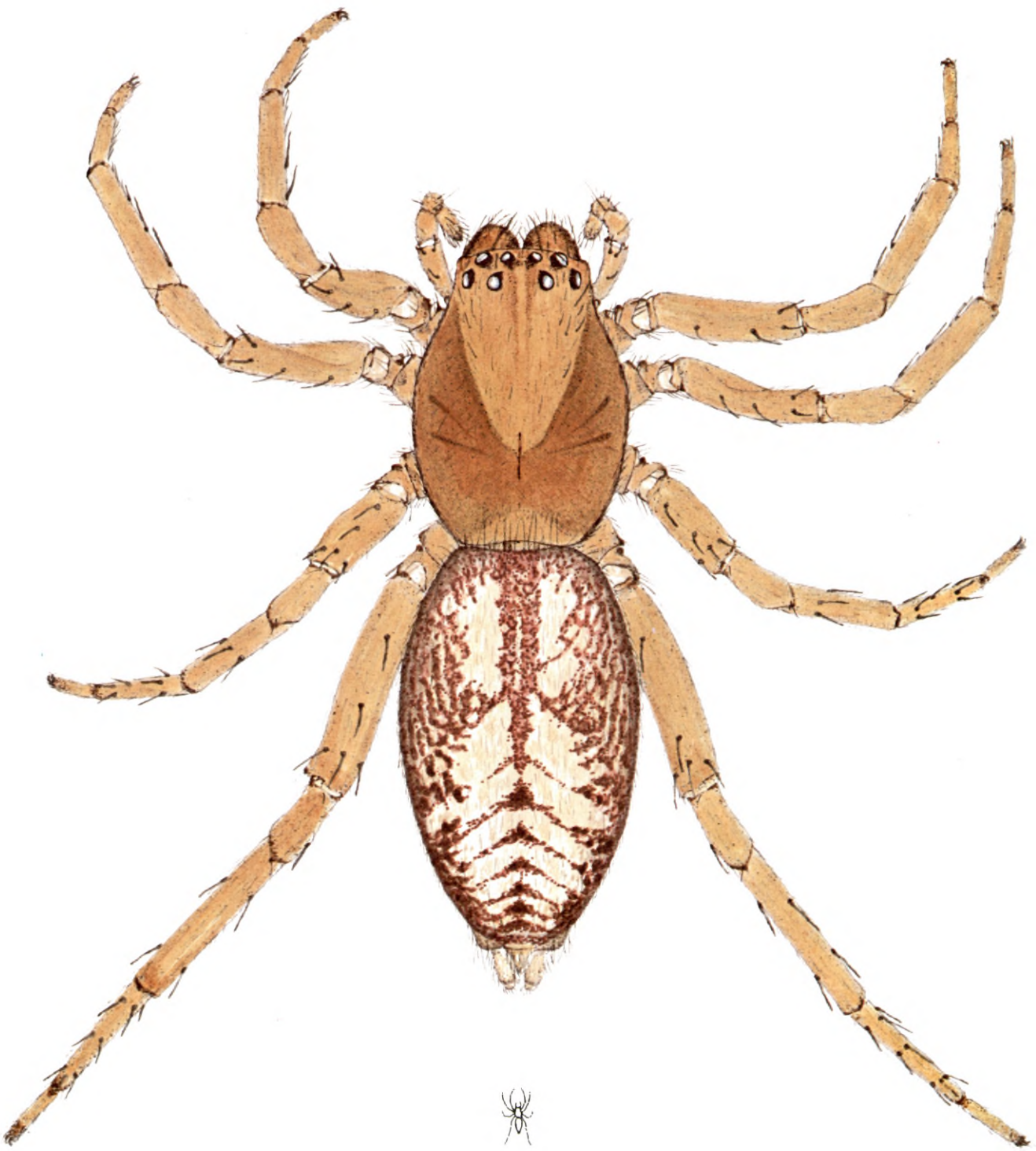
Micaria pulicaria (Sundevall) ♀



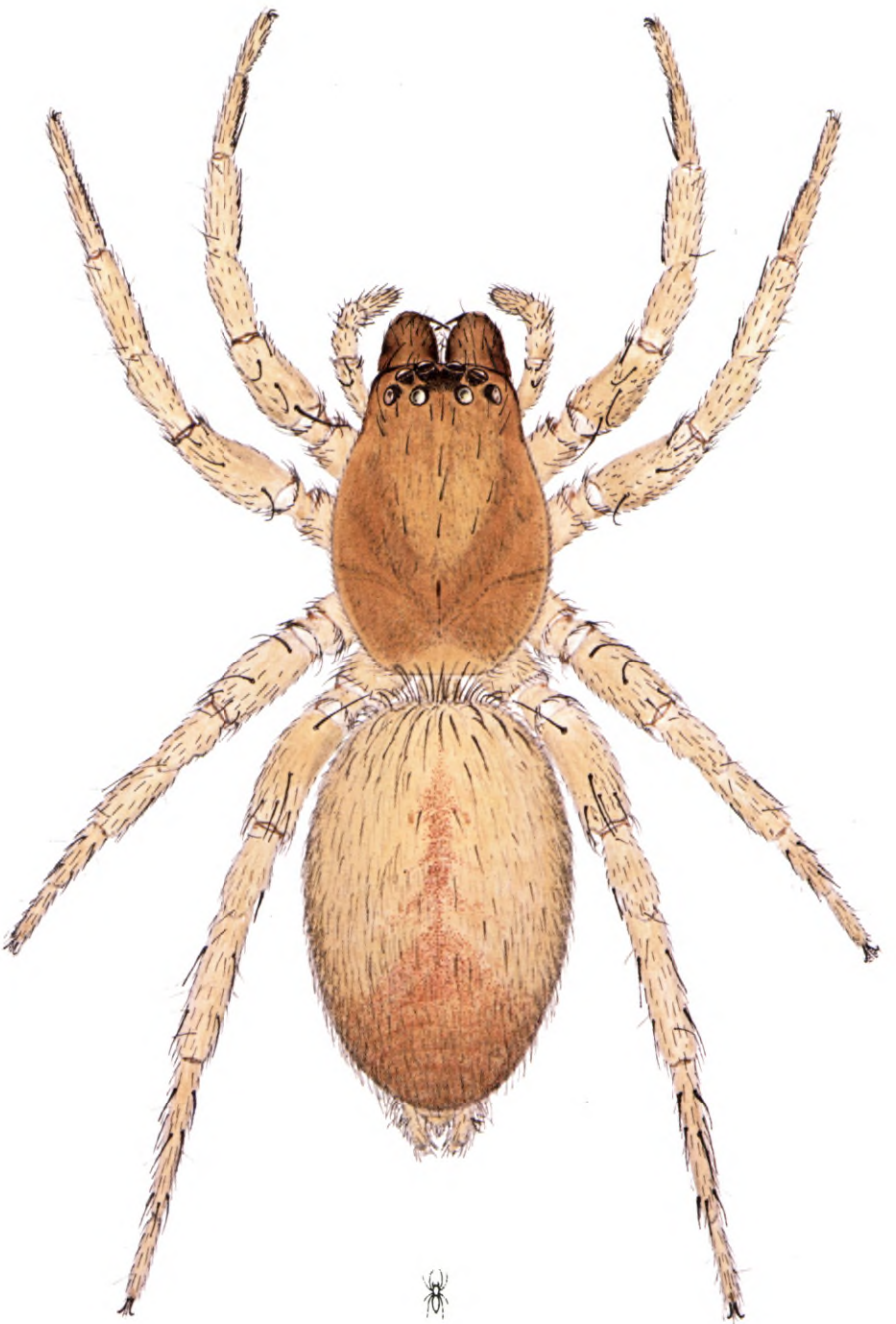
Micaria romana L. Koch ♂



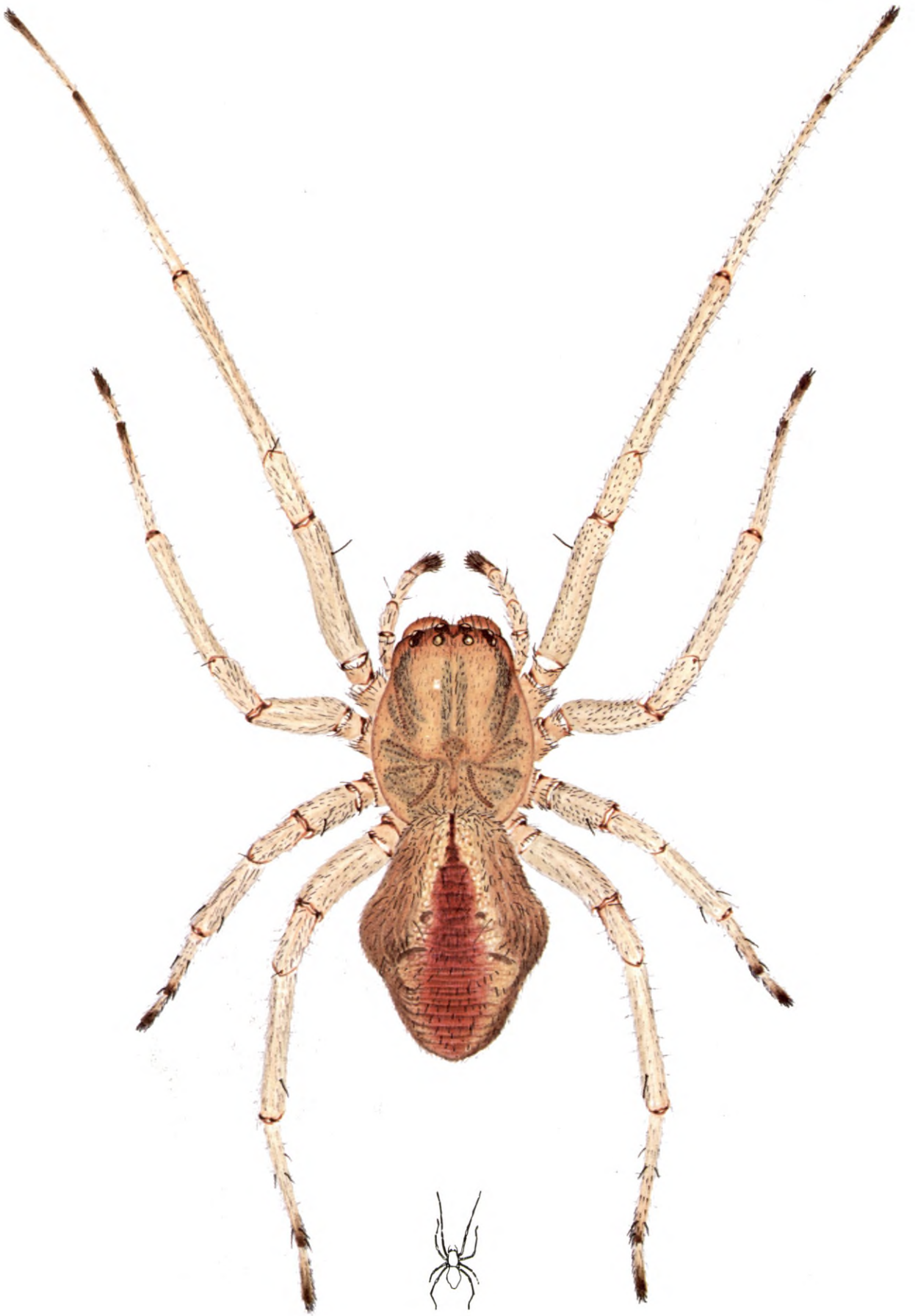
Clubiona lutescens Westring ♀



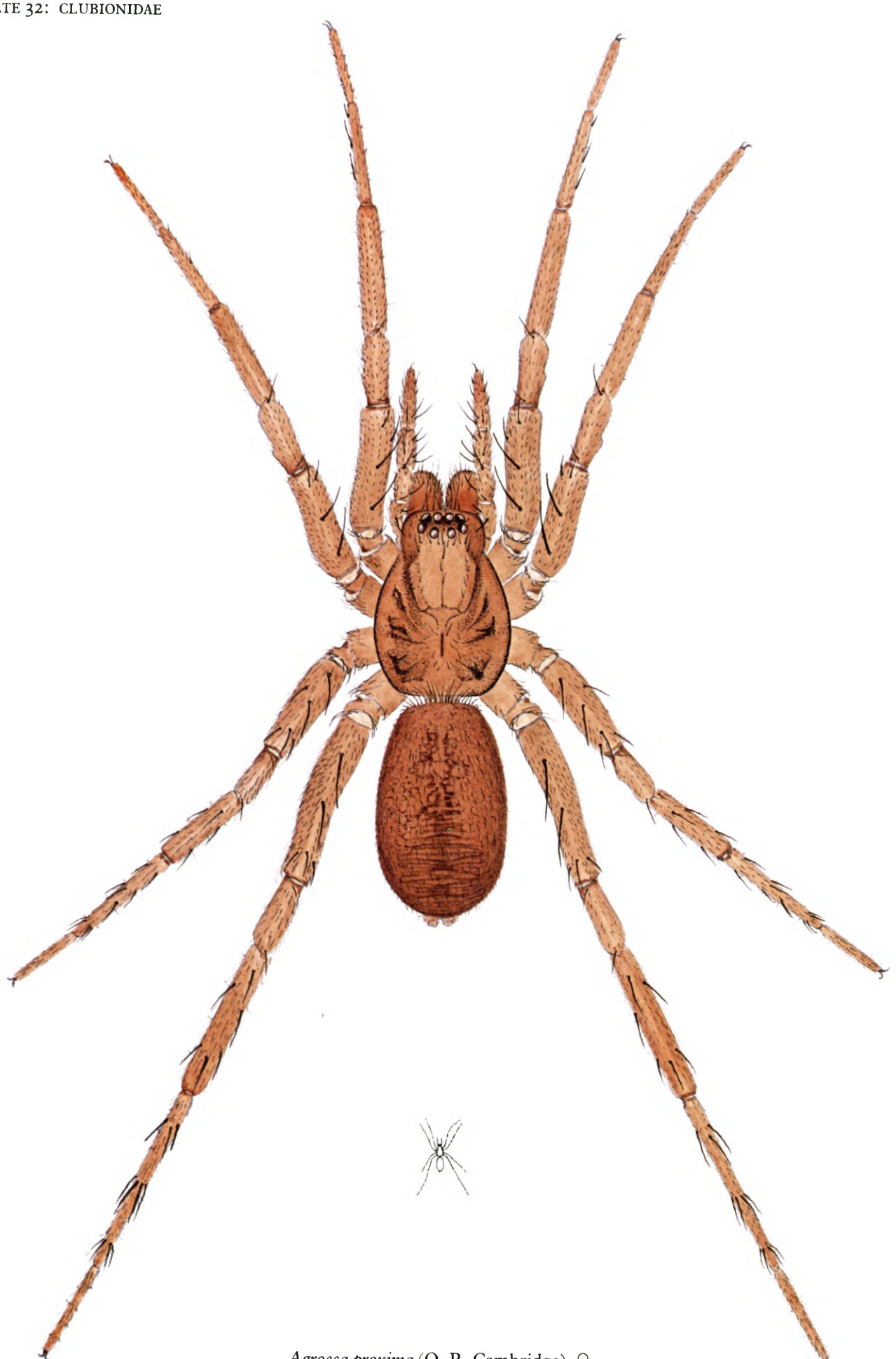
Clubiona compta C. L. Koch ♀



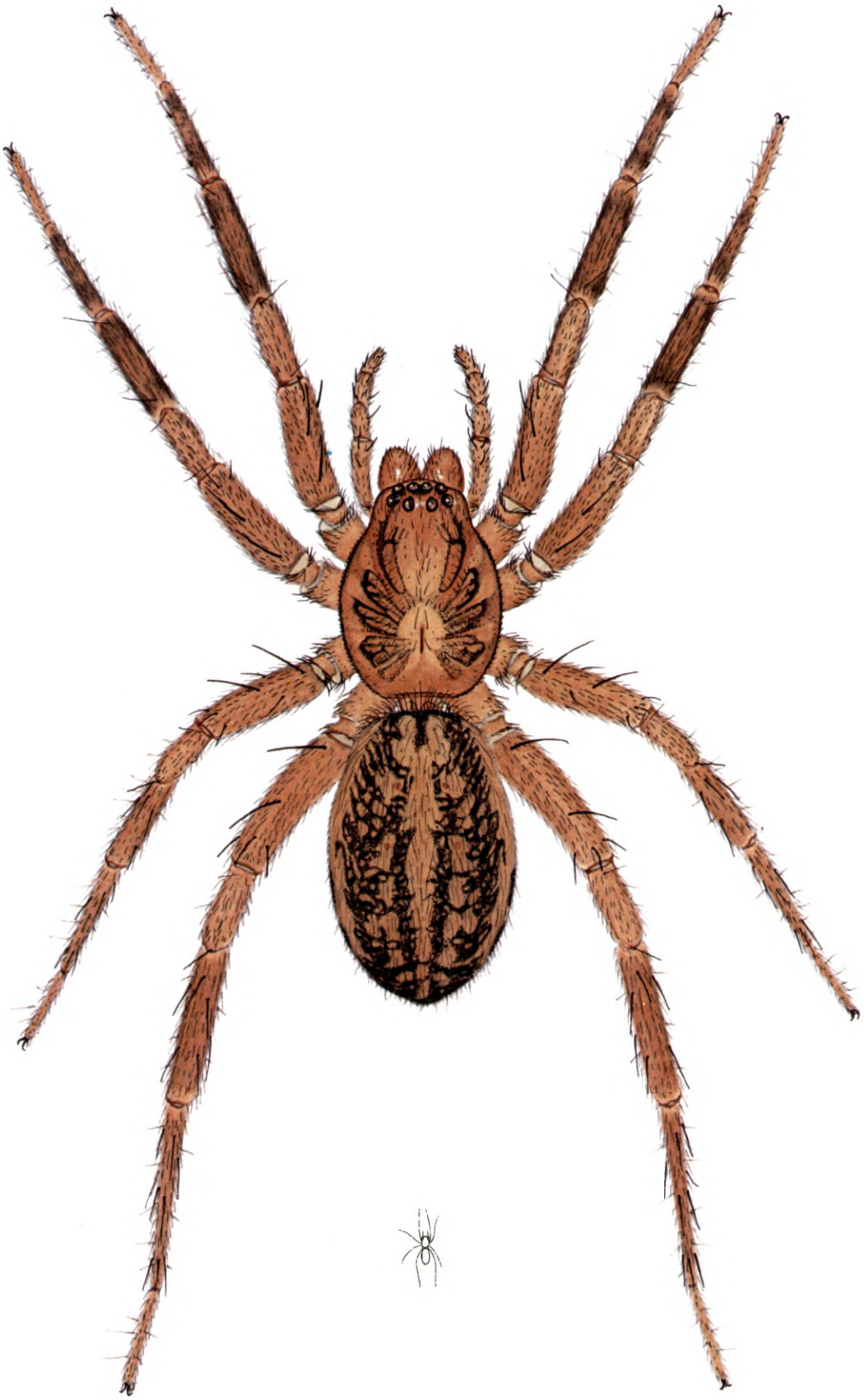
Clubiona diversa O. P.-Cambridge ♀



Cheiracanthium erraticum (Walckenaer) ♀

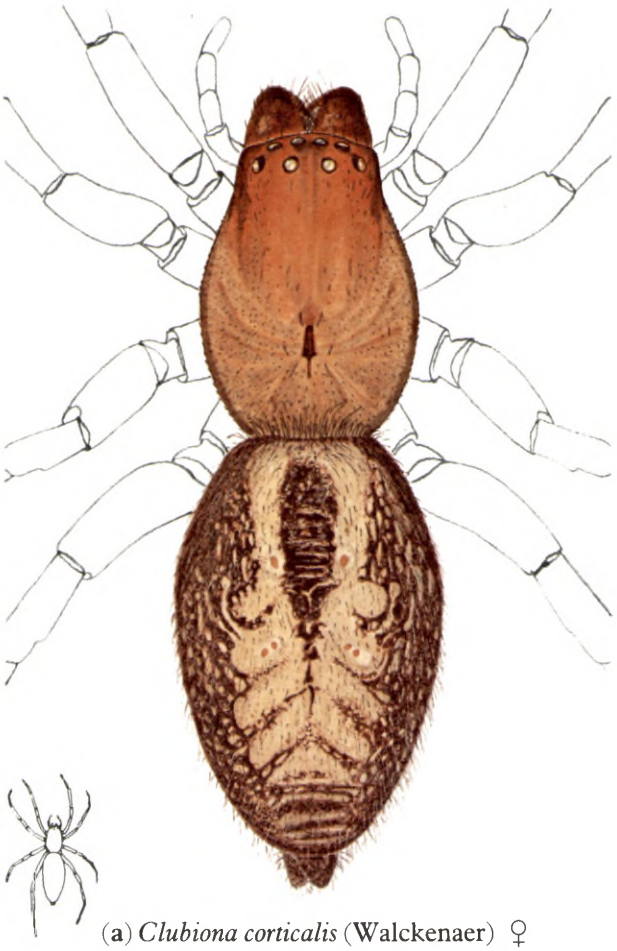


Agroeca proxima (O. P.-Cambridge) ♀

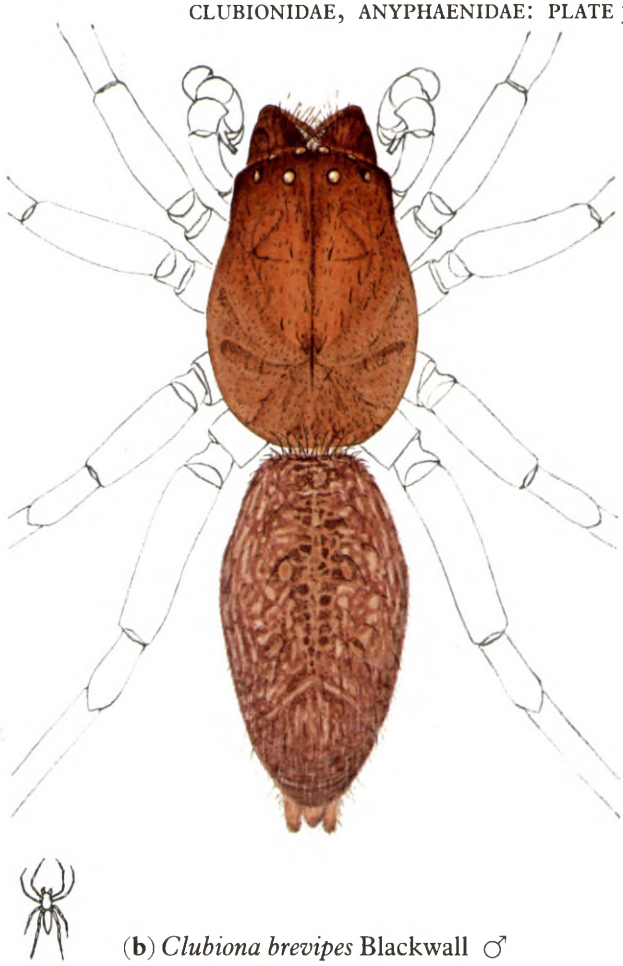


Agroeca striata Kulczynski ♀

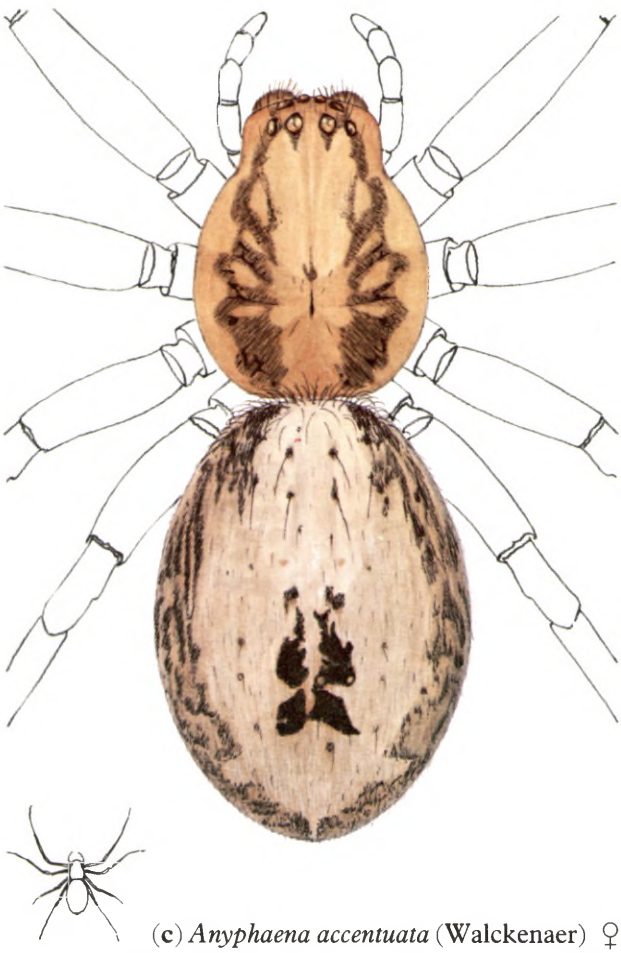
Scotina celans (Blackwall) ♀



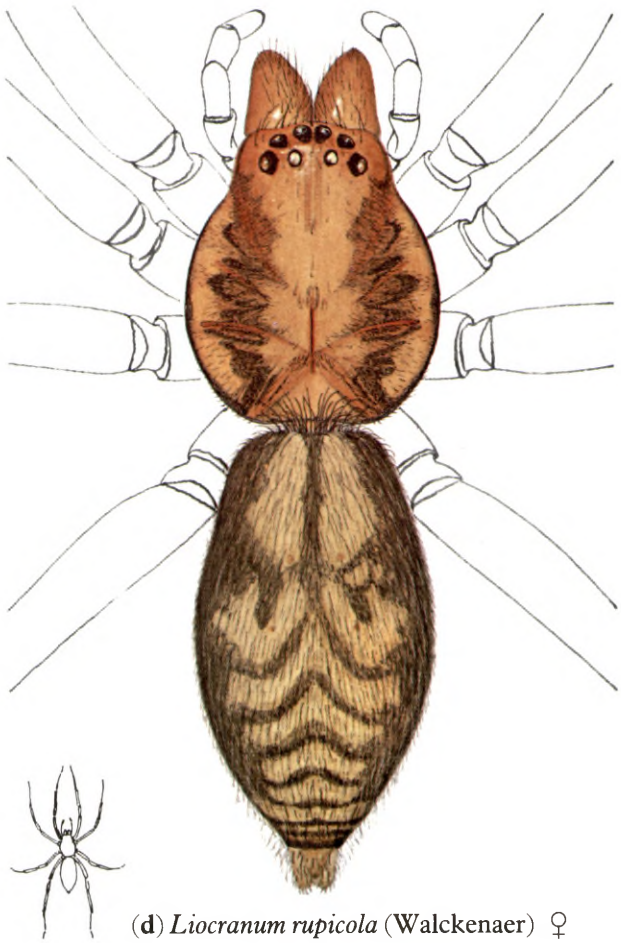
(**a**) *Clubiona corticalis* (Walckenaer) ♀



(**b**) *Clubiona brevipes* Blackwall ♂

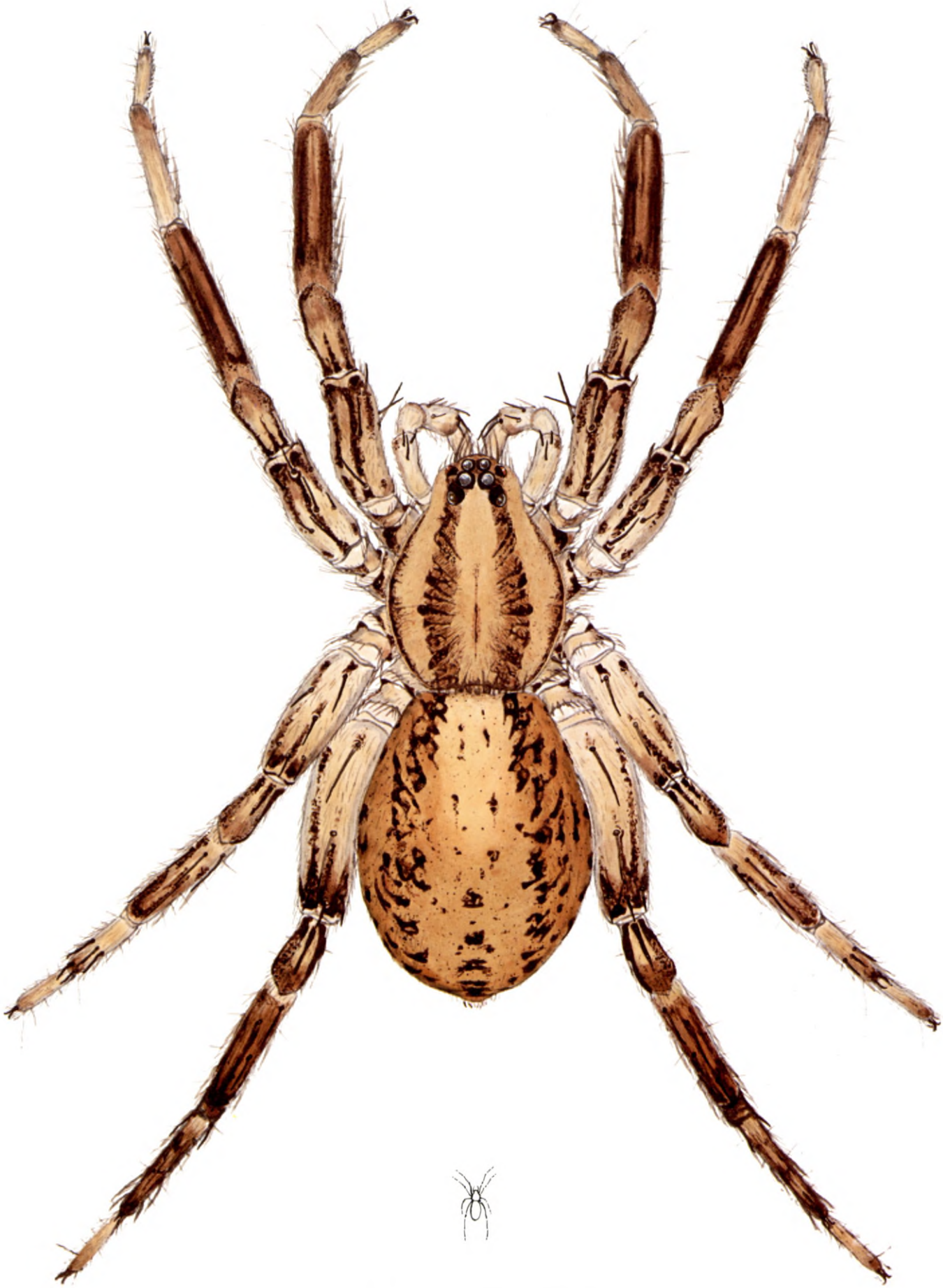


(**c**) *Anyphaena accentuata* (Walckenaer) ♀



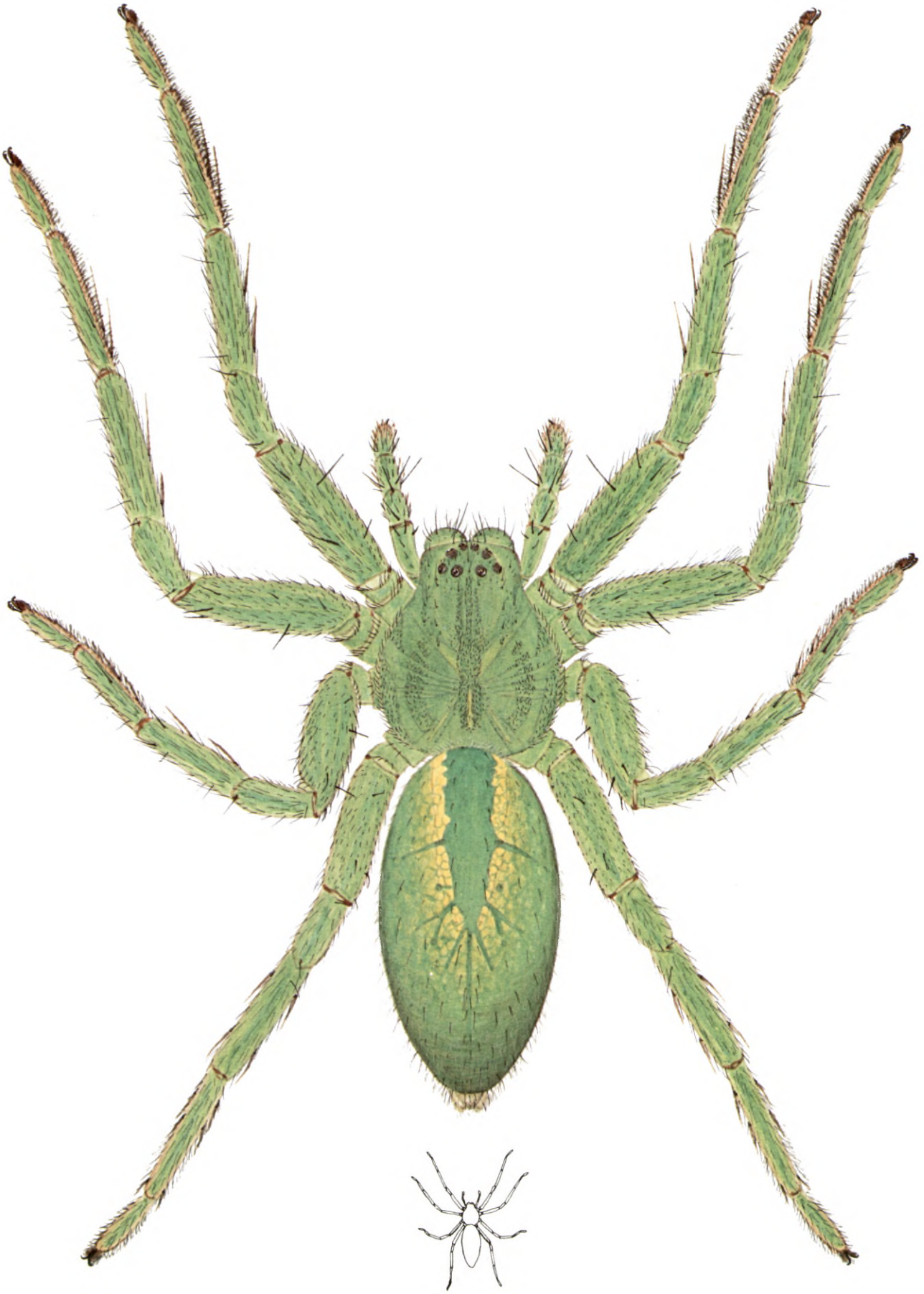
(**d**) *Liocranum rupicola* (Walckenaer) ♀

Phrurolithus festivus (C. L. Koch) ♂ (with parasitic mite attached)



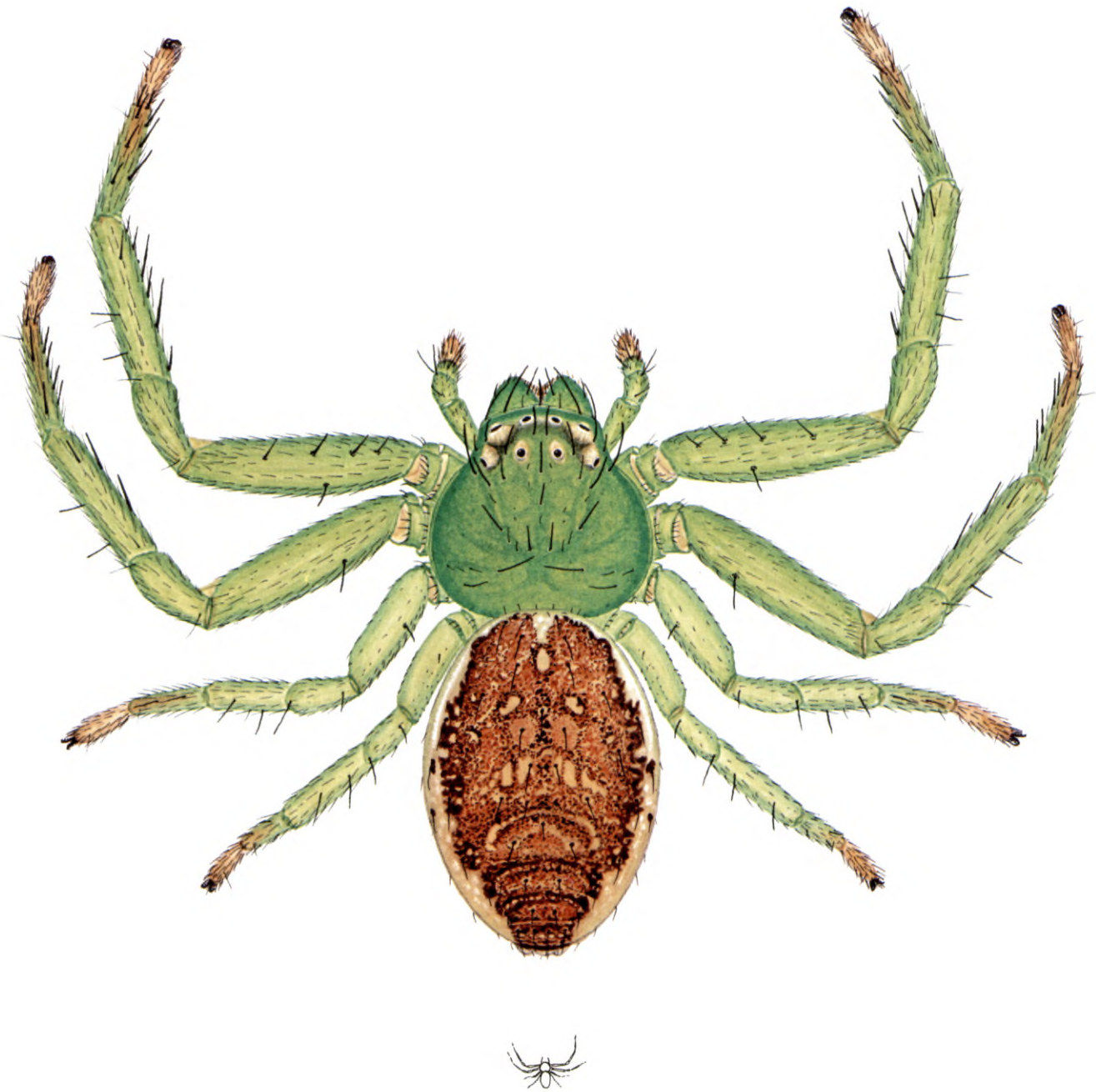
Zora spinimana (Sundevall) ♀

Anyphaena accentuata (Walckenaer) ♂



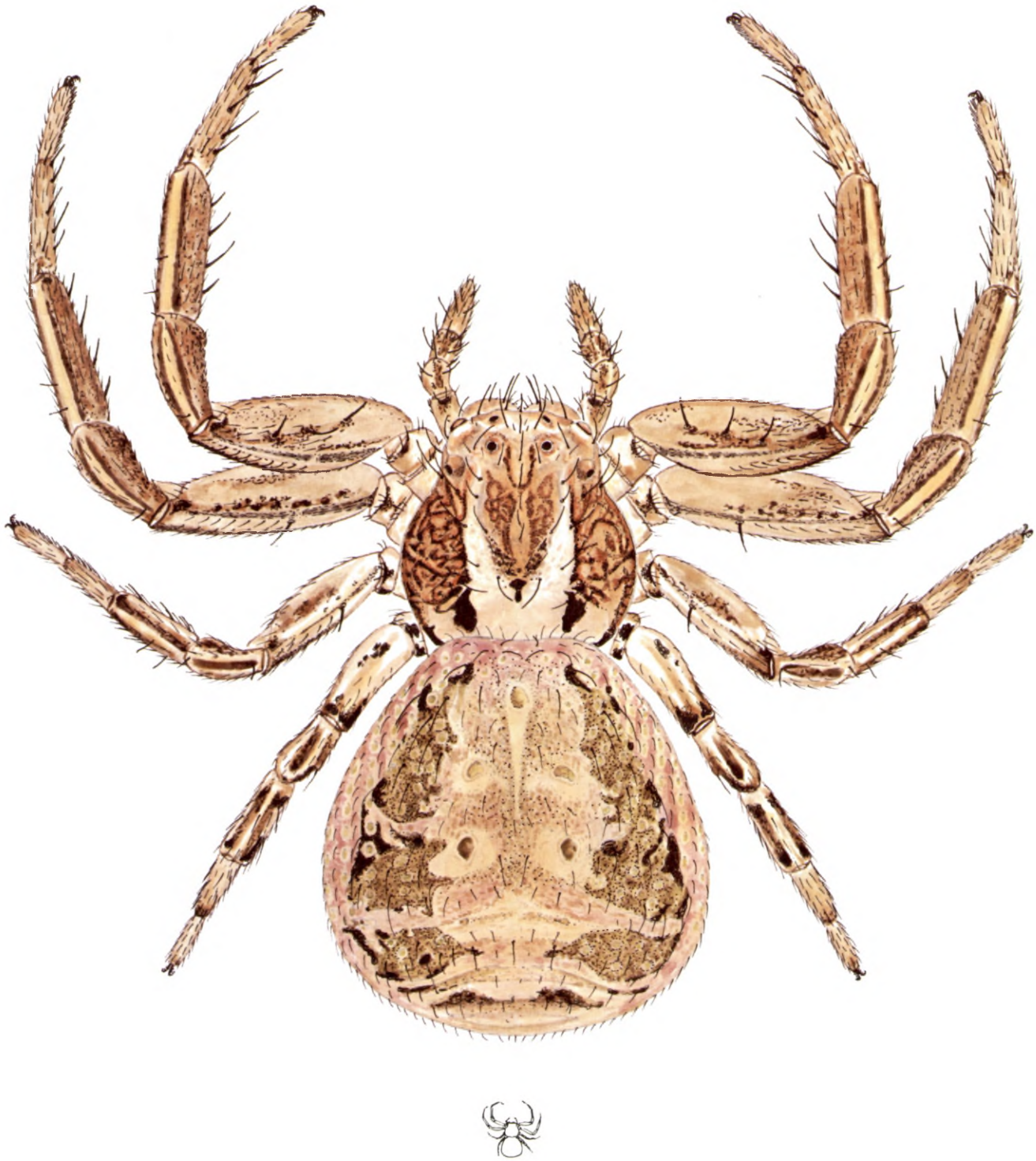
Micrommata virescens (Clerck) ♀

Thomisus onustus Walckenaer ♀

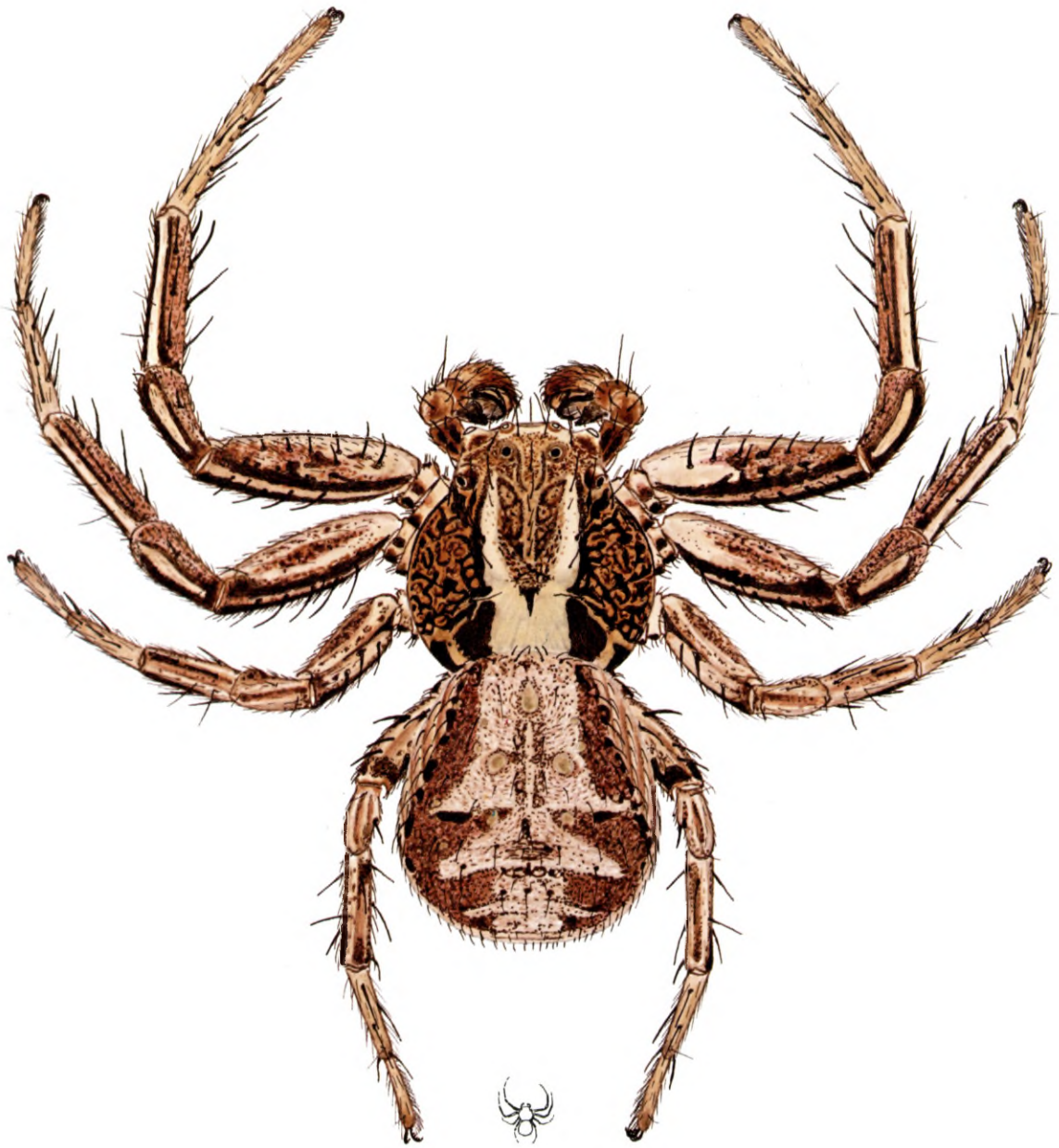


Diaea dorsata (Fabricius) ♀ (subadult)

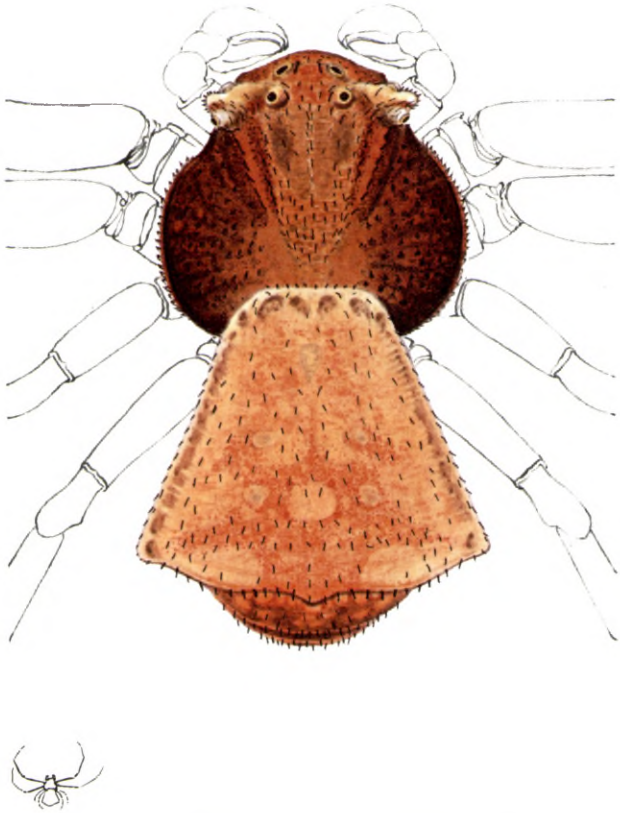
Misumena vatia (Clerck) ♀



Xysticus cristatus (Clerck) ♀

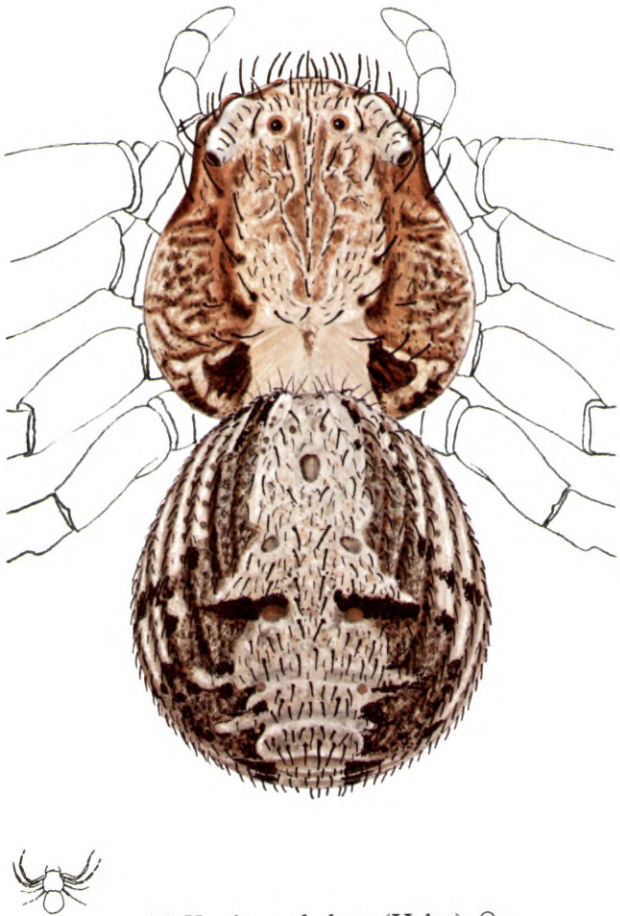


Xysticus cristatus (Clerck) ♂

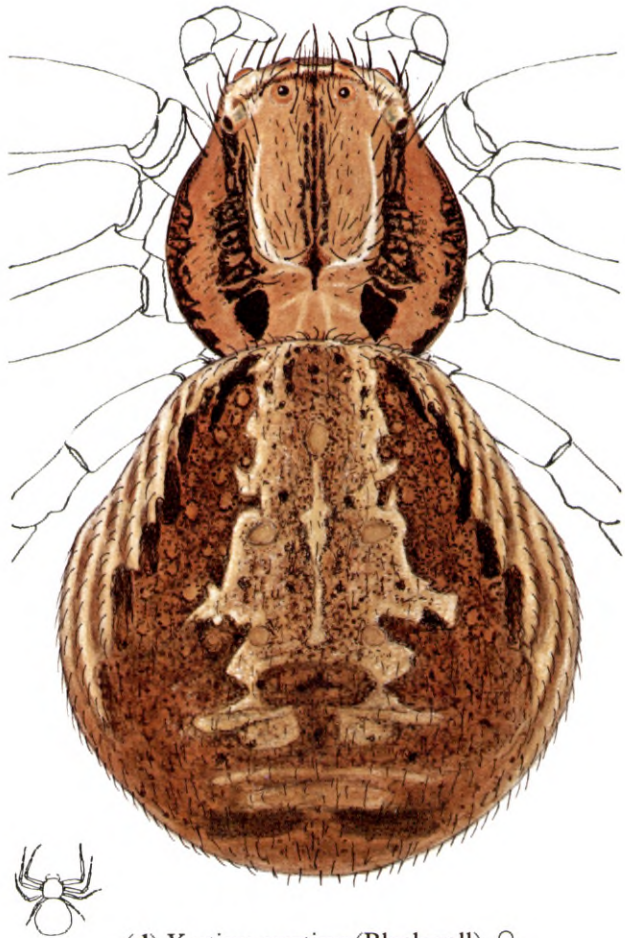


(**a**) *Thomisus onustus* Walckenaer ♂

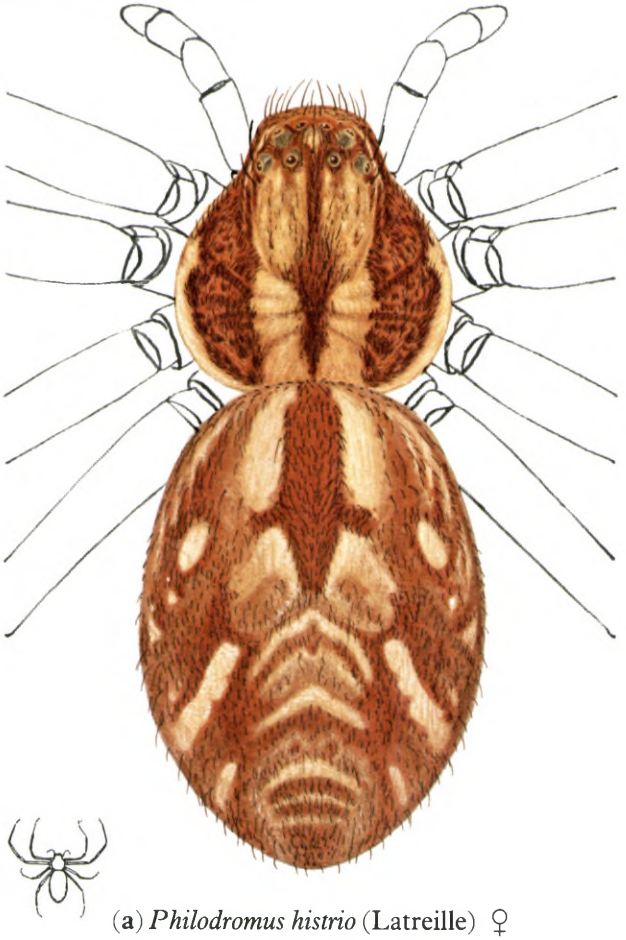
(**b**) *Philodromus aureolus* (Clerck) ♂



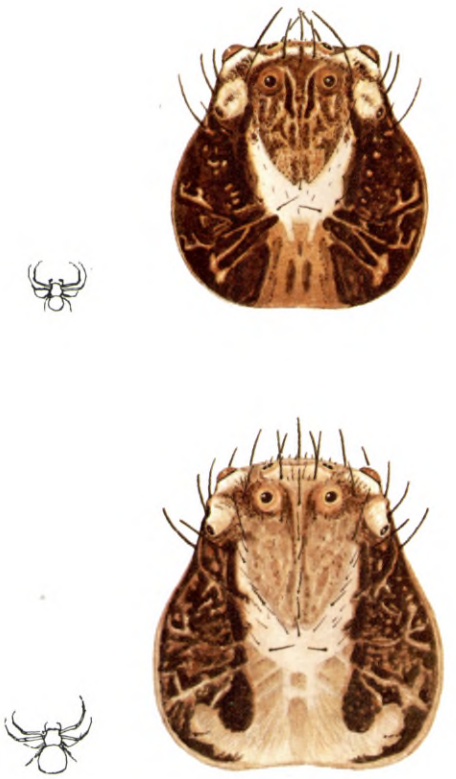
(**c**) *Xysticus sabulosus* (Hahn) ♀



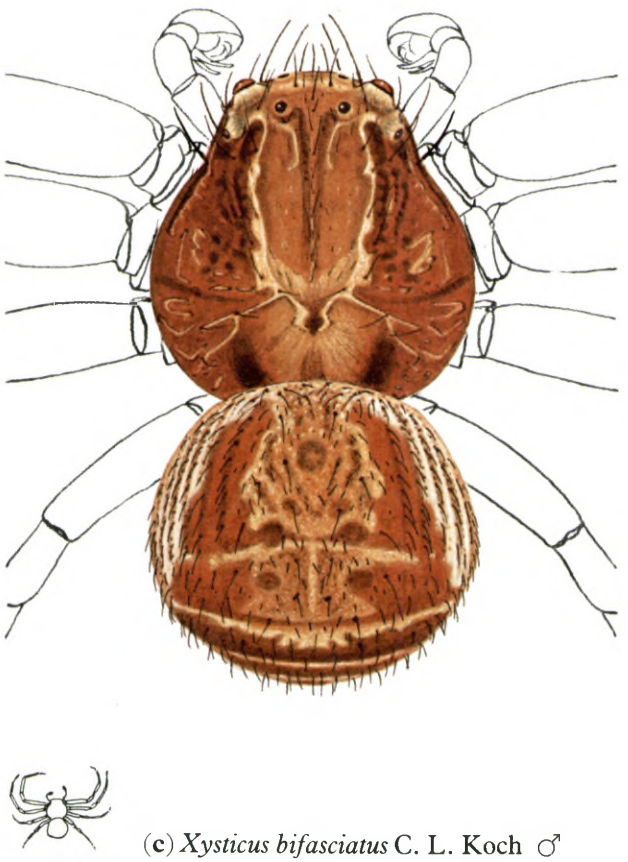
(**d**) *Xysticus erraticus* (Blackwall) ♀



(**a**) *Philodromus histrio* (Latreille) ♀

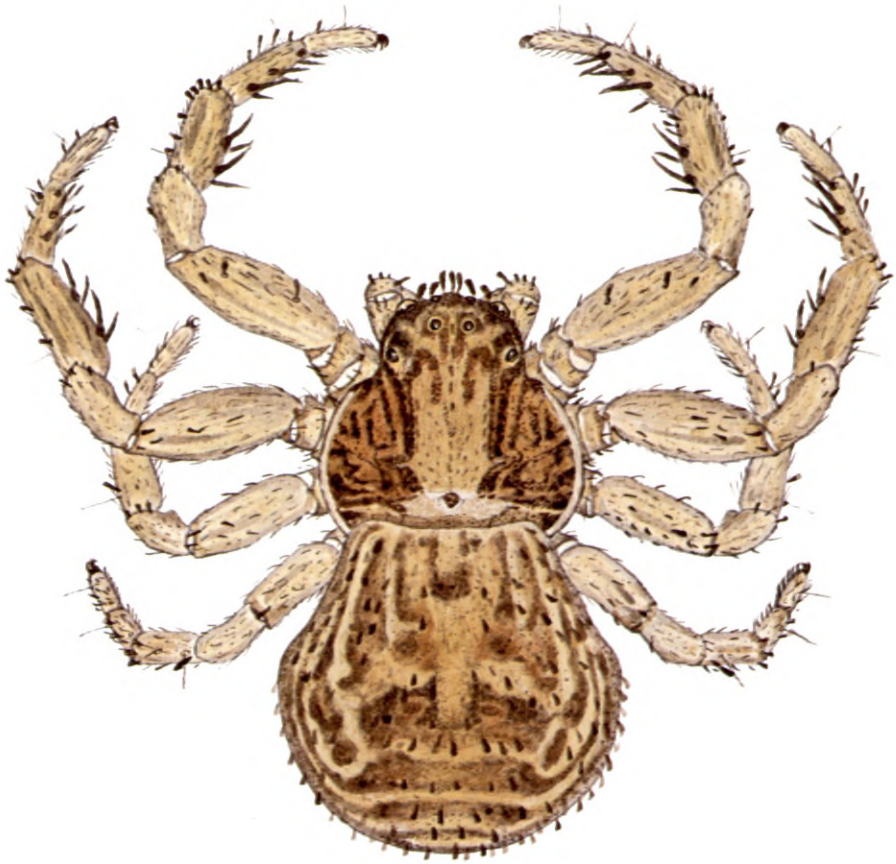


(**b**) *Xysticus audax* (Schrank) carapaces ♂♀

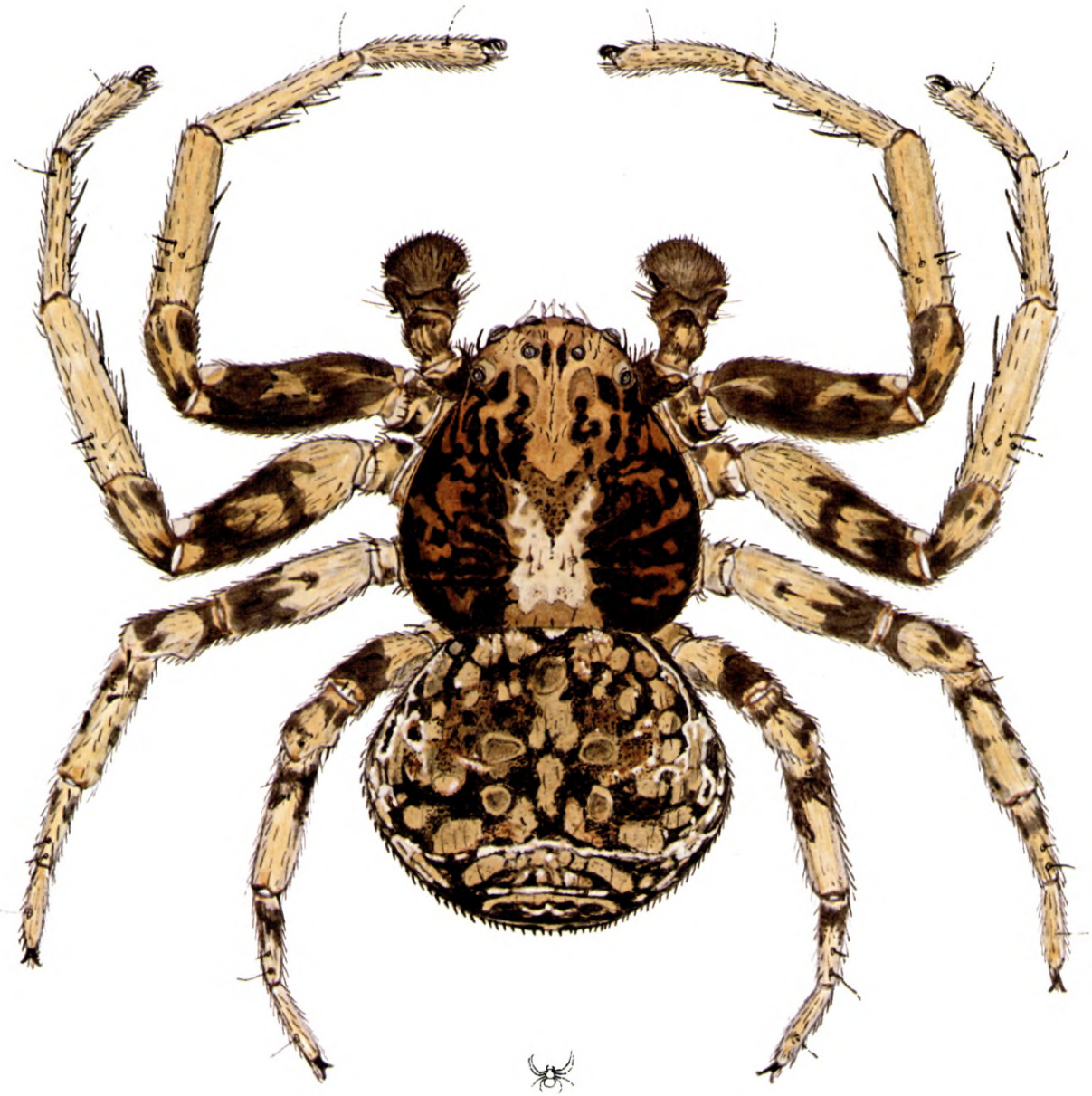


(**c**) *Xysticus bifasciatus* C. L. Koch ♂

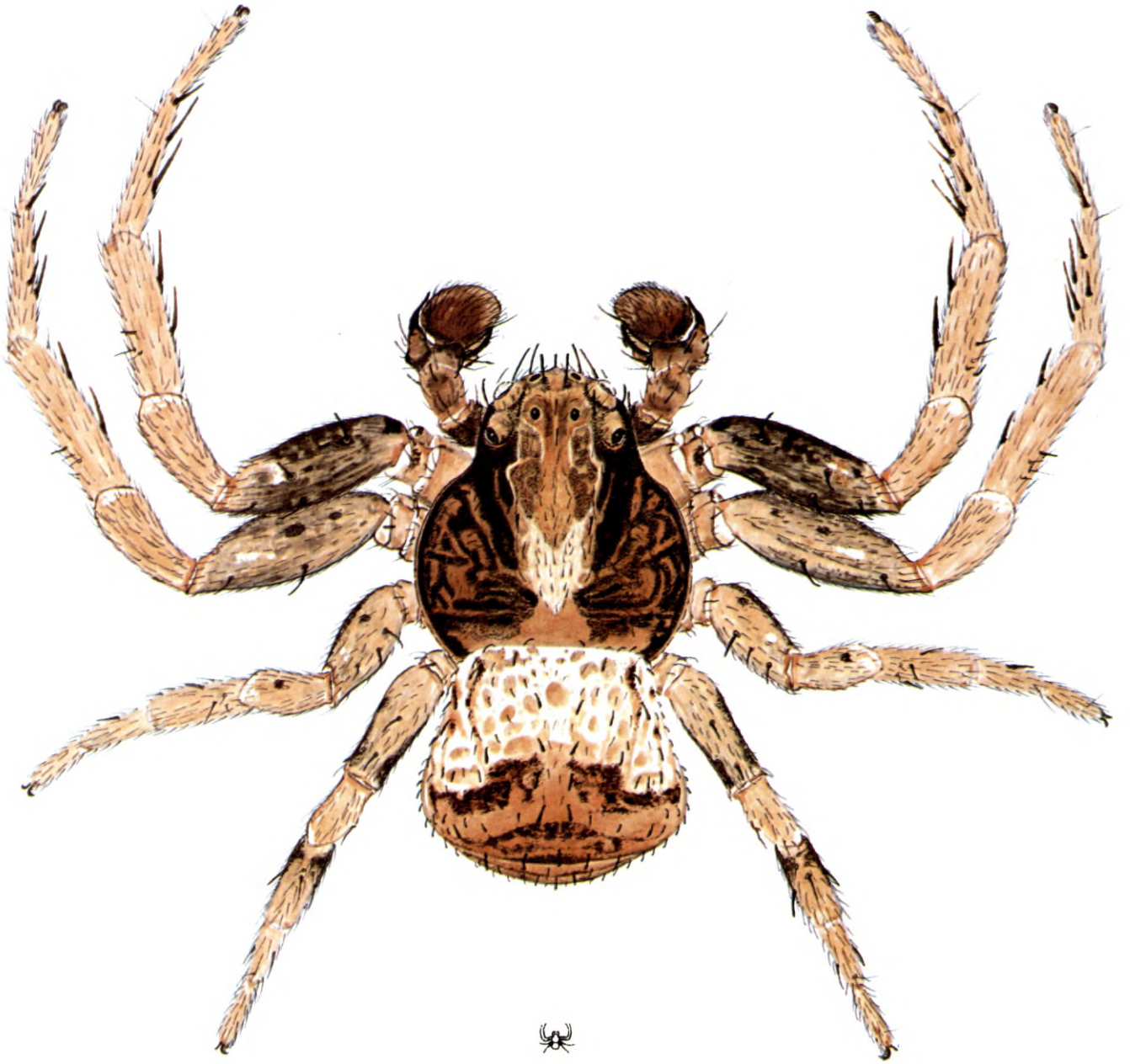
(**d**) *Xysticus robustus* (Hahn) ♂



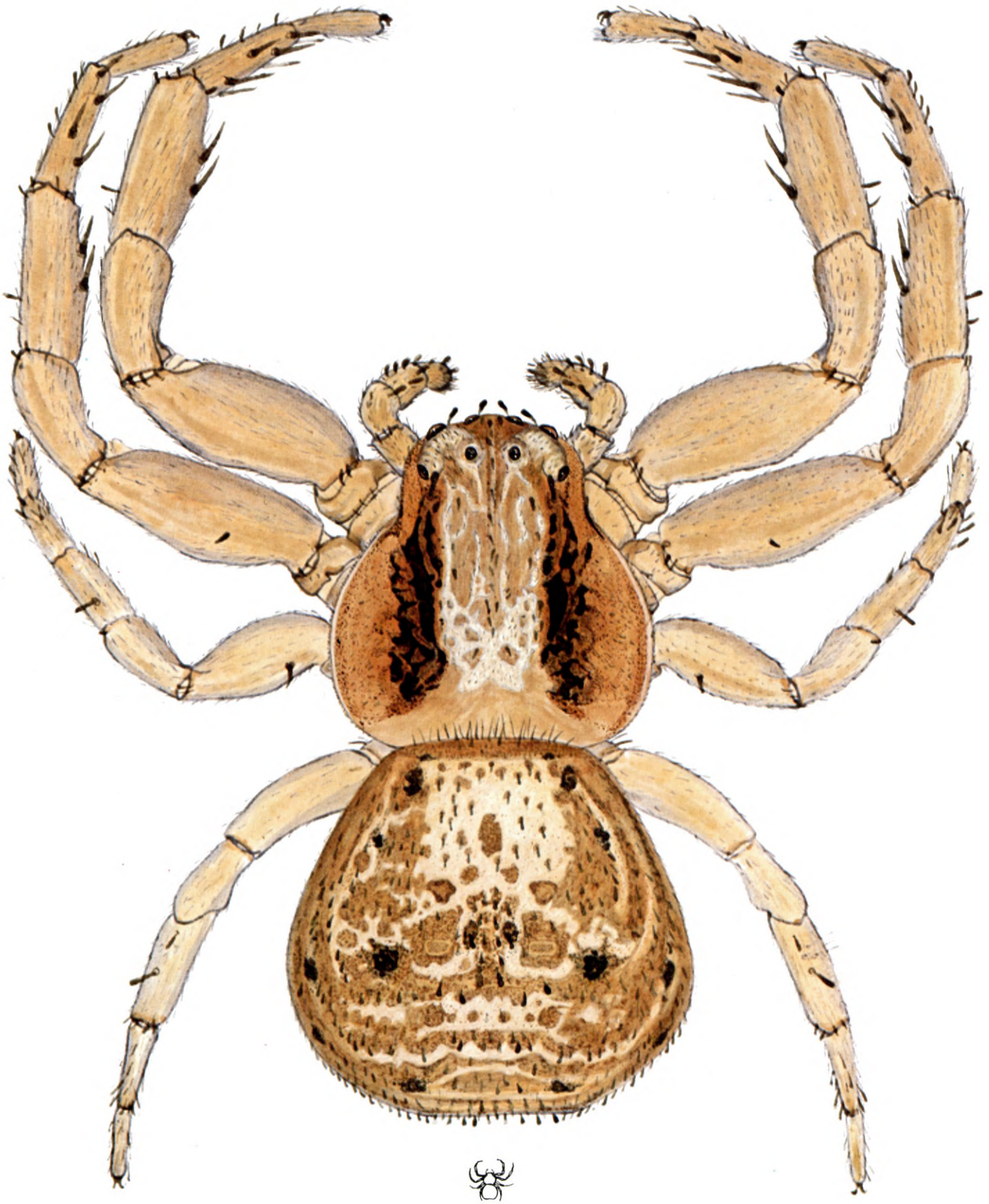
Oxyptila sanctuaria (O. P.-Cambridge) ♀



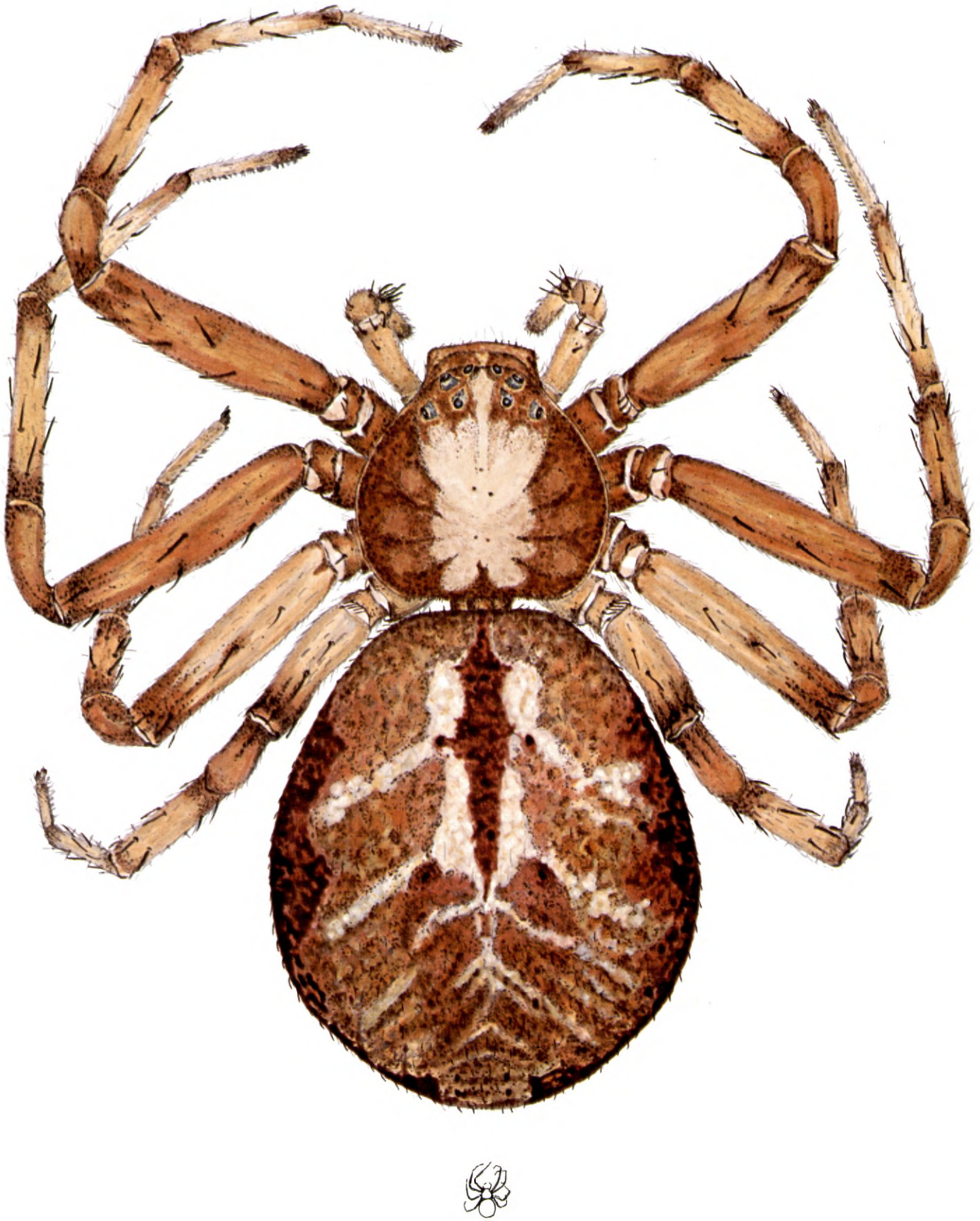
Oxyptila praticola (C. L. Koch) ♂



Oxyptila simplex (O. P.-Cambridge) ♂

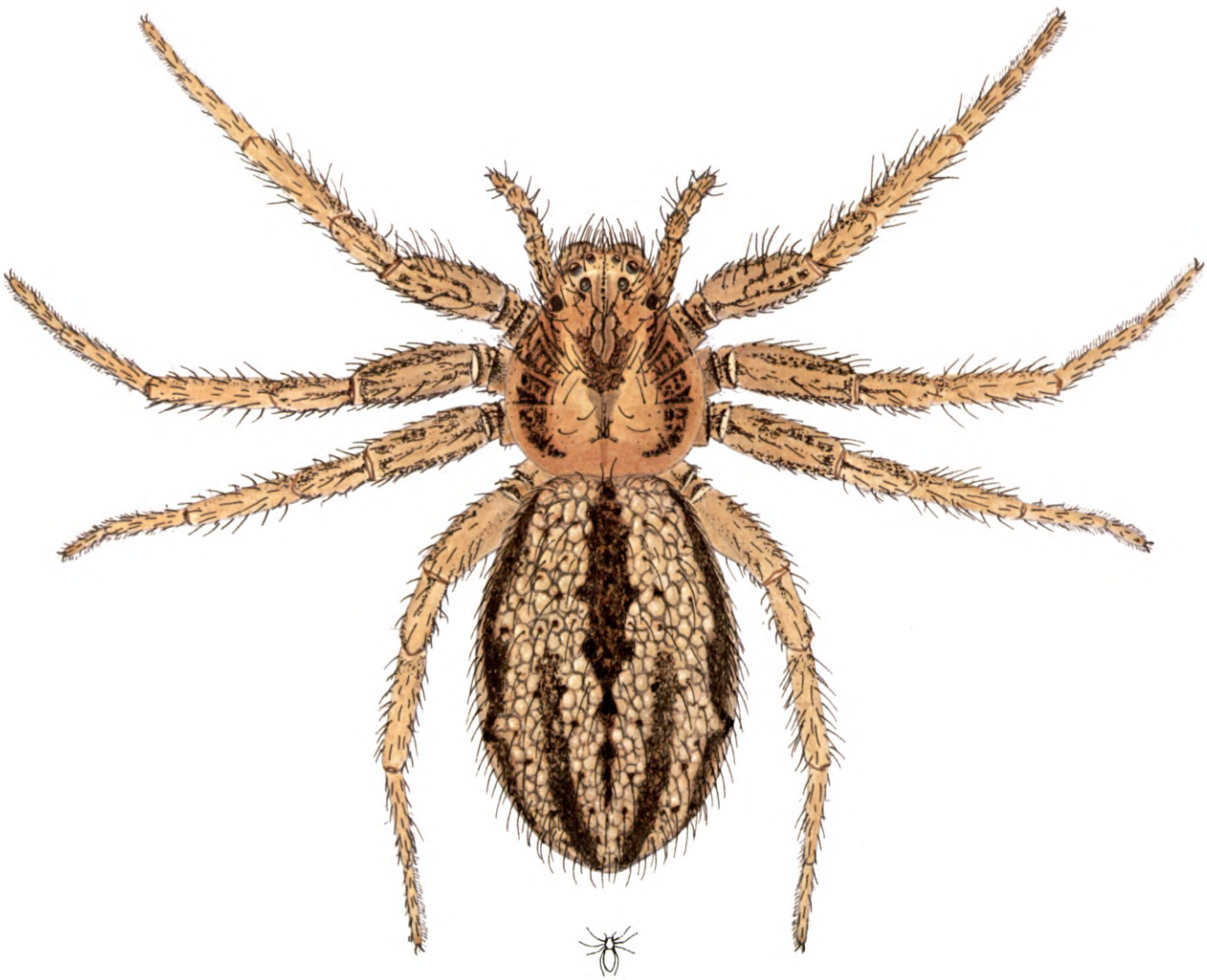


Oxyptila atomaria (Panzer) ♀

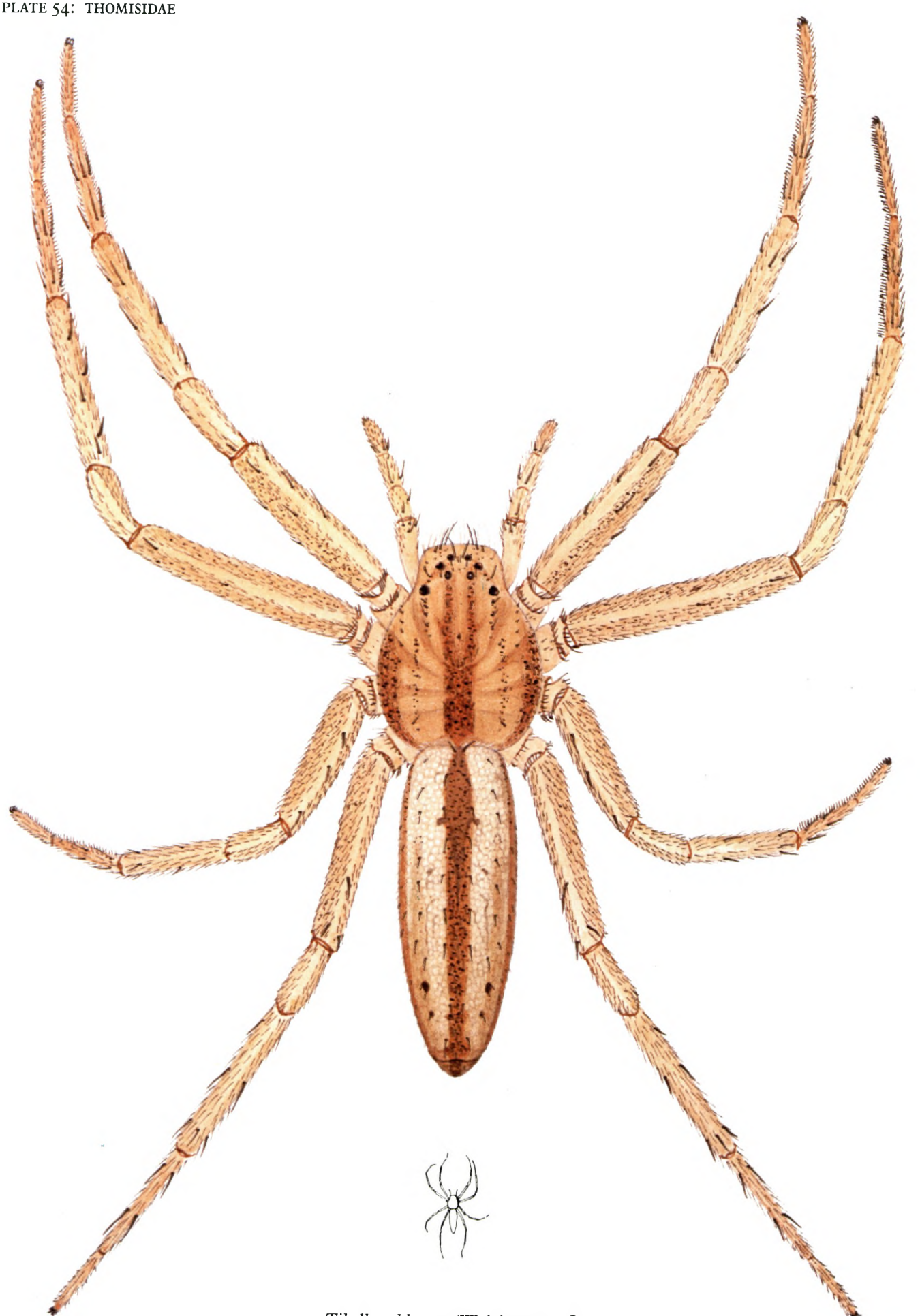


Philodromus cespitum (Walckenaer) ♀

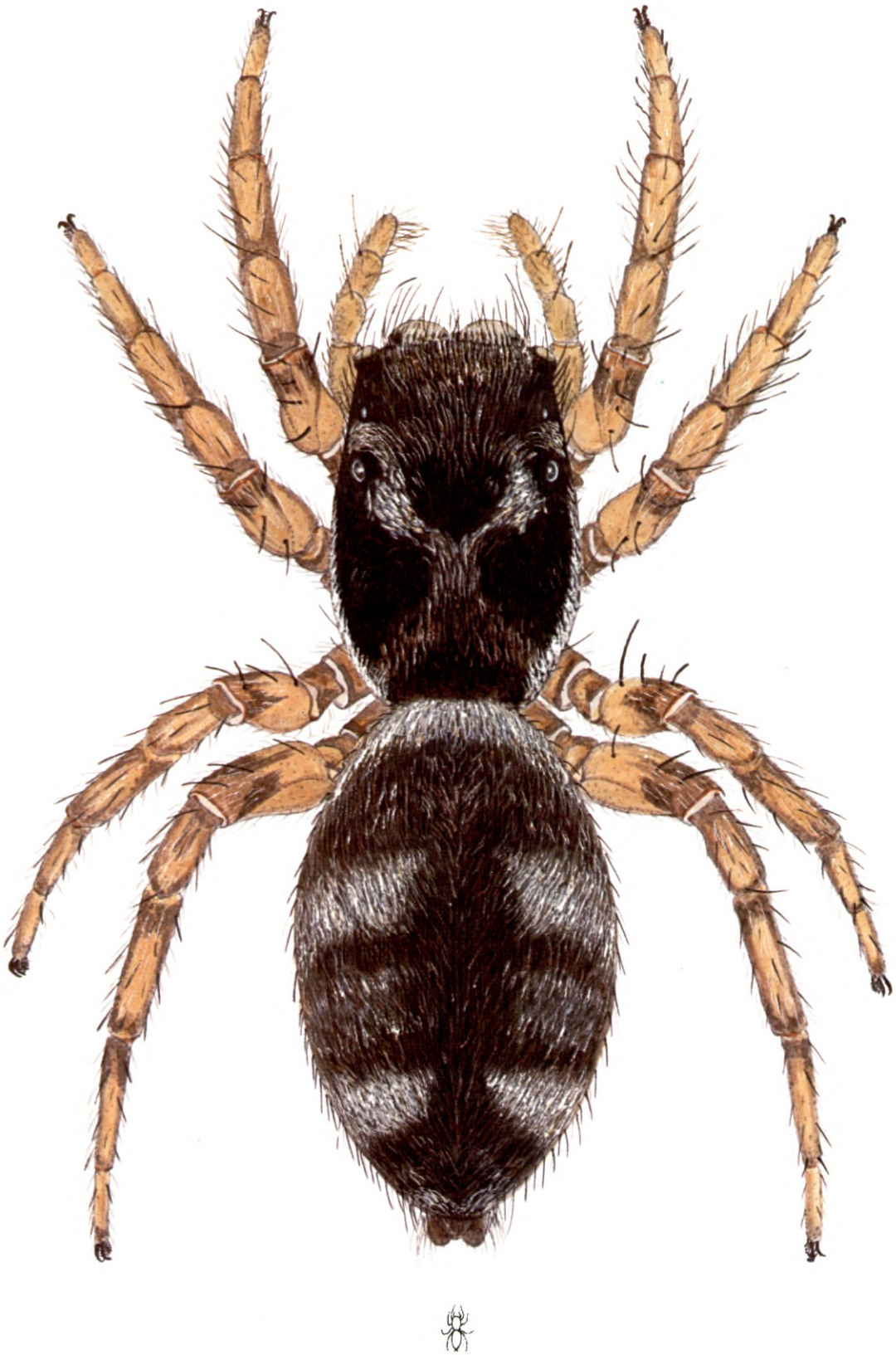
Philodromus fallax Sundevall ♀



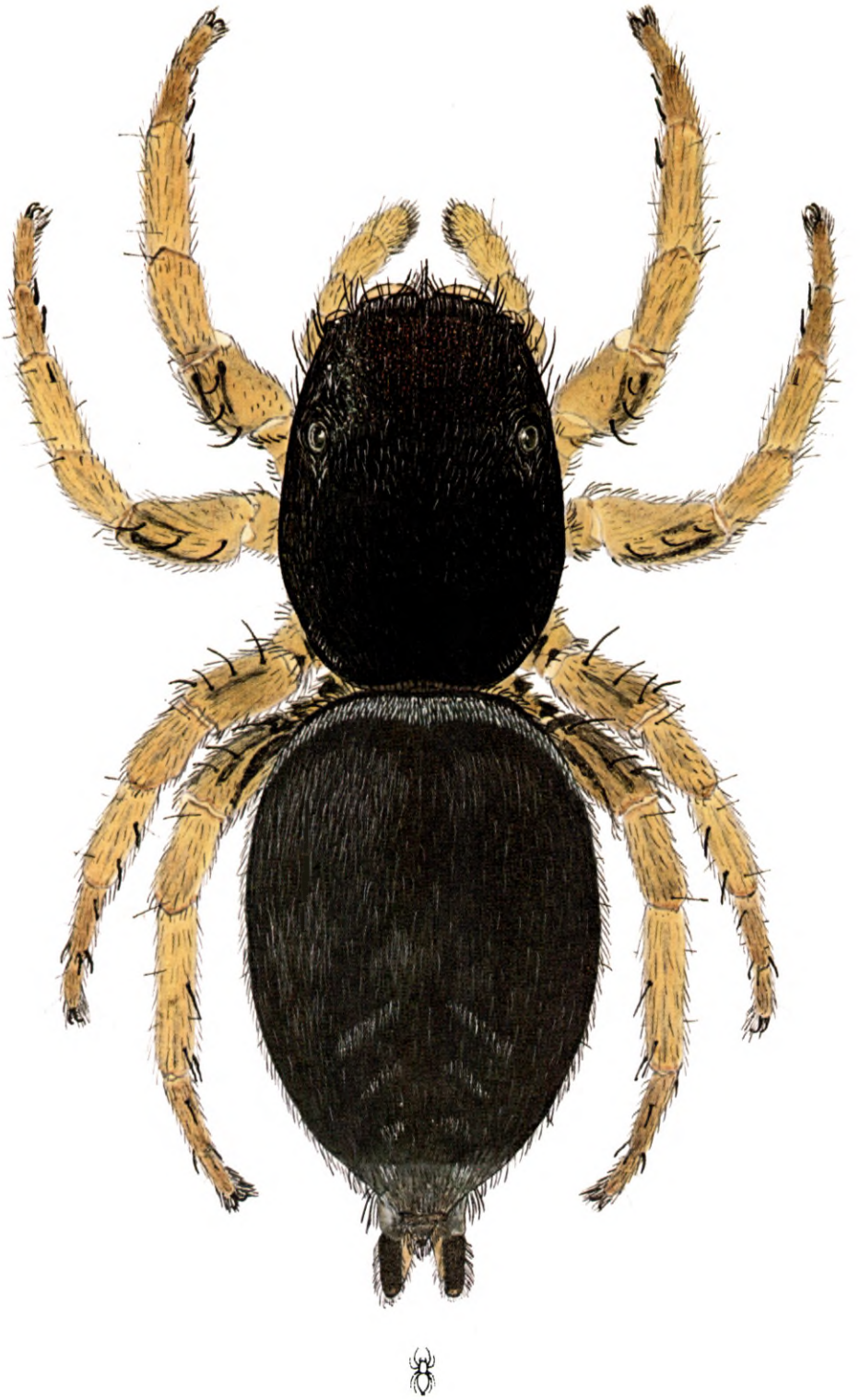
Thanatus striatus C. L. Koch ♀



Tibellus oblongus (Walckenaer) ♀

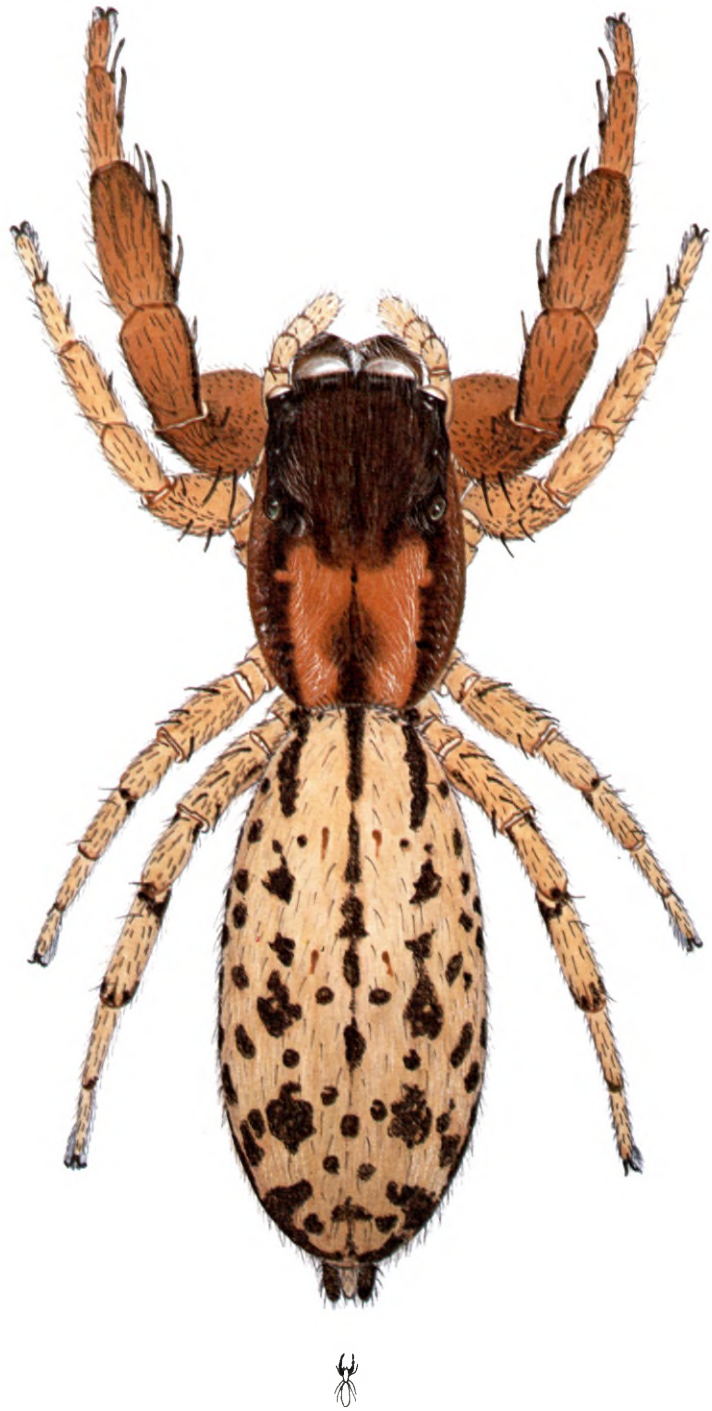


Salticus scenicus (Clerck) ♀

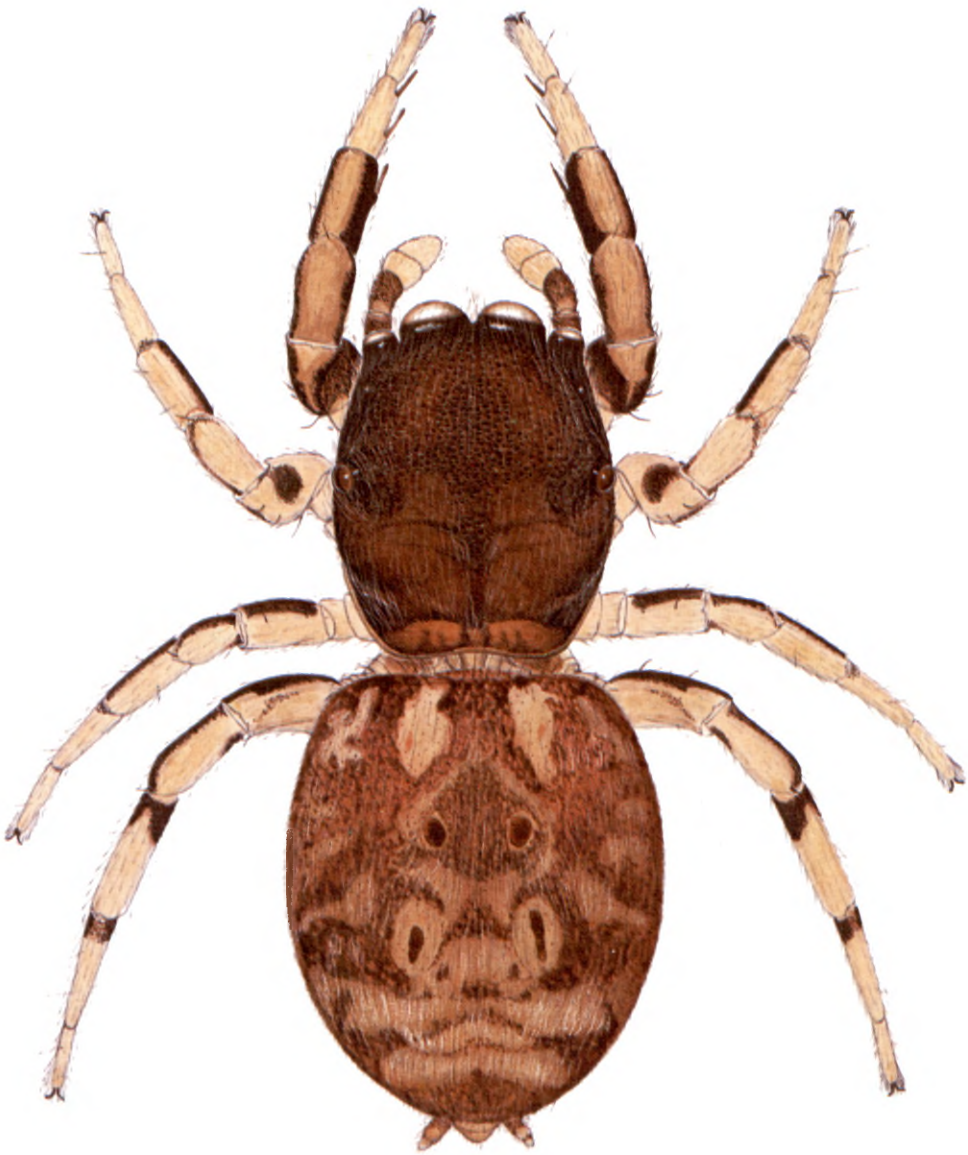


Heliophanus flavipes C. L. Koch ♀

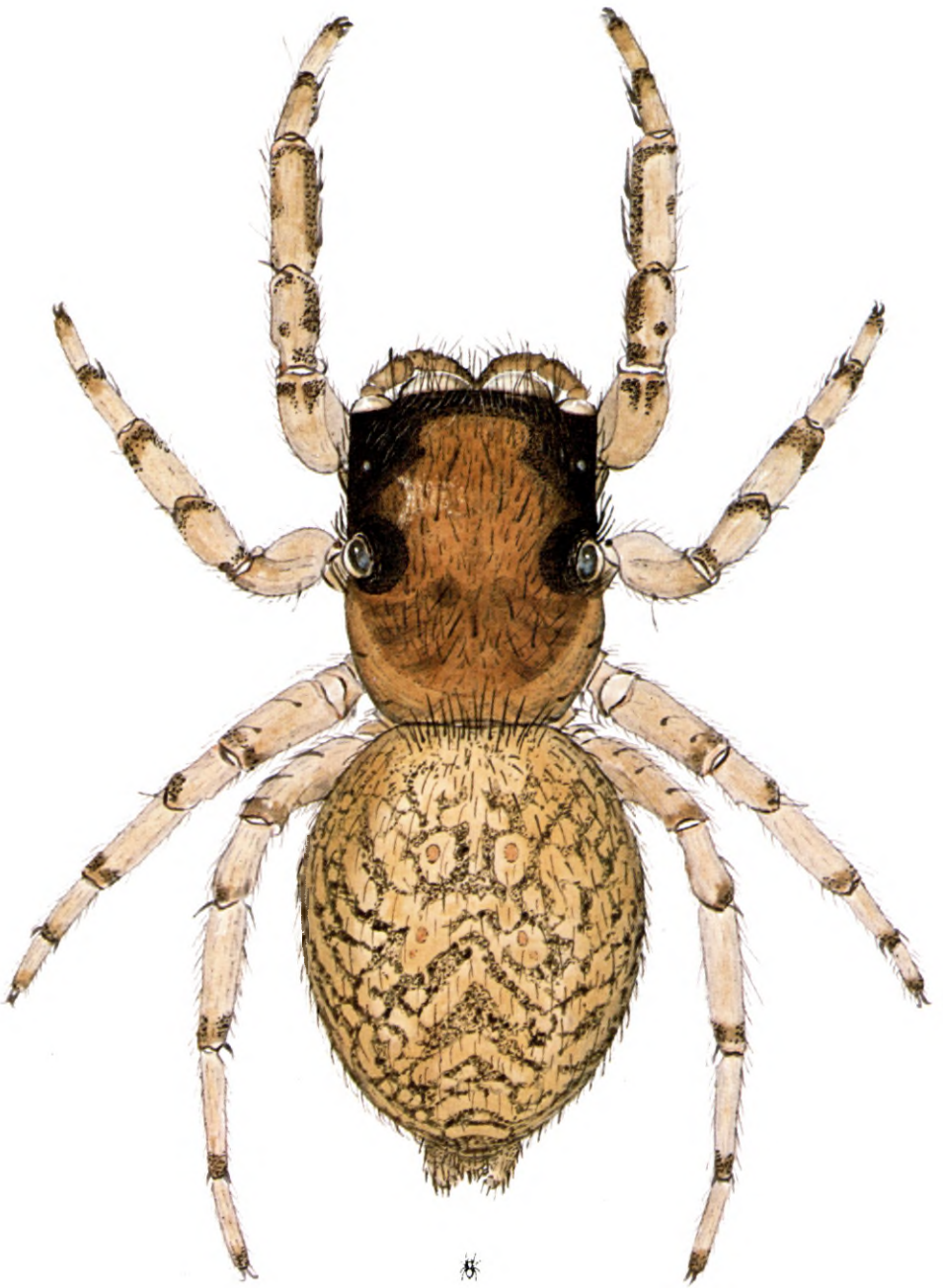
Marpissa muscosa (Clerck) ♀



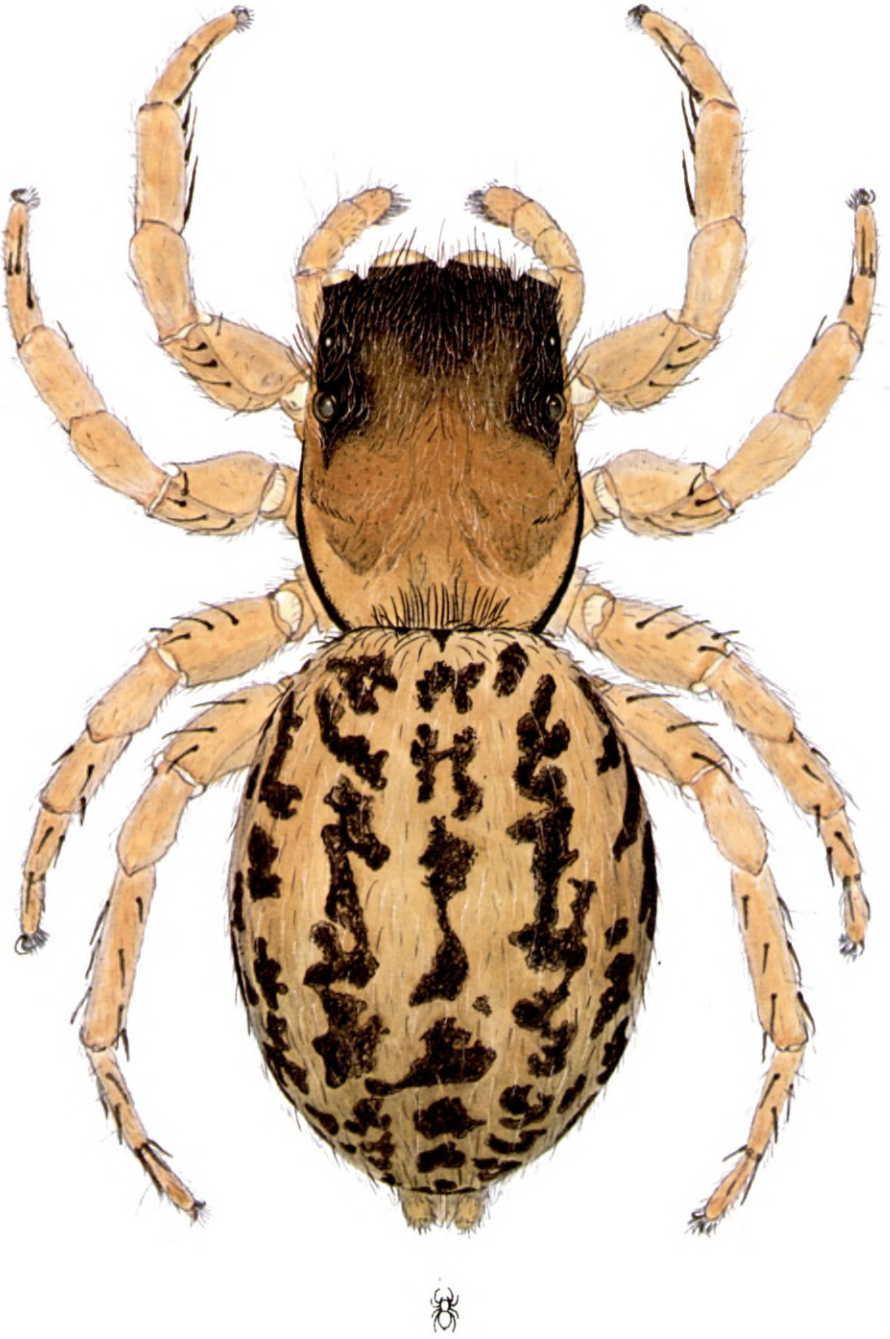
Marpissa nivoyi (Lucas) ♀



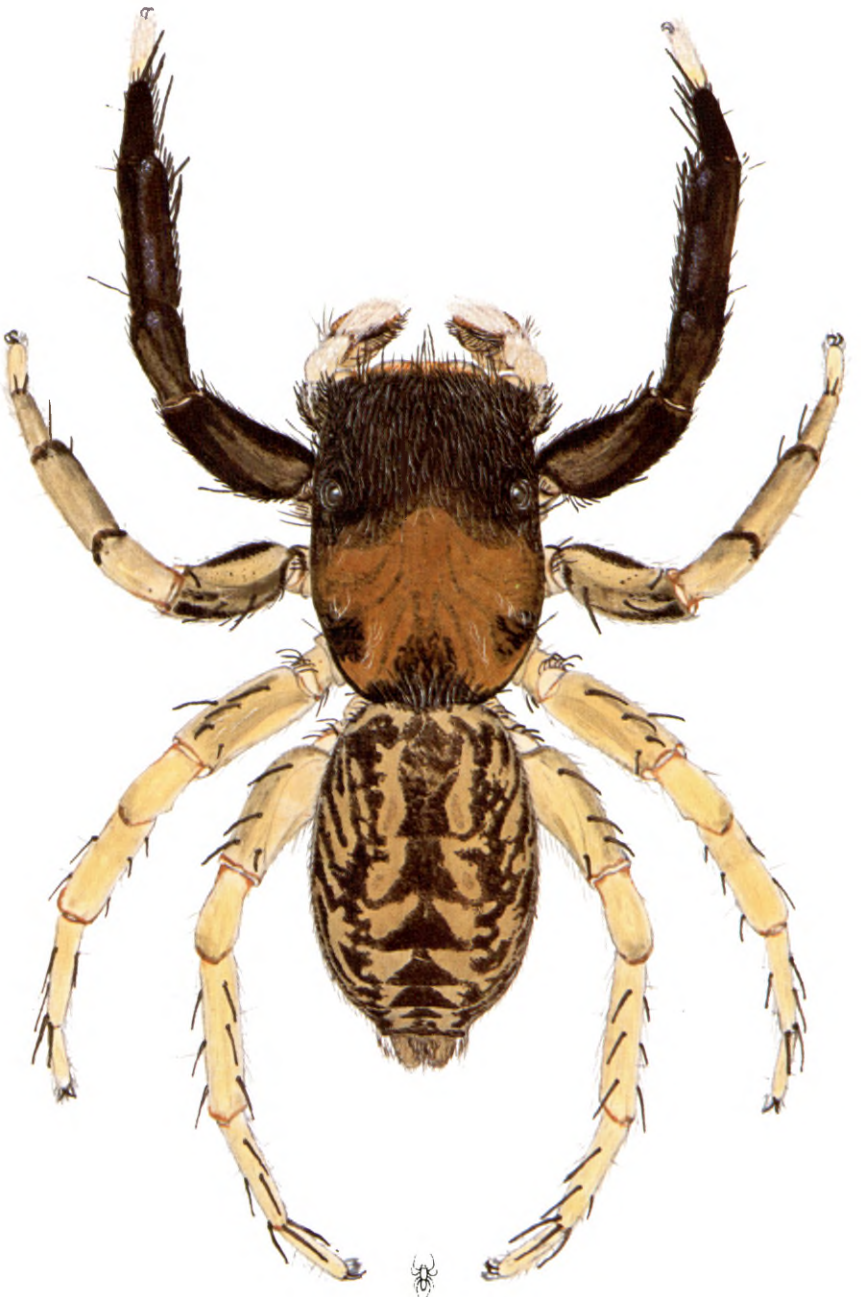
Ballus depressus (Walckenaer) ♀



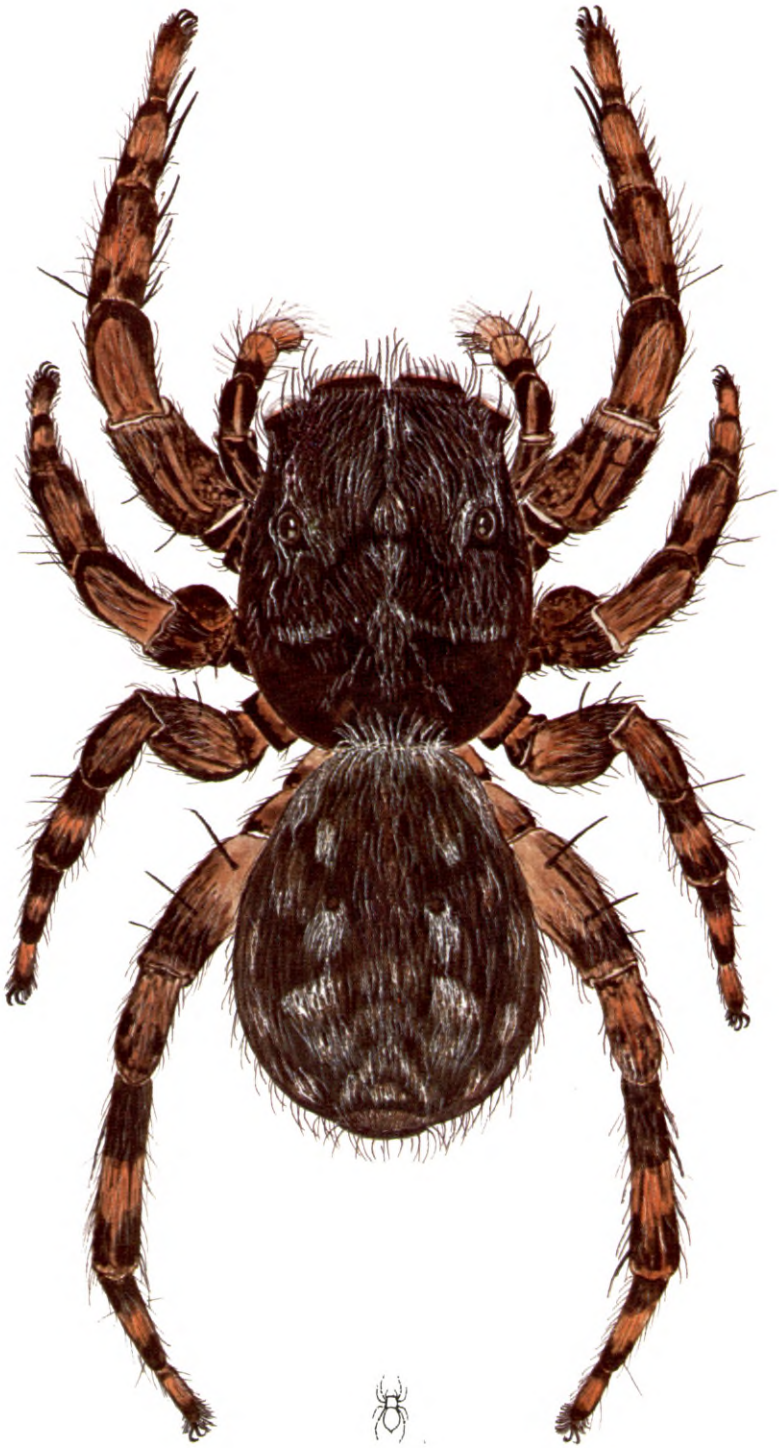
Neon reticulatus (Blackwall) ♀



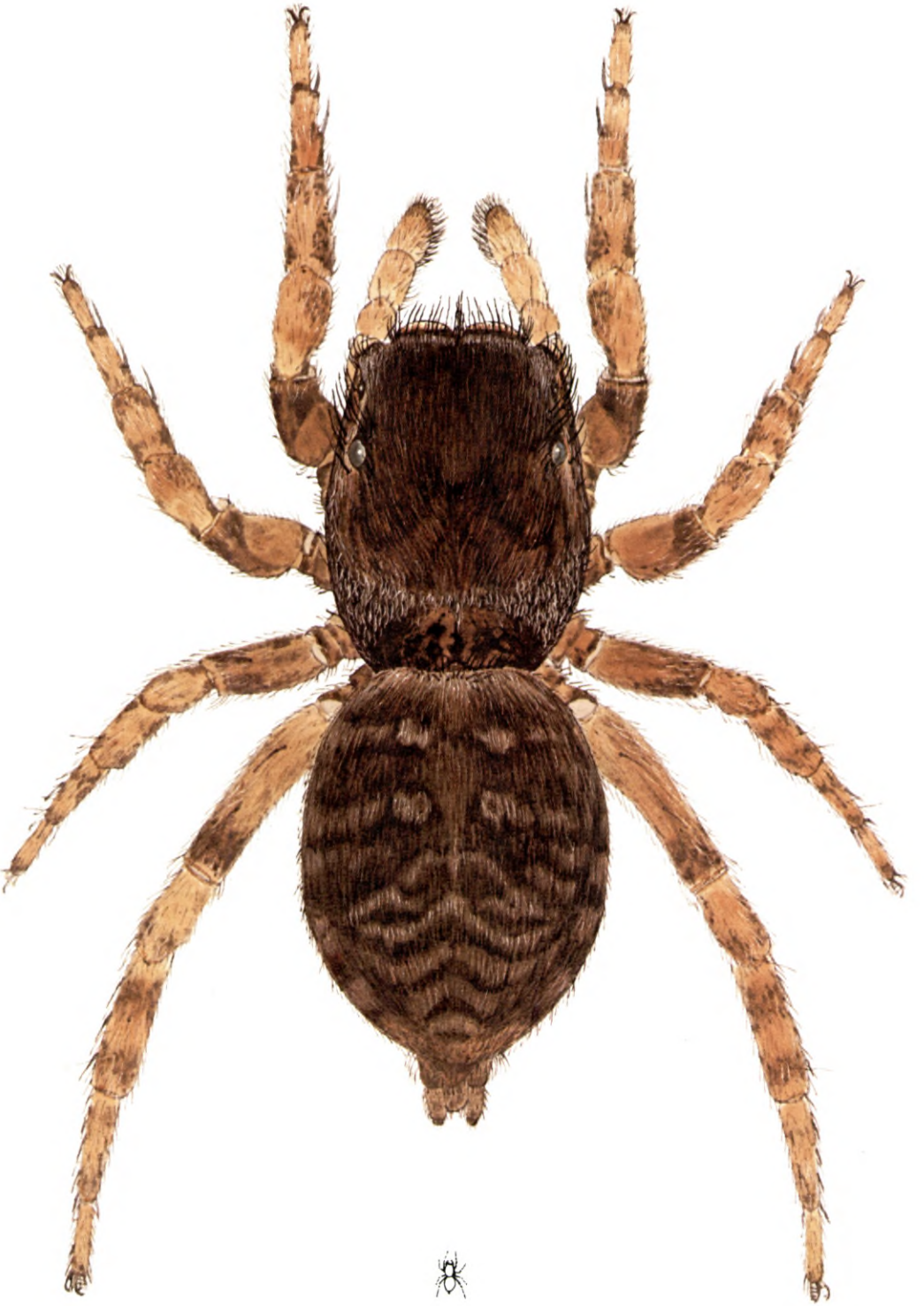
Euophrys frontalis (Walckenaer) ♀



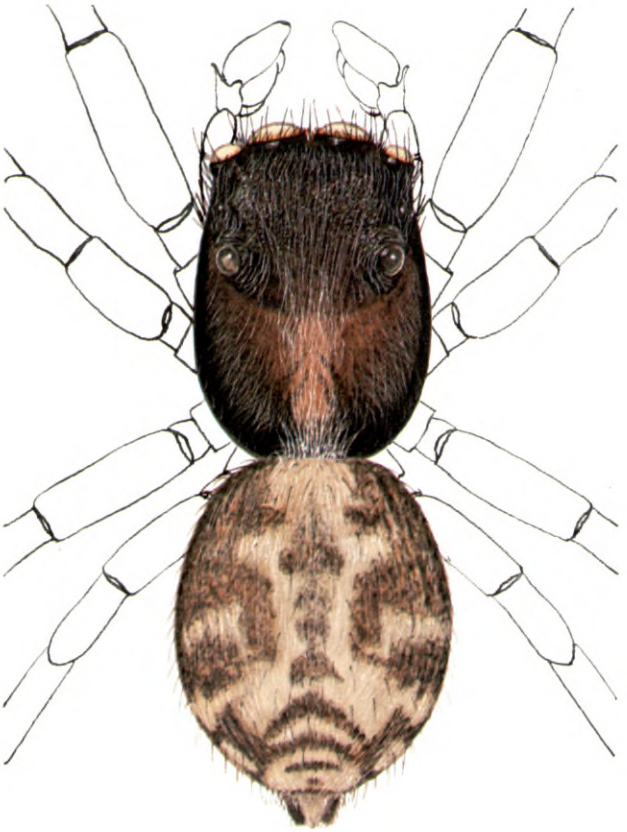
Euophrys frontalis (Walckenaer) ♂



Sitticus pubescens (Fabricius) ♀

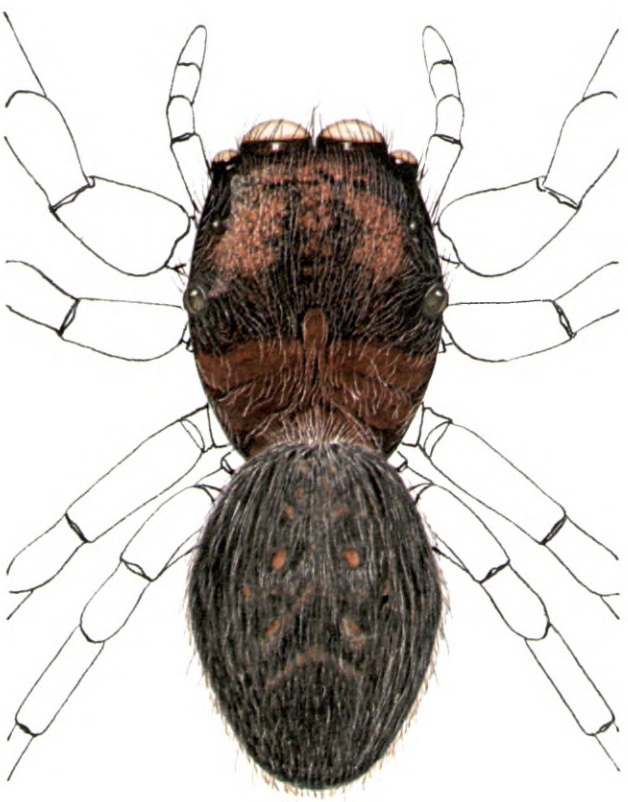


Sitticus caricis (Westring) ♀

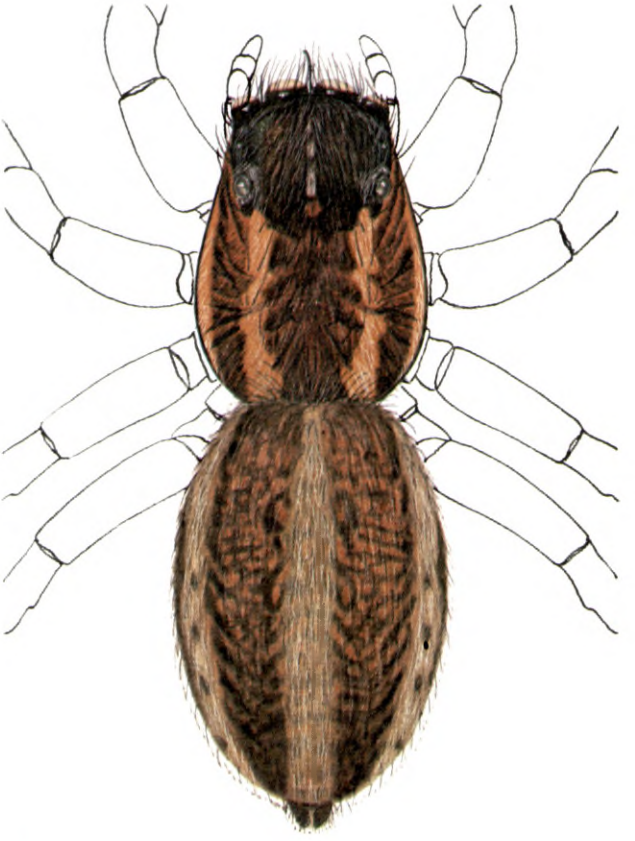


(**a**) *Euophrys lanigera* (Simon) ♂

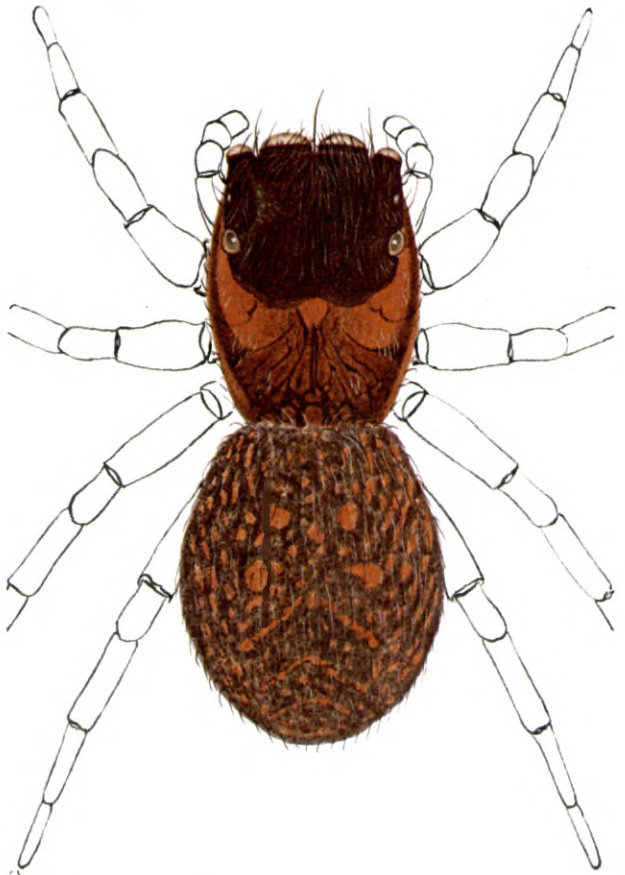
(**b**) *Salticus scenicus* (Clerck) ♂



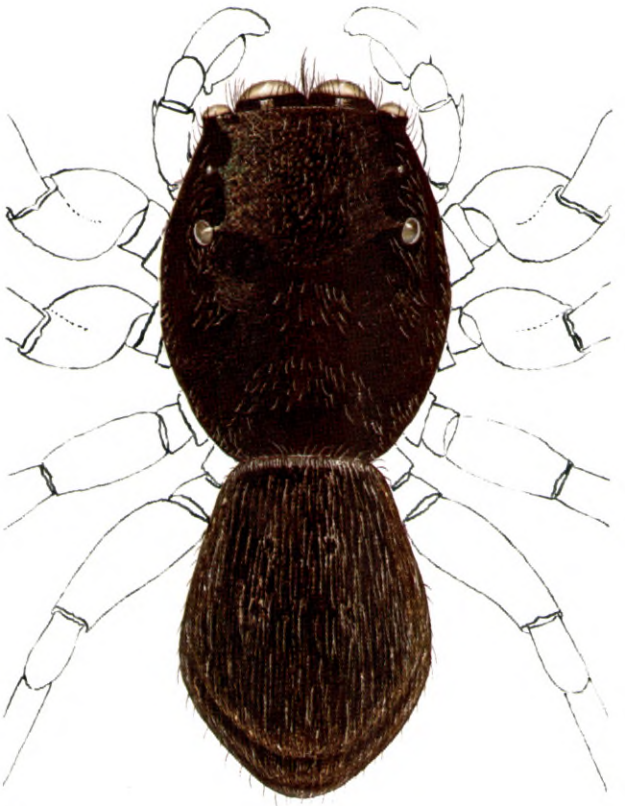
(**c**) *Bianor aurocinctus* (Ohlert) ♀



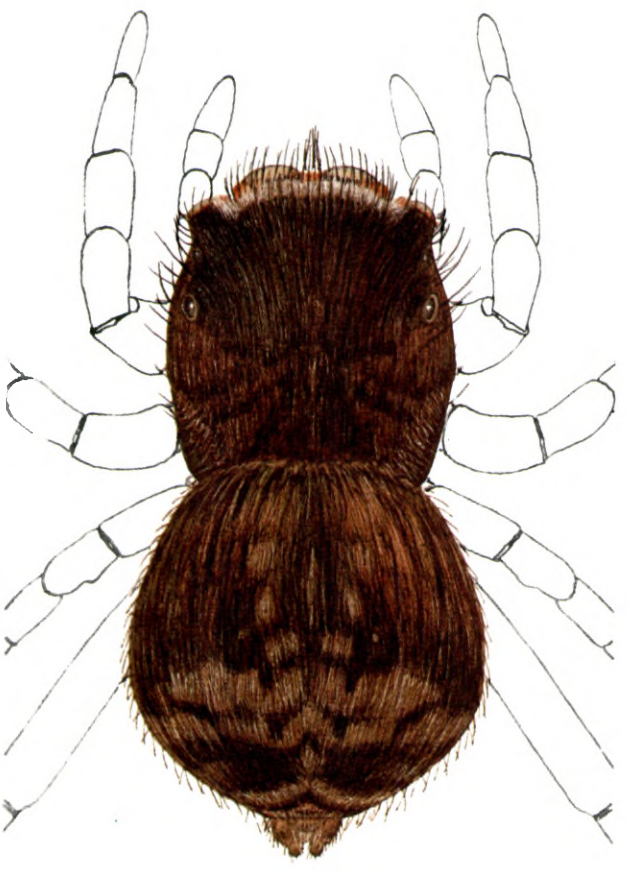
(**d**) *Phlegra fasciata* (Hahn) ♀



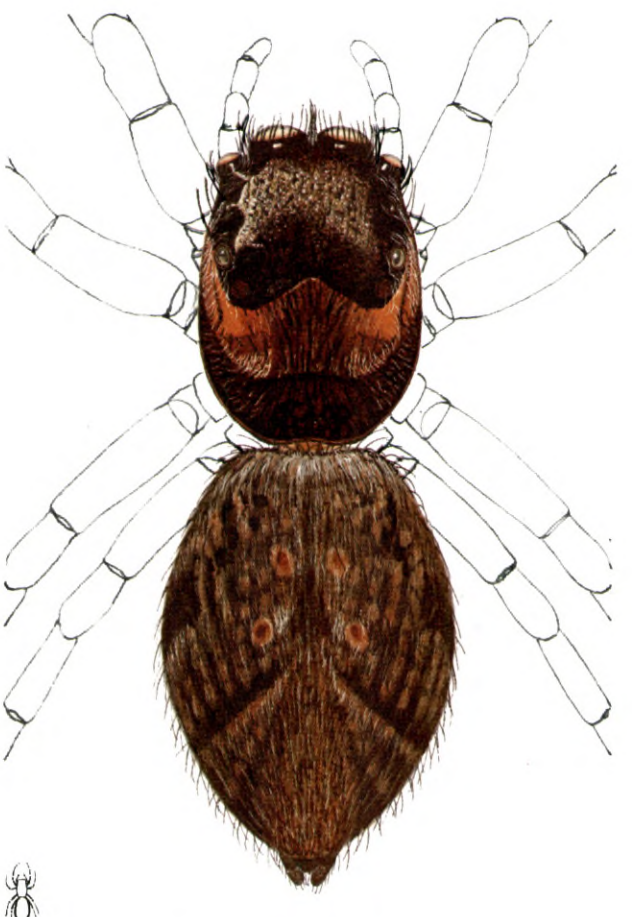
(**a**) *Euophrys aequipes* (O. P.-Cambridge) ♀



(**b**) *Heliophanus cupreus* (Walckenaer) ♂



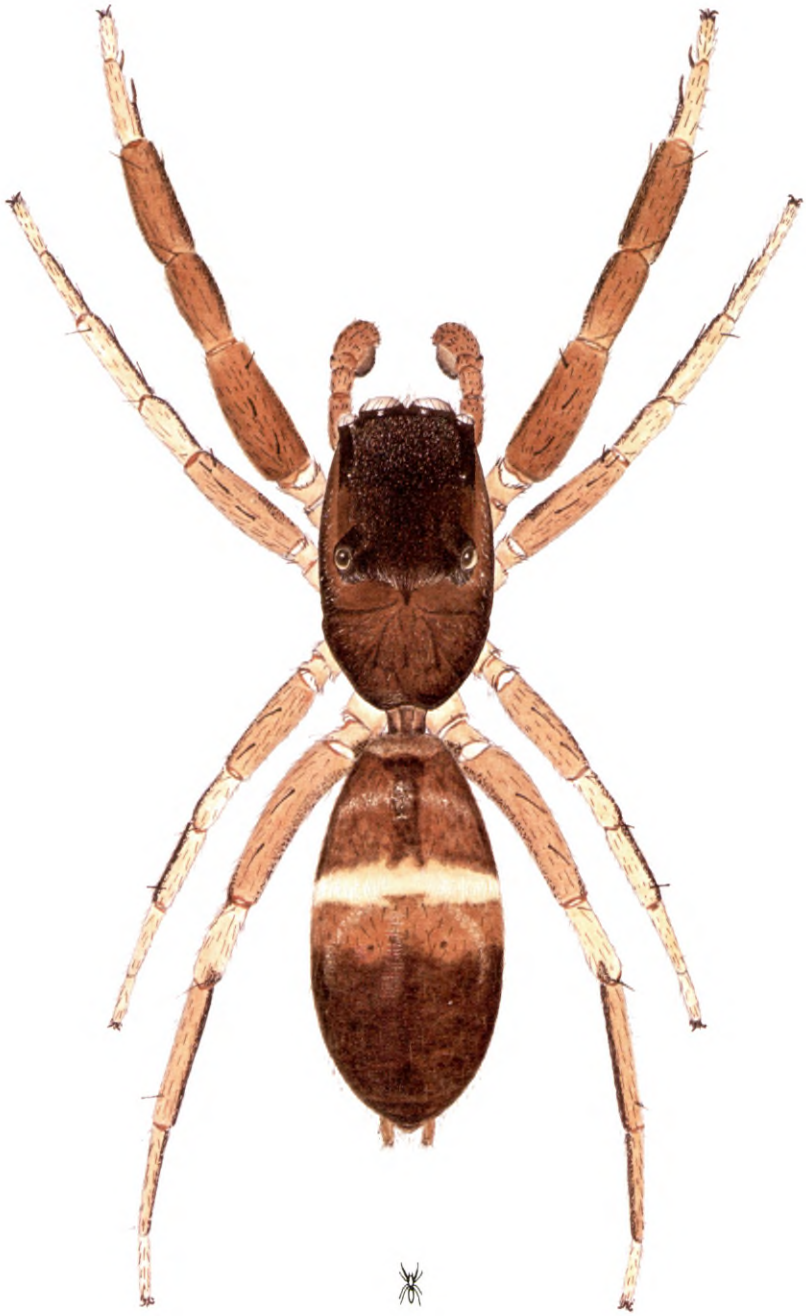
(**c**) *Attulus saltator* (Simon) ♀



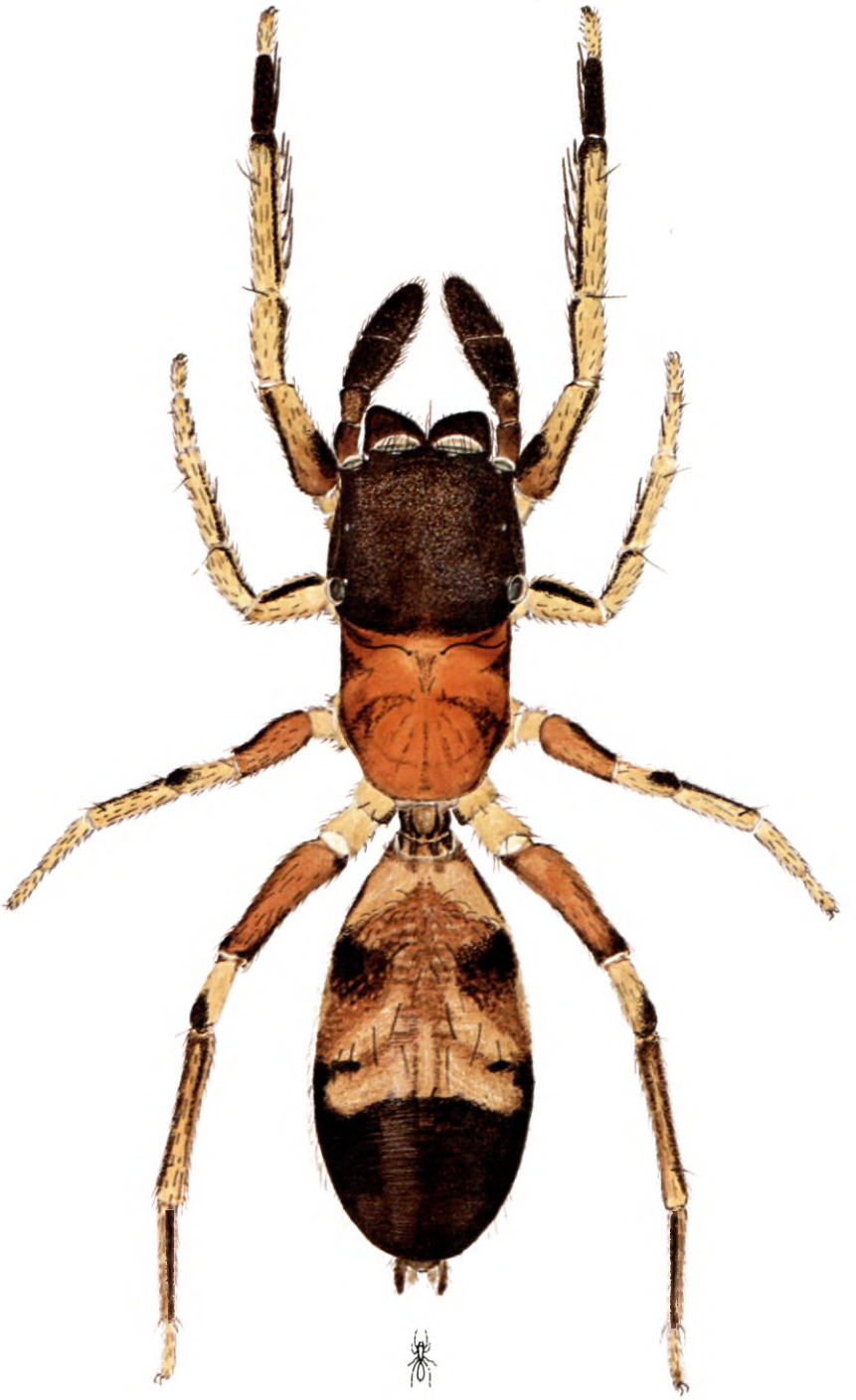
(**d**) *Evarcha falcata* (Clerck) ♀

Evarcha falcata (Clerck) ♂

Aelurillus v-insignitus (Clerck) ♂

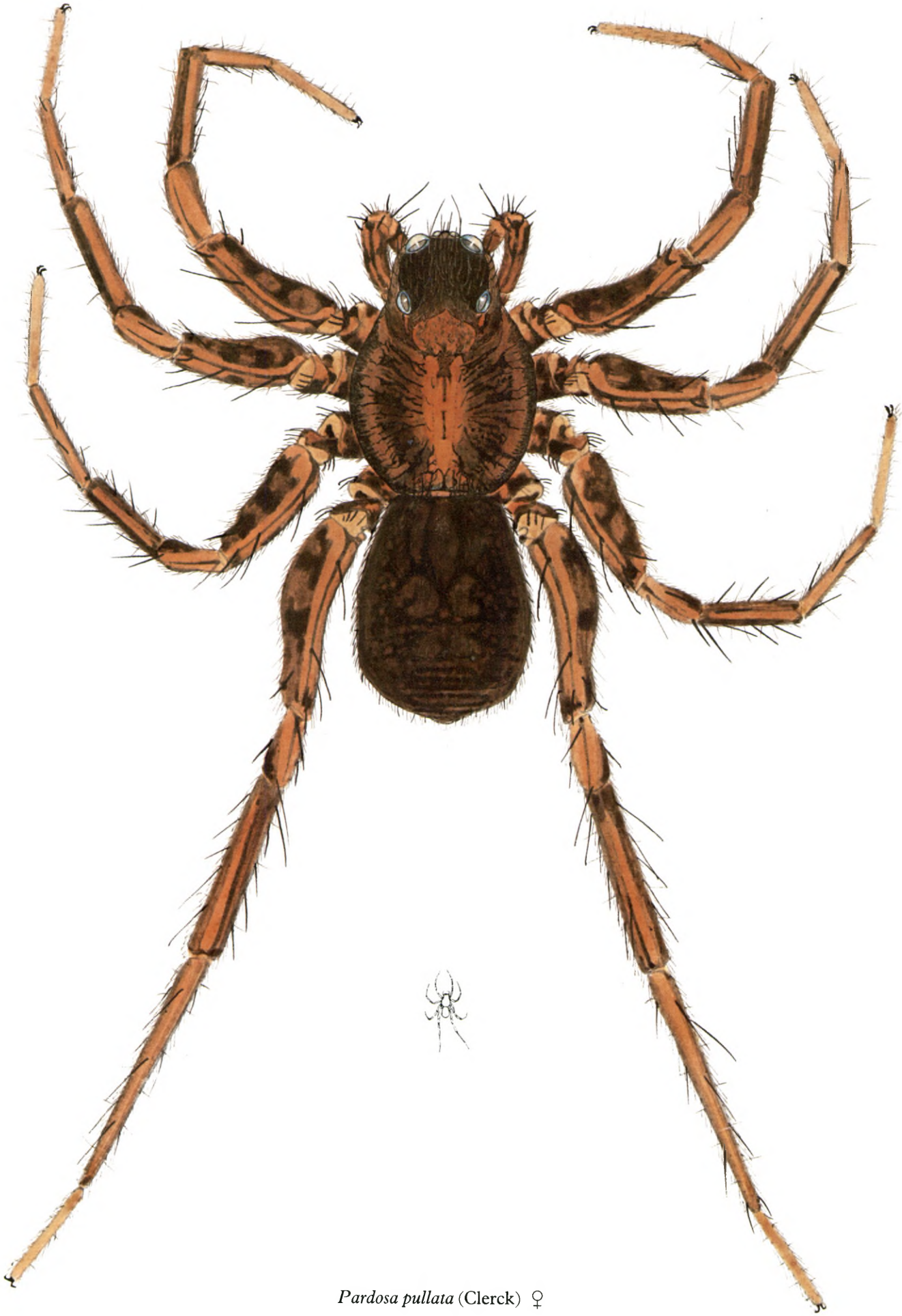


Synageles venator (Lucas) ♂

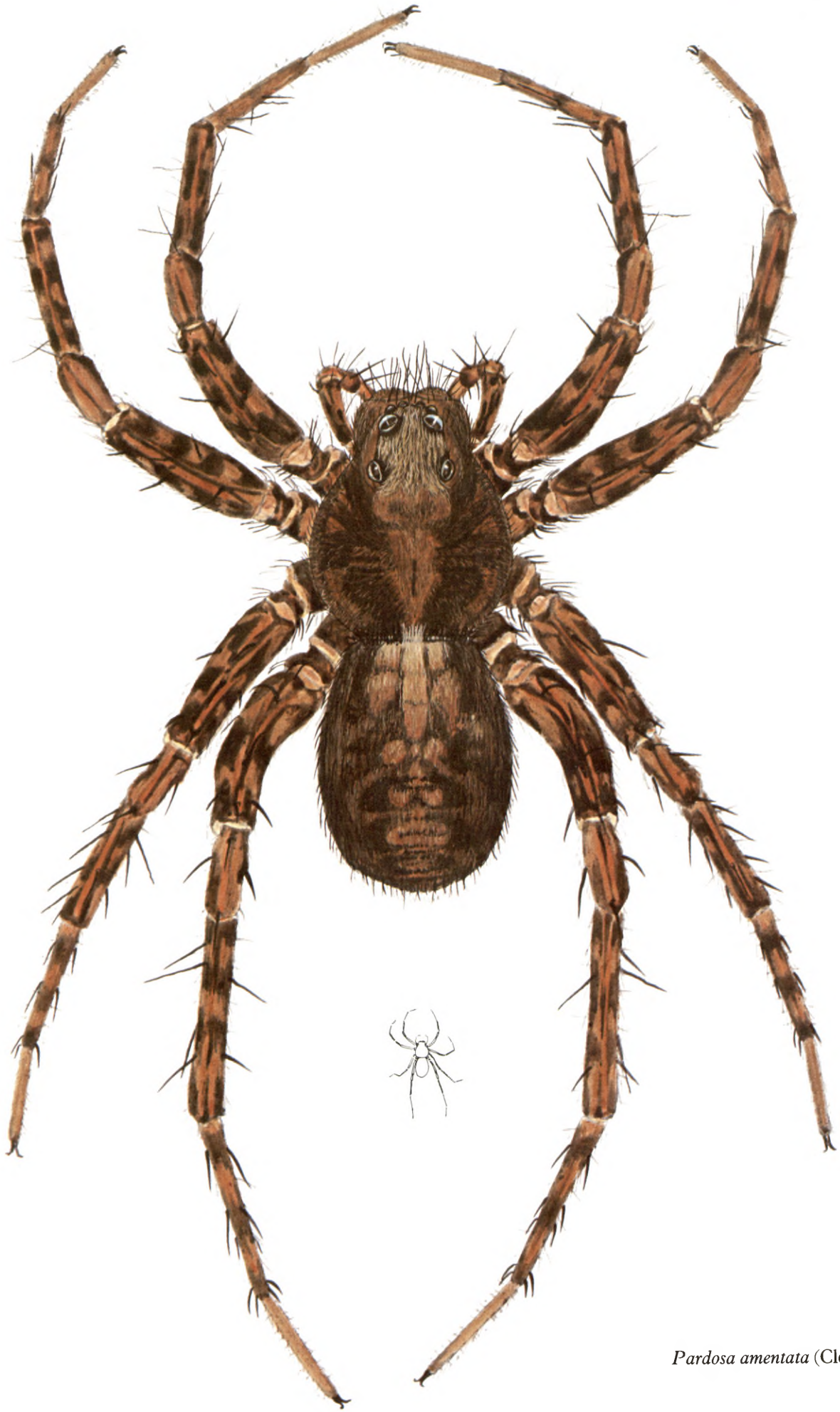


Myrmarachne formicaria (Degeer) ♀

Oxyopes heterophthalmus Latreille ♀



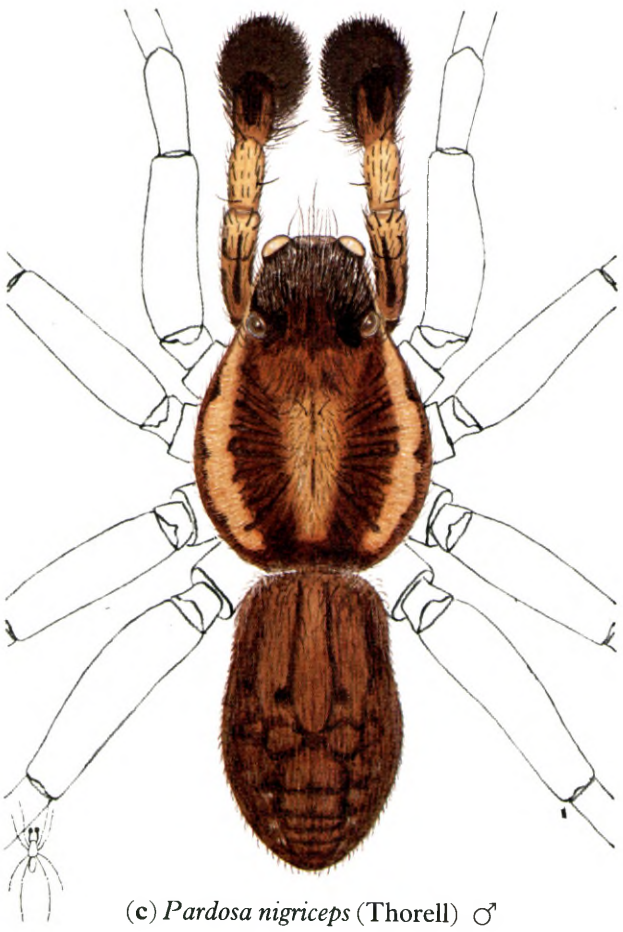
Pardosa pullata (Clerck) ♀



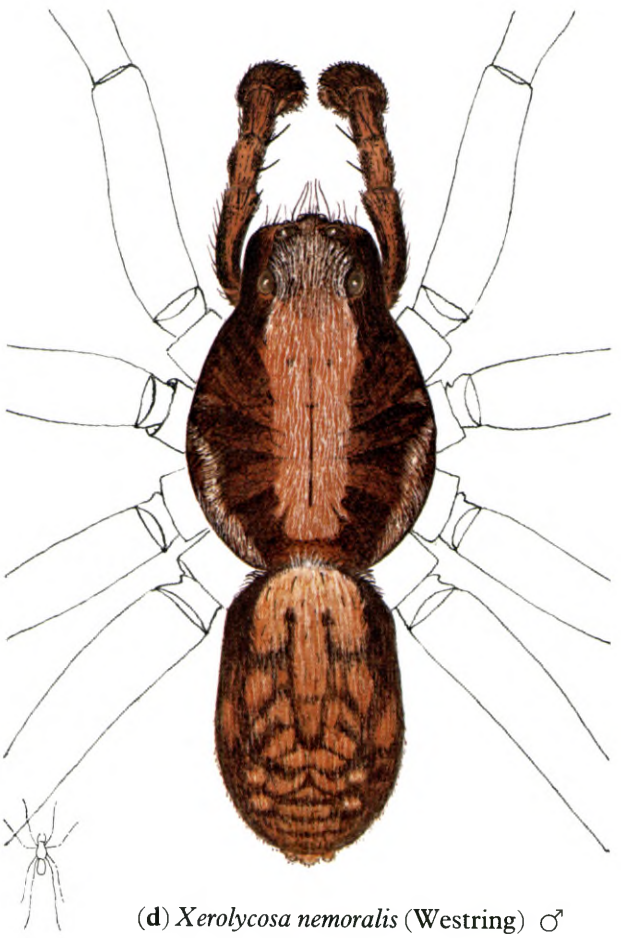
Pardosa amentata (Clerck) ♀

(**a**) *Pardosa monticola* (Clerck) ♀

(**b**) *Pardosa hortensis* (Thorell) ♀



(**c**) *Pardosa nigriceps* (Thorell) ♂



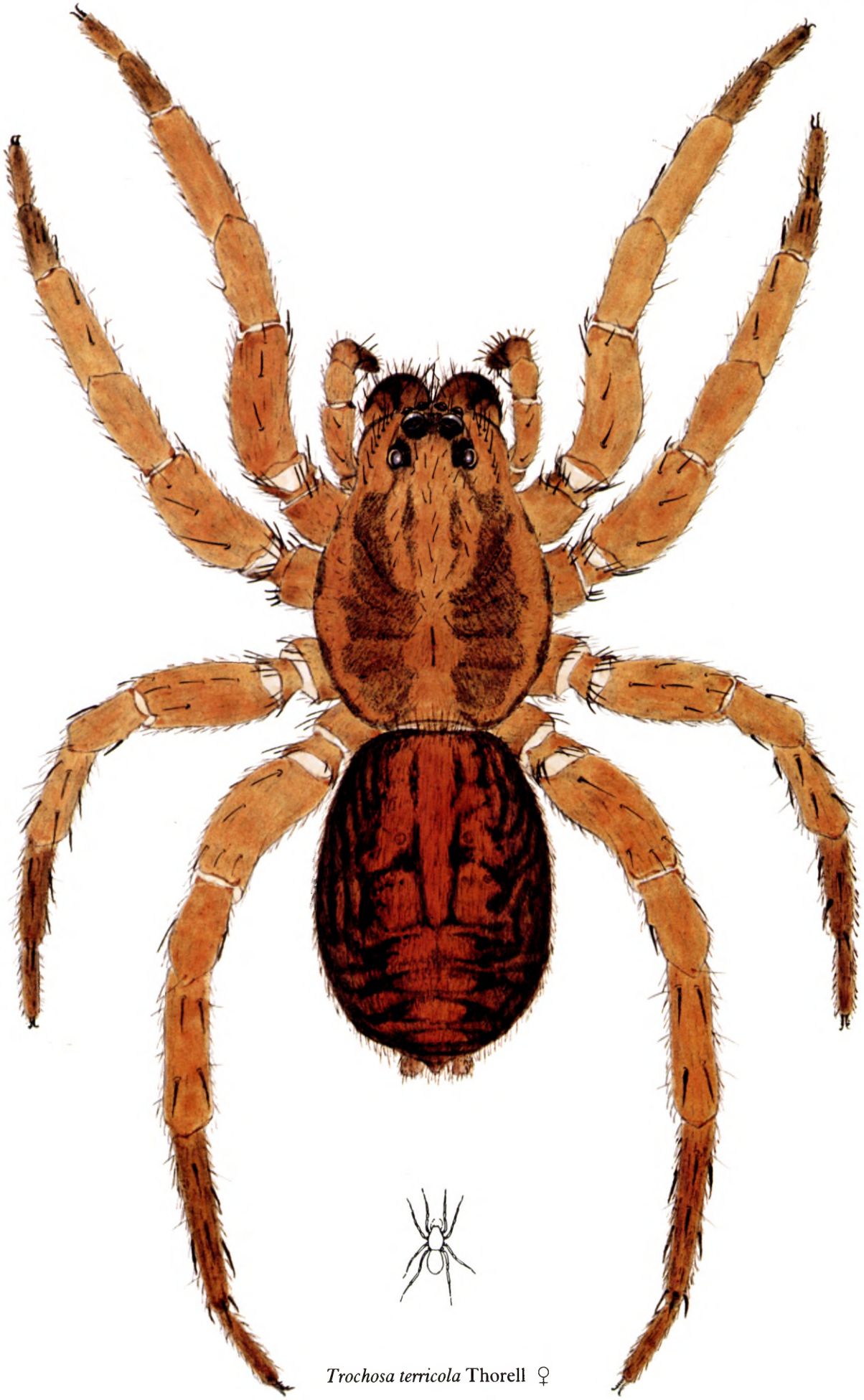
(**d**) *Xerolycosa nemoralis* (Westring) ♂

Xerolycosa miniata (C. L. Koch) ♀

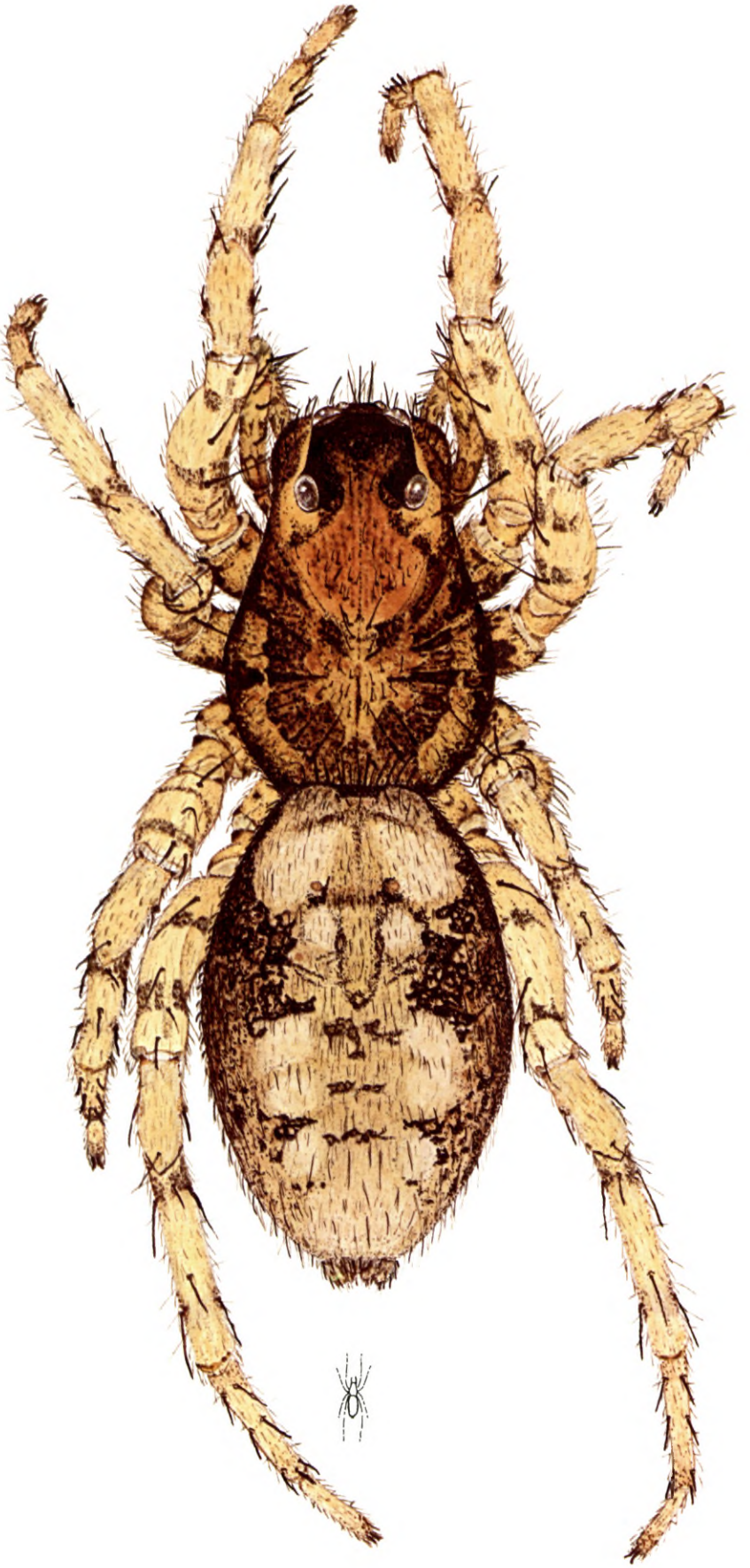
Hygrolycosa rubrofasciata (Ohlert) ♀

Alopecosa pulverulenta (Clerck) ♀

Alopecosa accentuata (Latreille) ♂

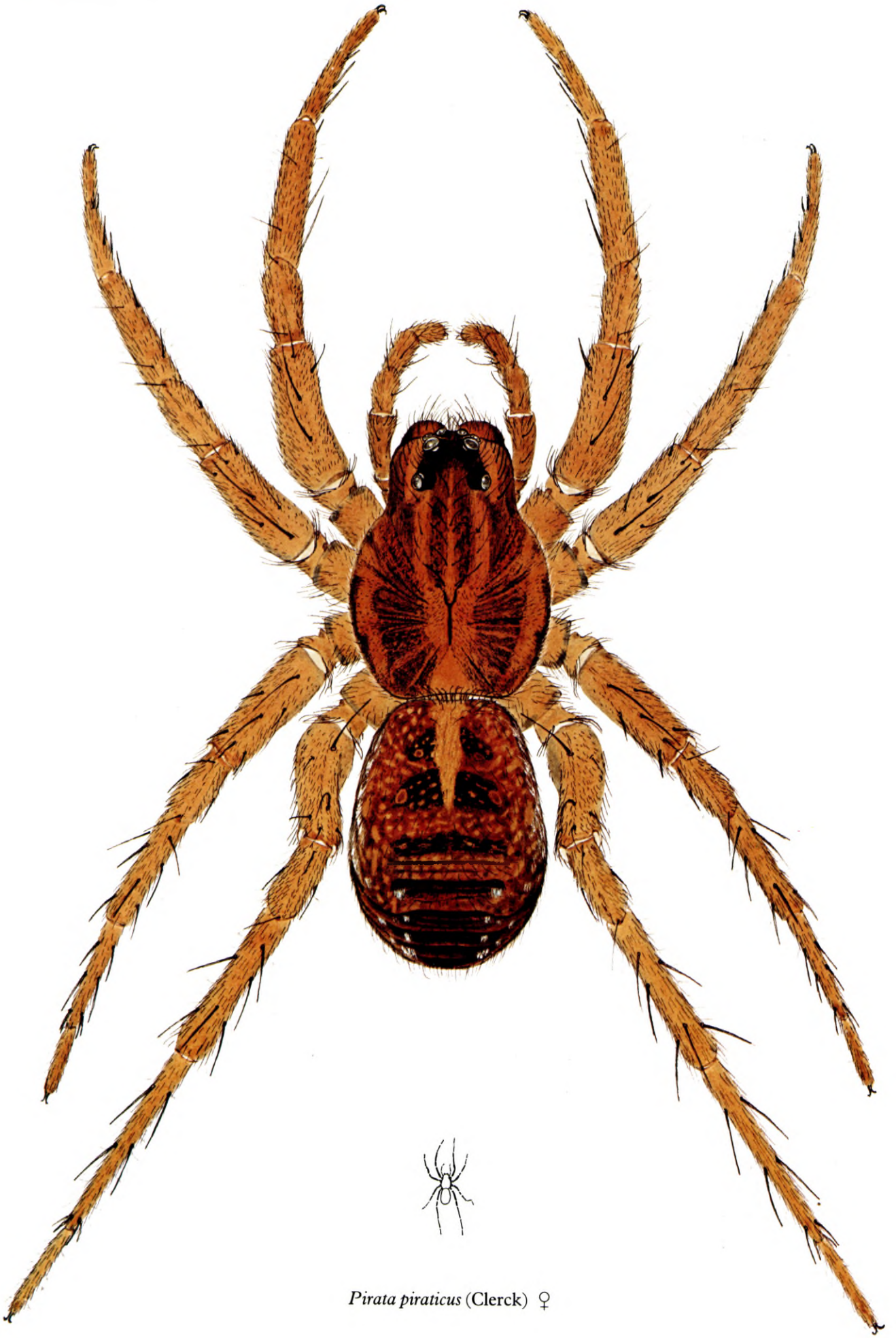


Trochosa terricola Thorell ♀

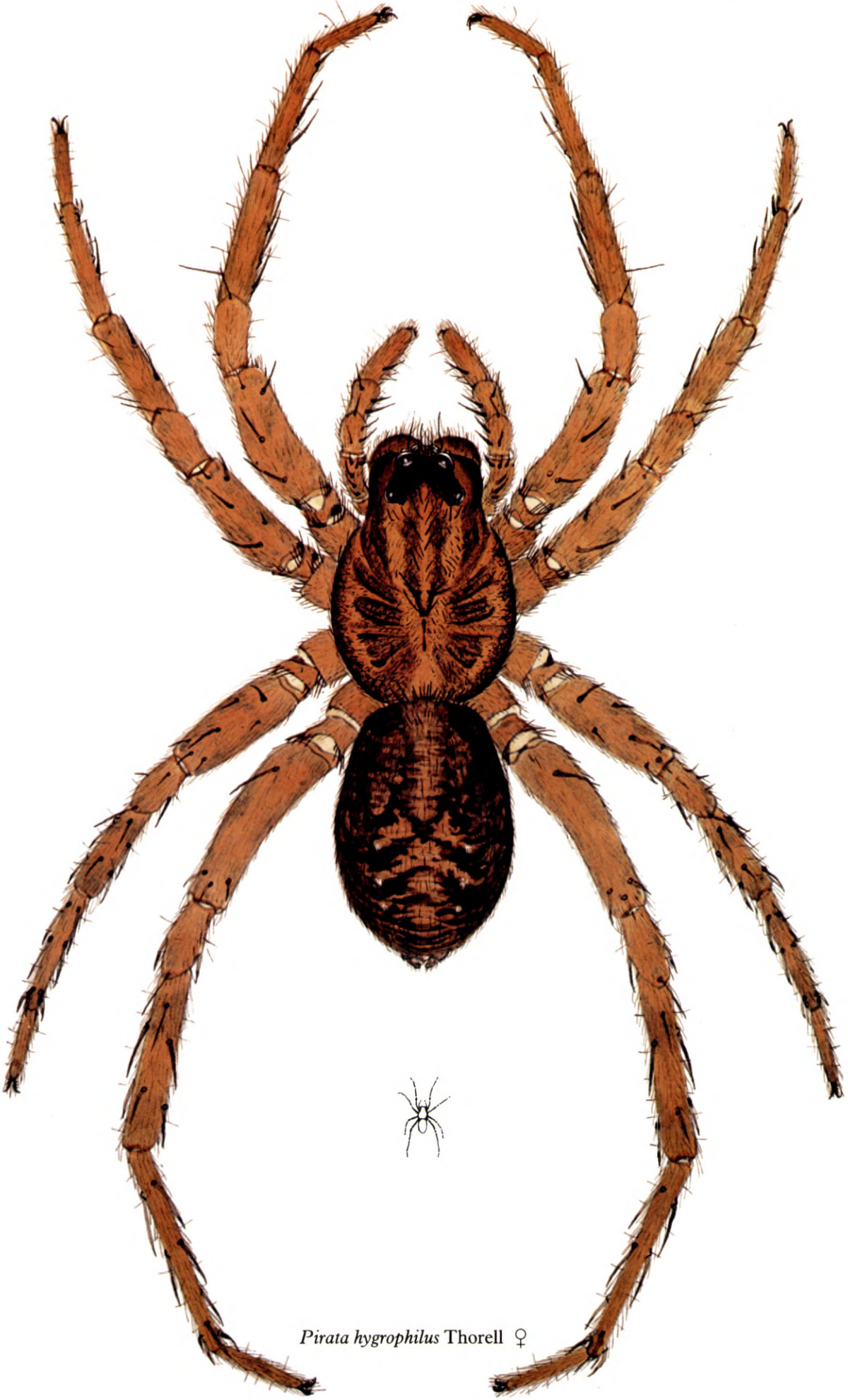


Arctosa perita (Latreille) ♀

Arctosa leopardus (Sundevall) ♀



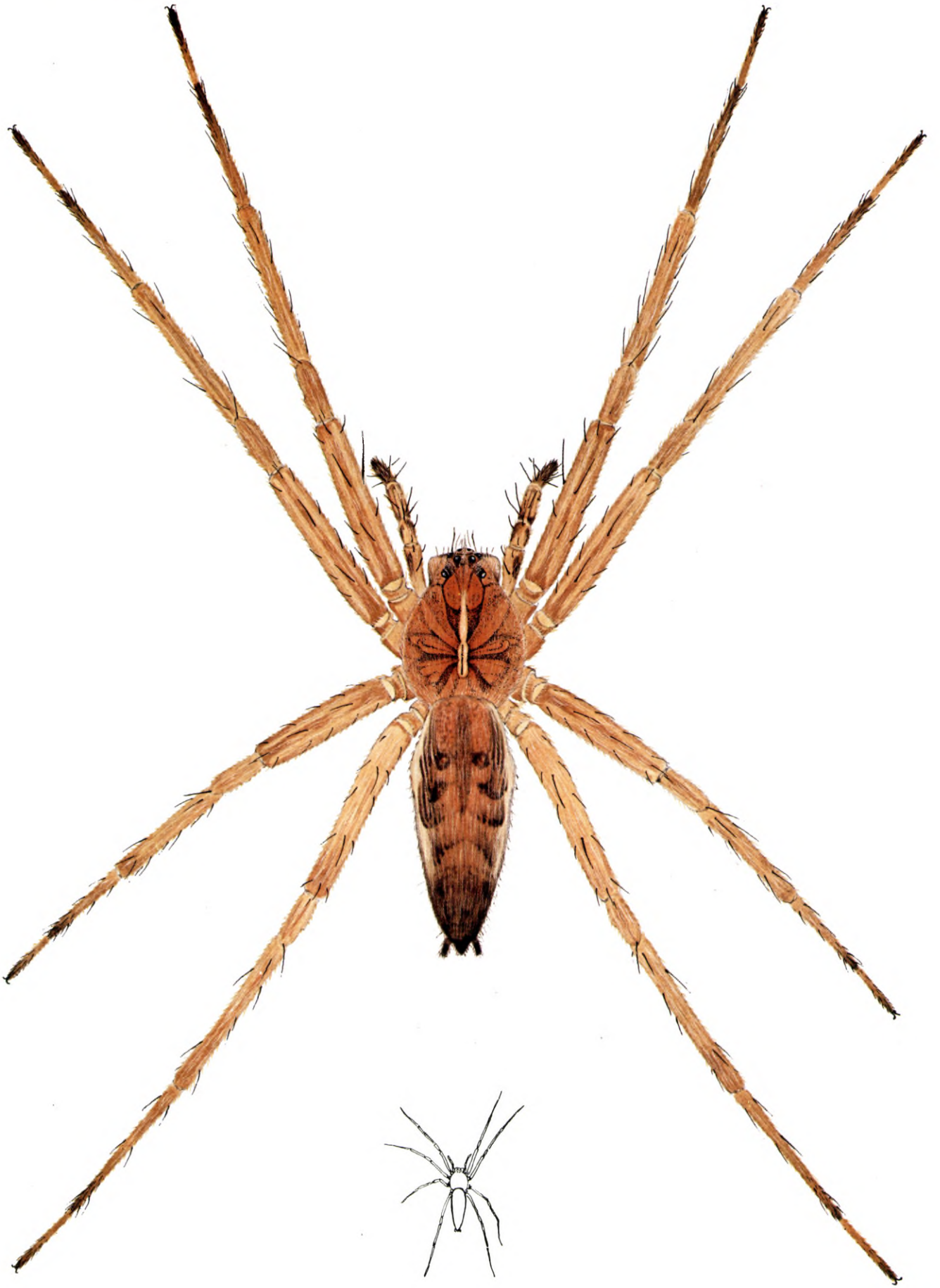
Pirata piraticus (Clerck) ♀



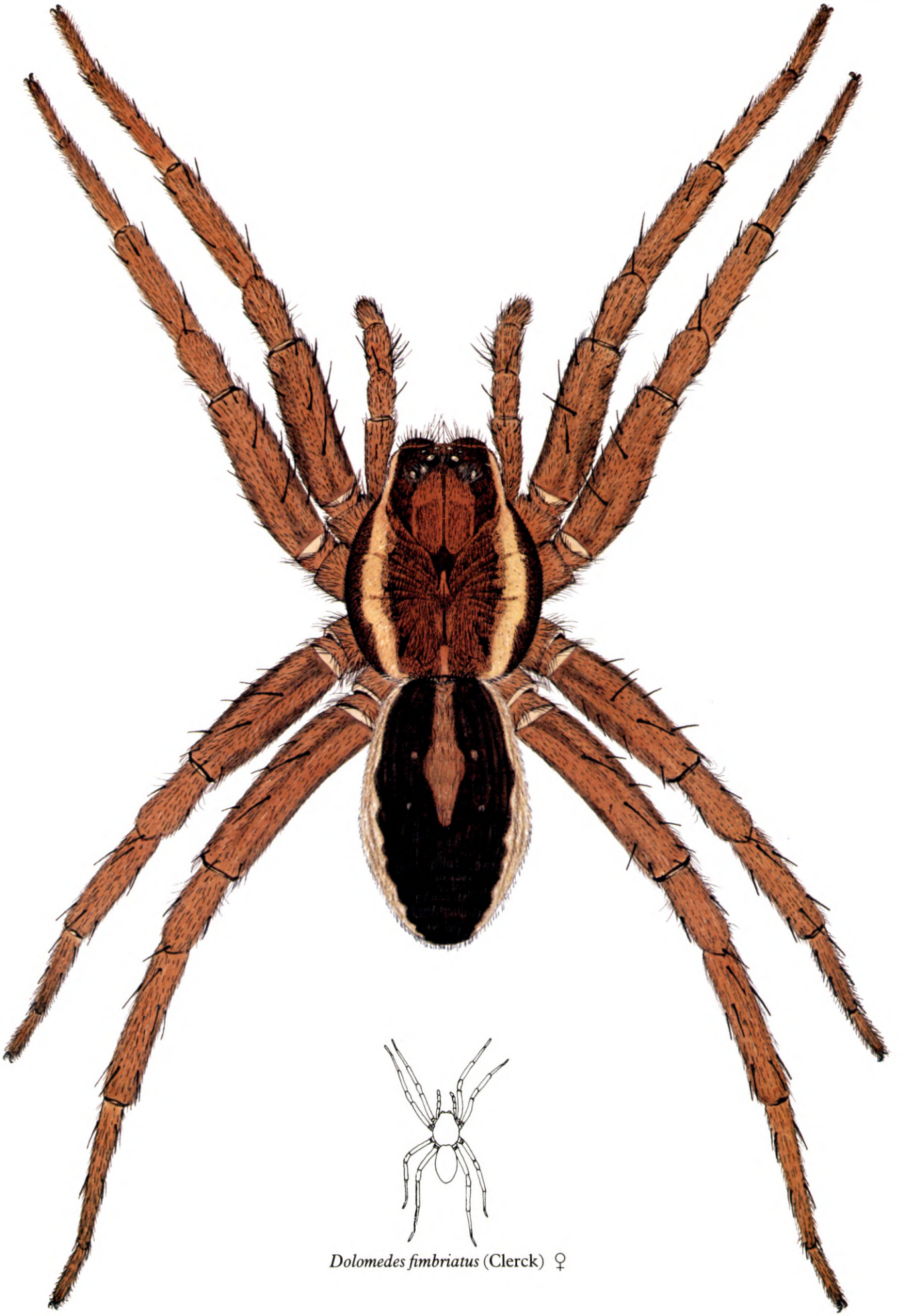
Pirata hygrophilus Thorell ♀

Pirata latitans (Blackwall) ♀

Aulonia albimana (Walckenaer) ♀

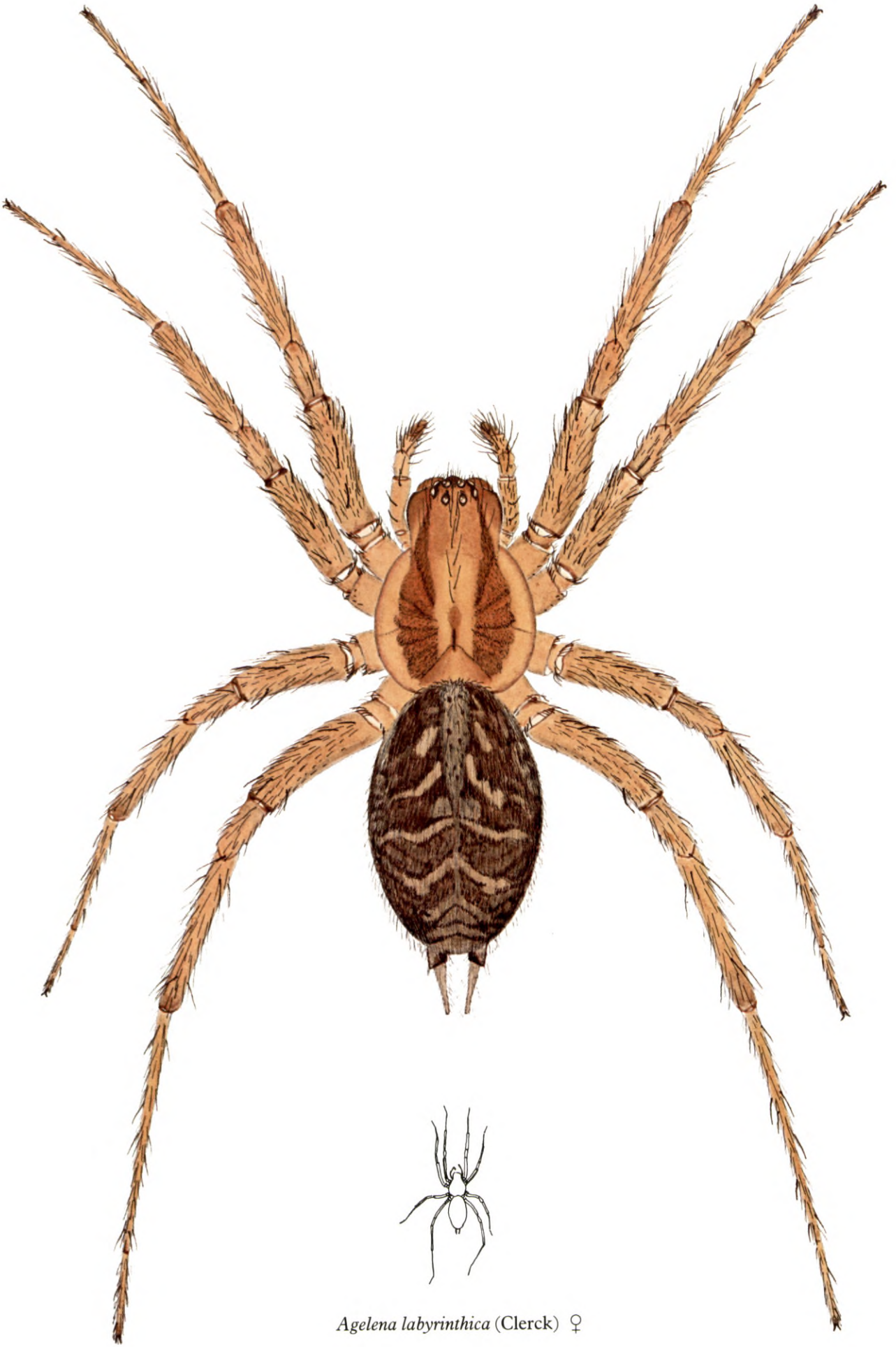


Pisaura mirabilis (Clerck) ♀

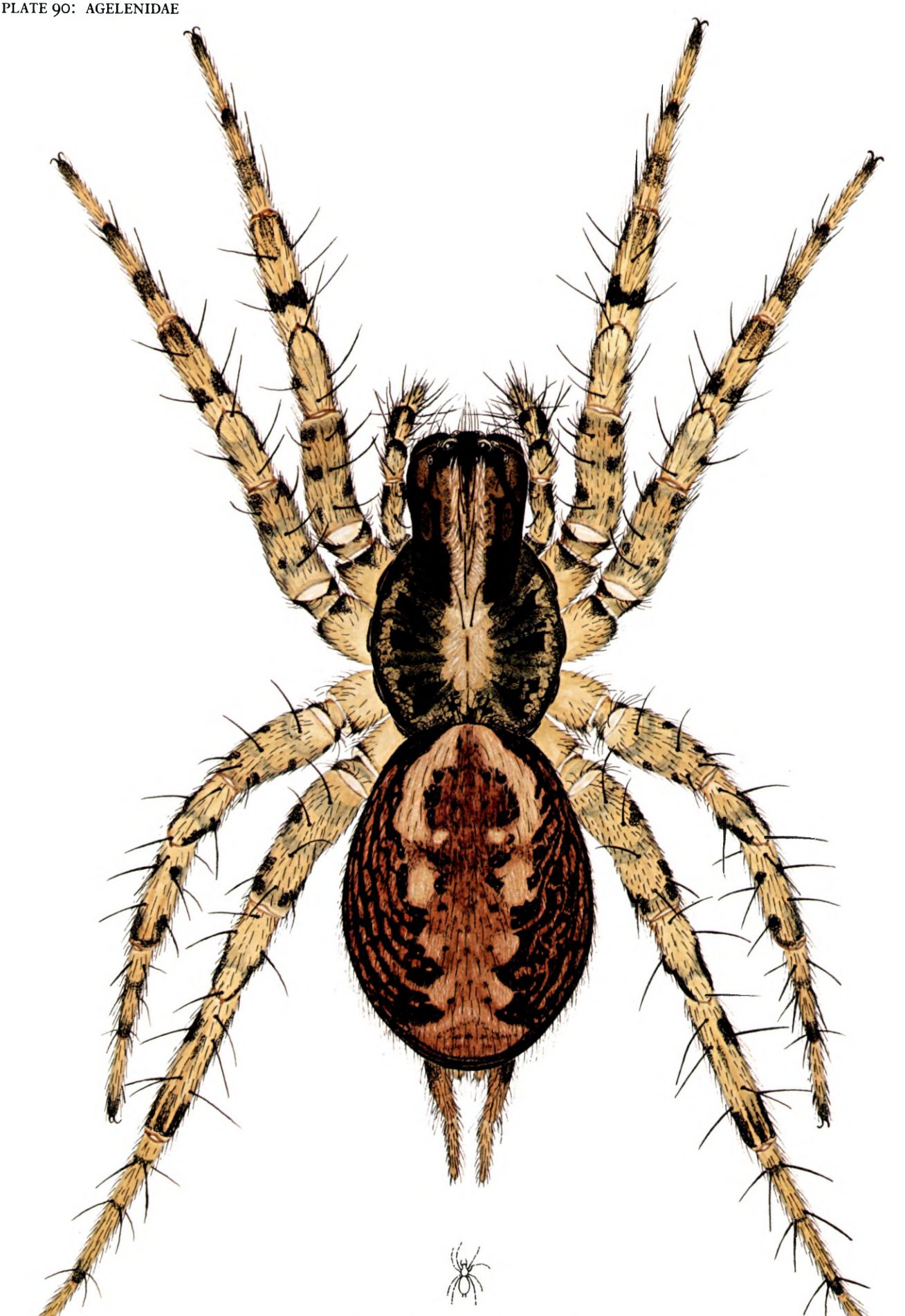


Dolomedes fimbriatus (Clerck) ♀

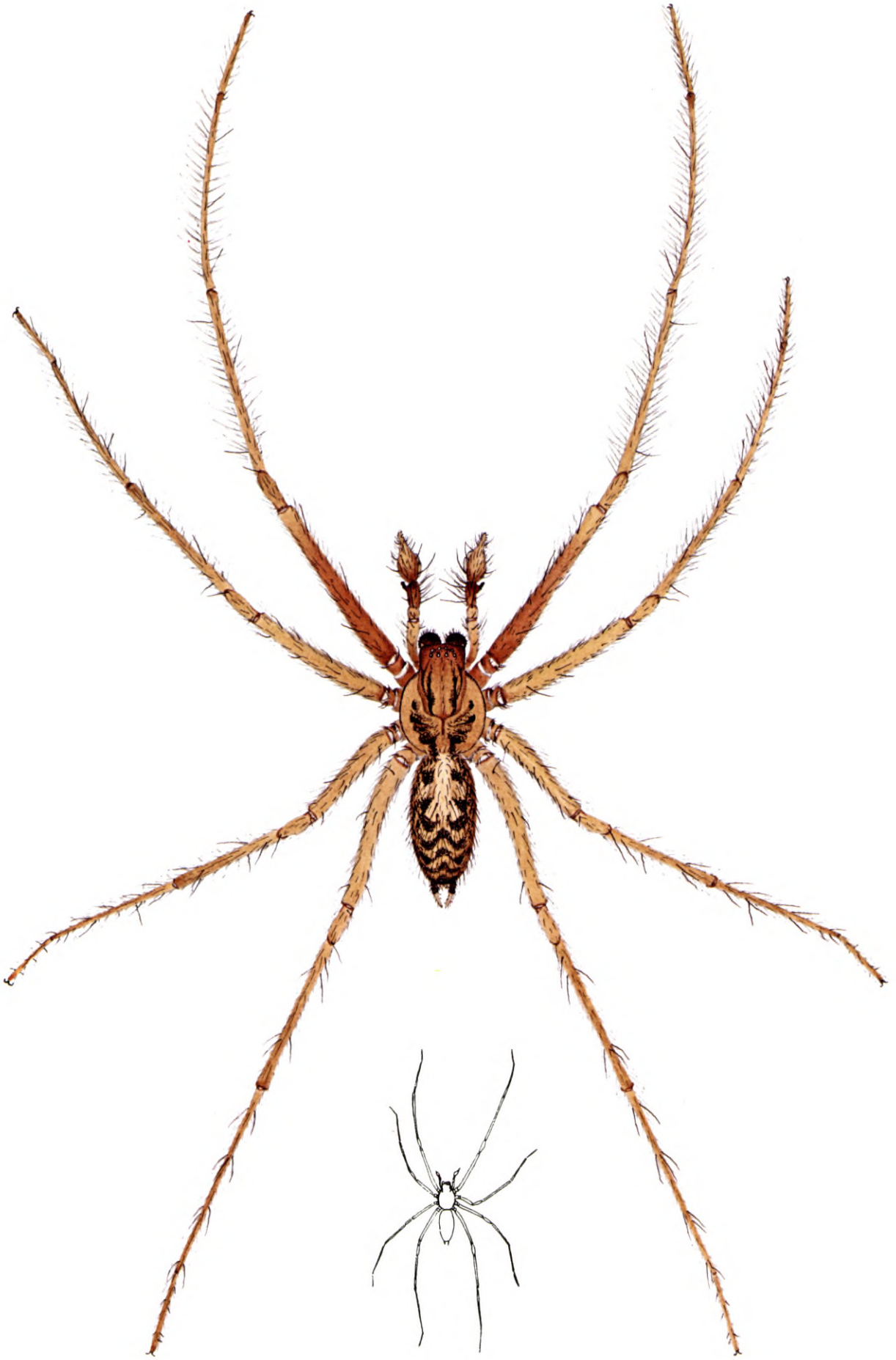
Argyroneta aquatica (Clerck) ♀



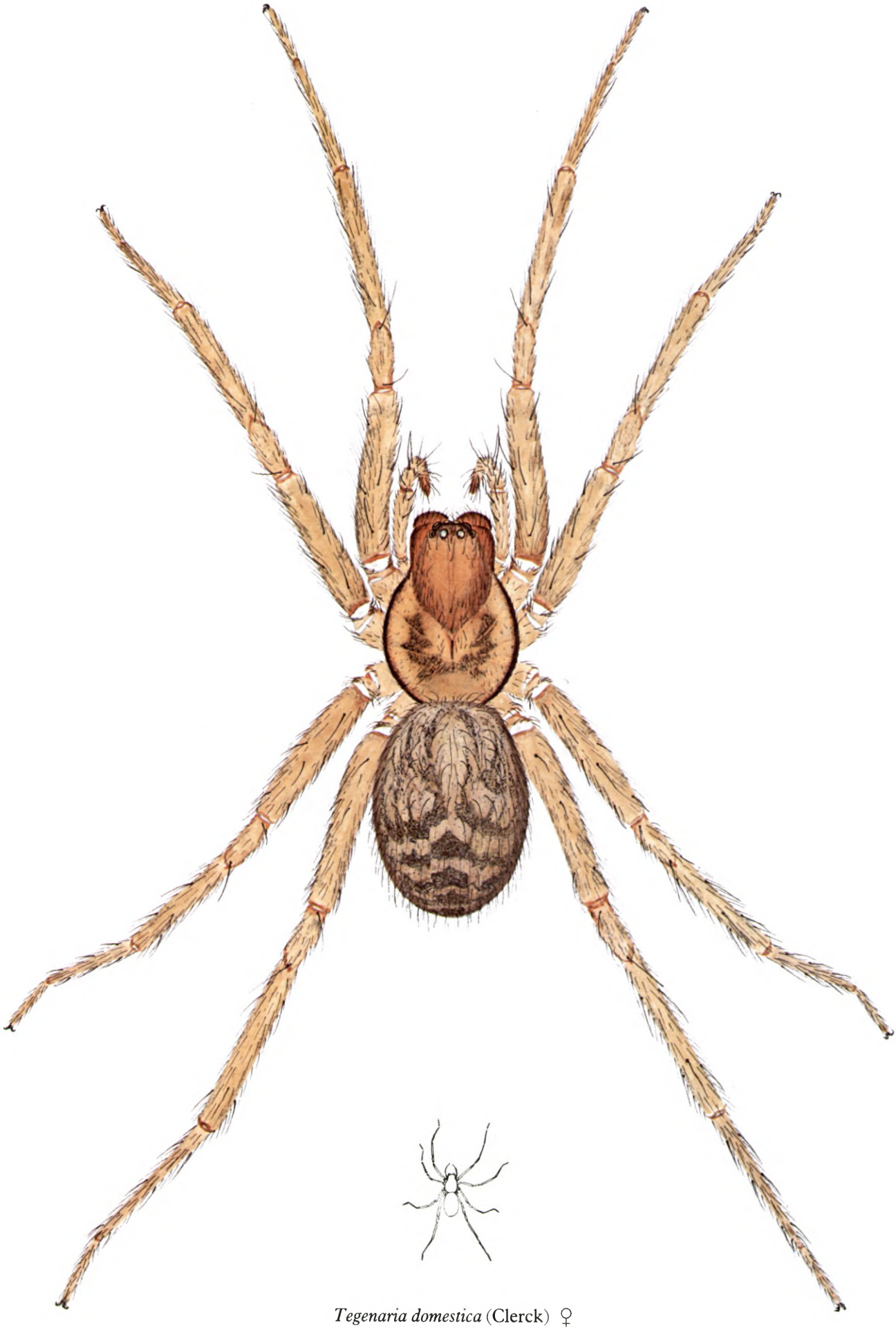
Agelena labyrinthica (Clerck) ♀



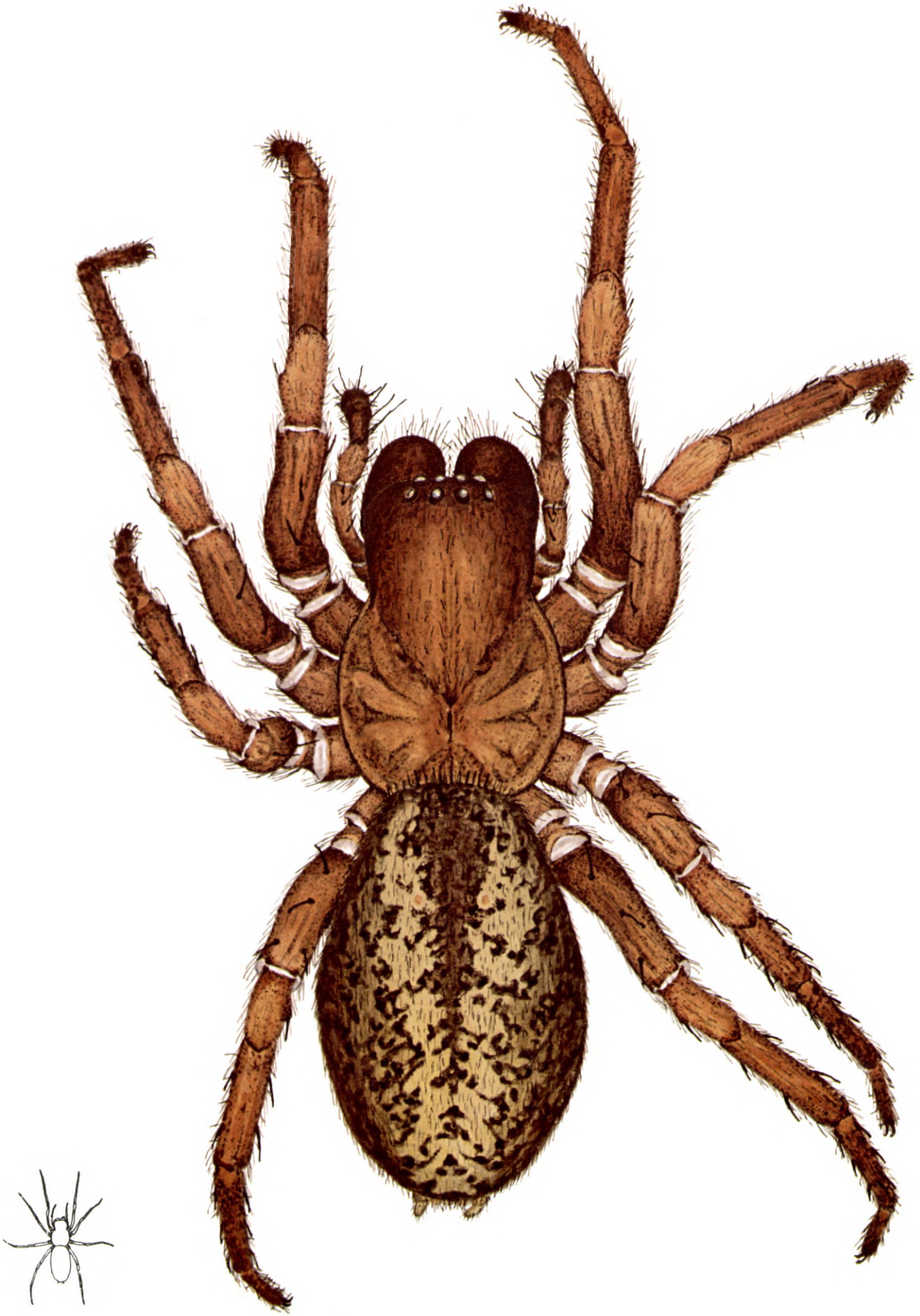
Textrix denticulata (Olivier) ♀



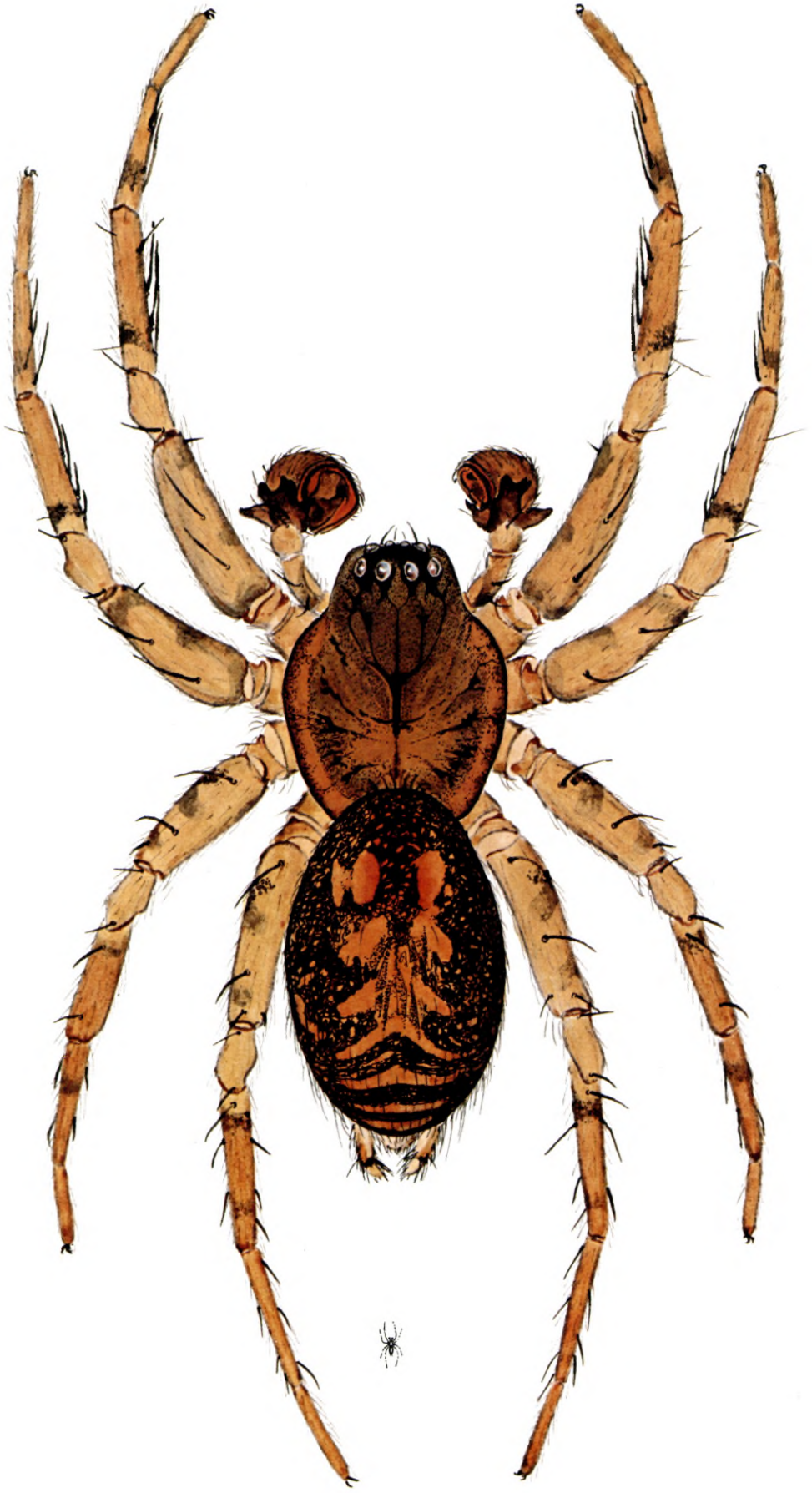
Tegenaria duellica Simon ♂



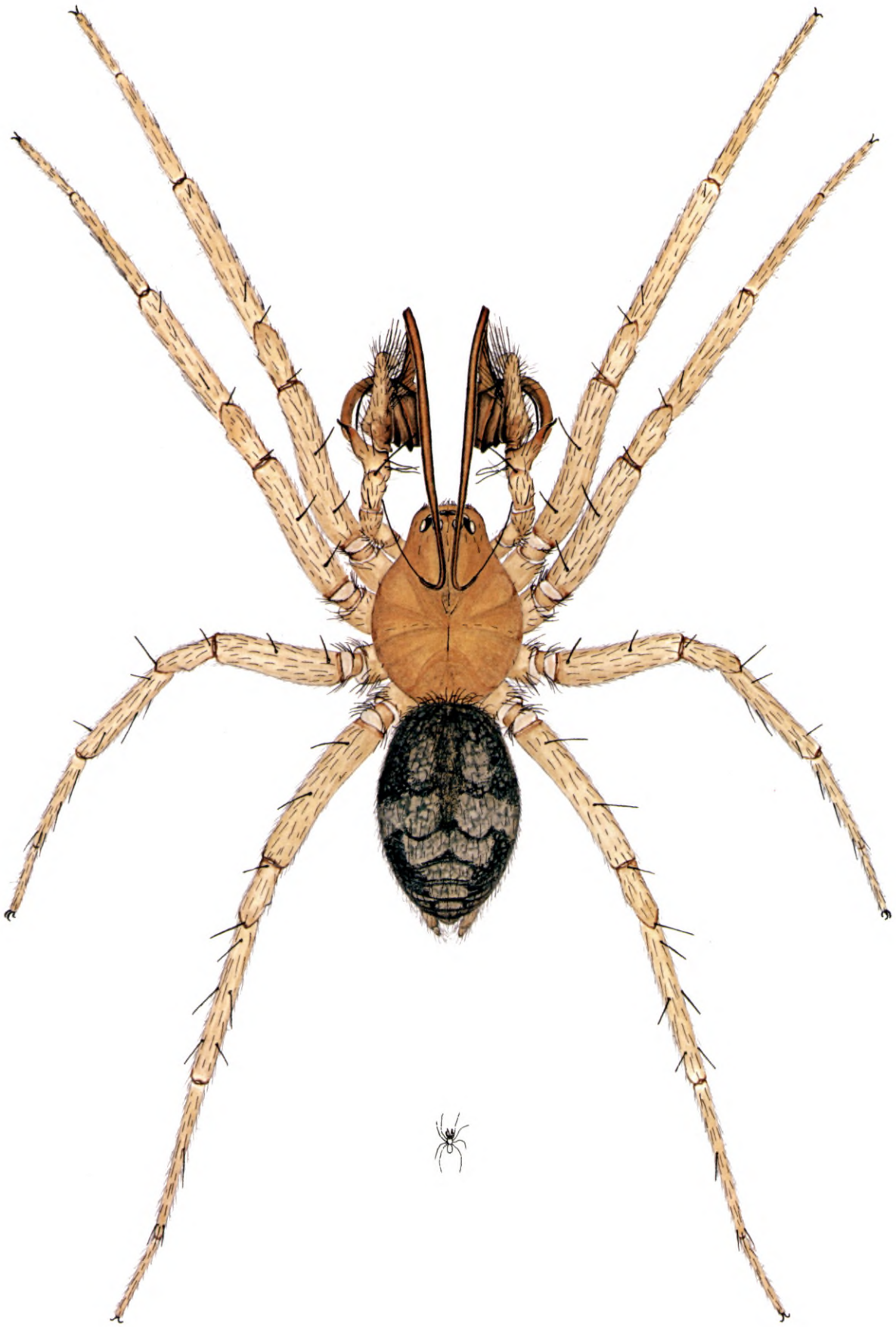
Tegenaria domestica (Clerck) ♀



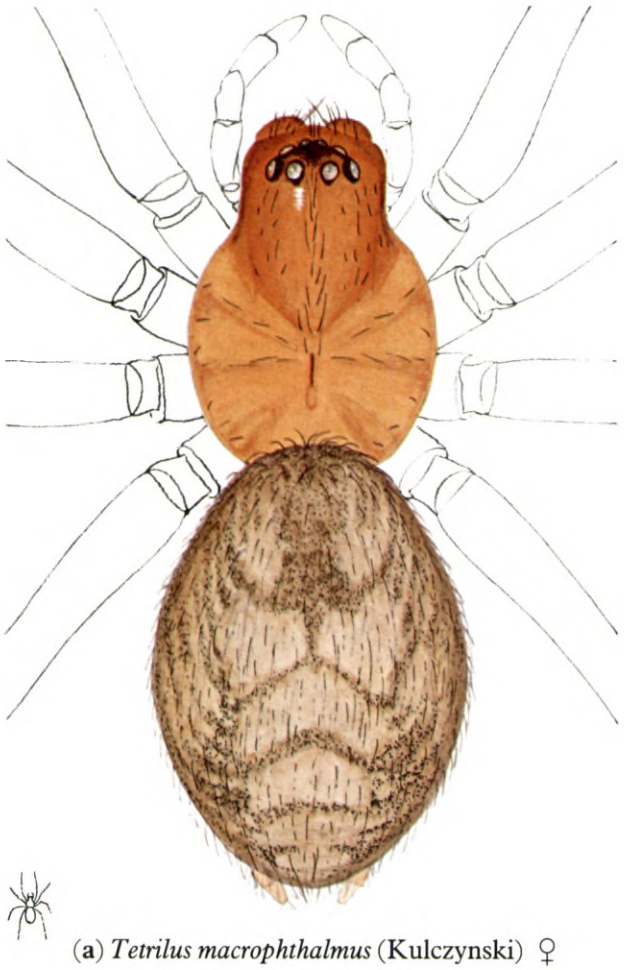
Coelotes atropos (Walckenaer) ♀



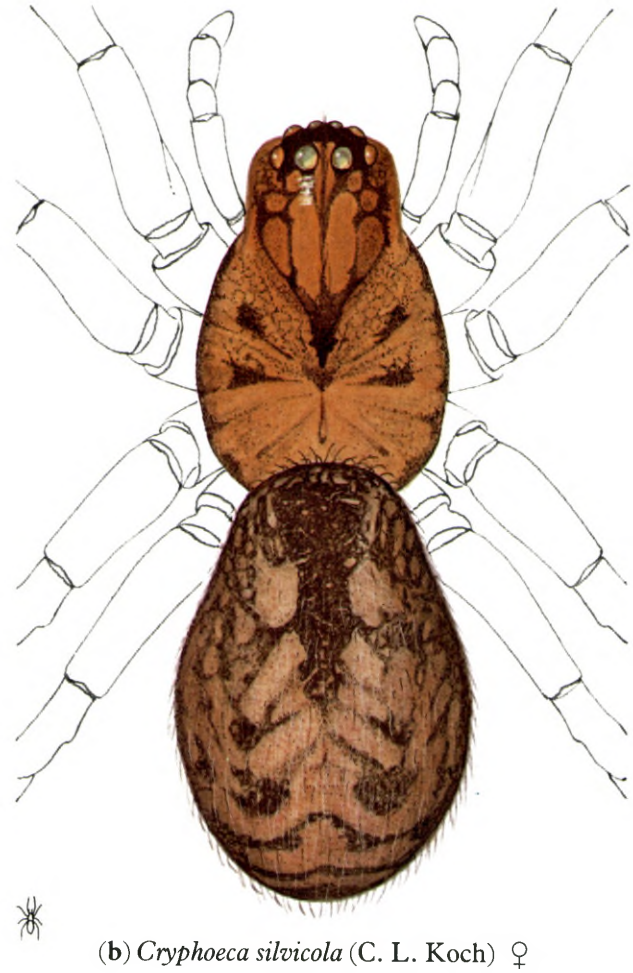
Cryphoeca silvicola (C. L. Koch) ♂



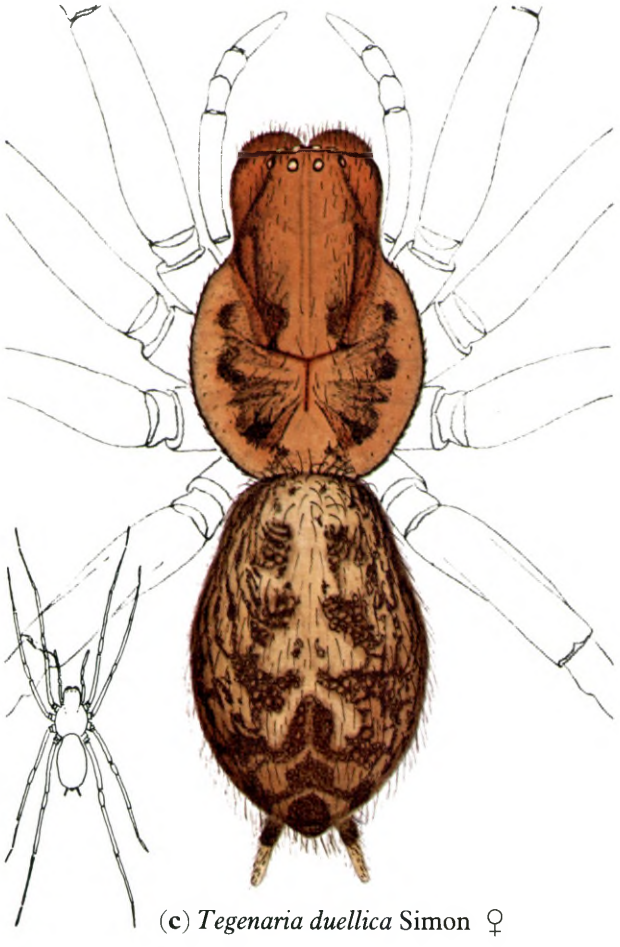
Tetrilus macrophthalmus (Kulczynski) ♂



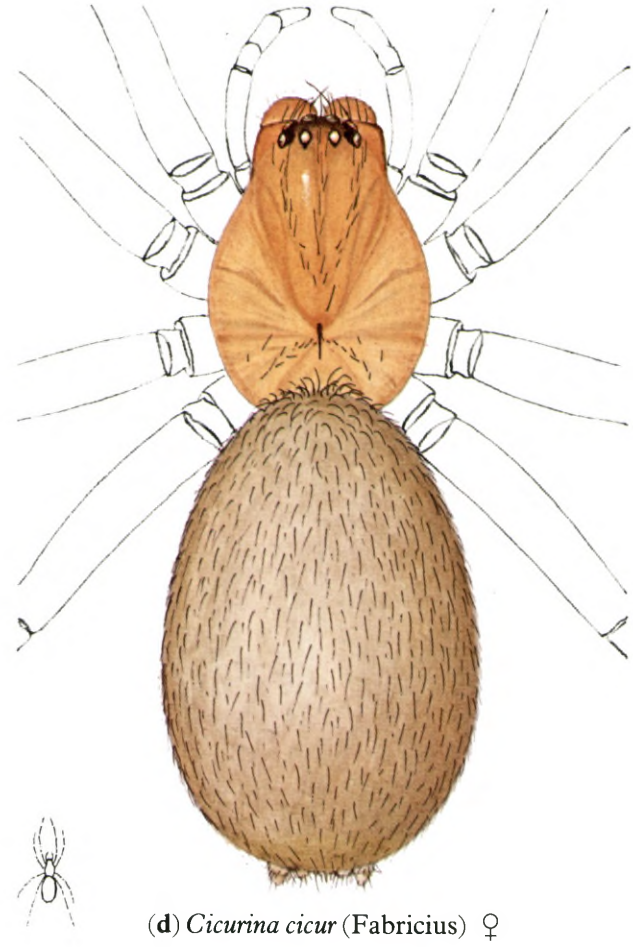
(**a**) *Tetrilus macrophthalmus* (Kulczynski) ♀



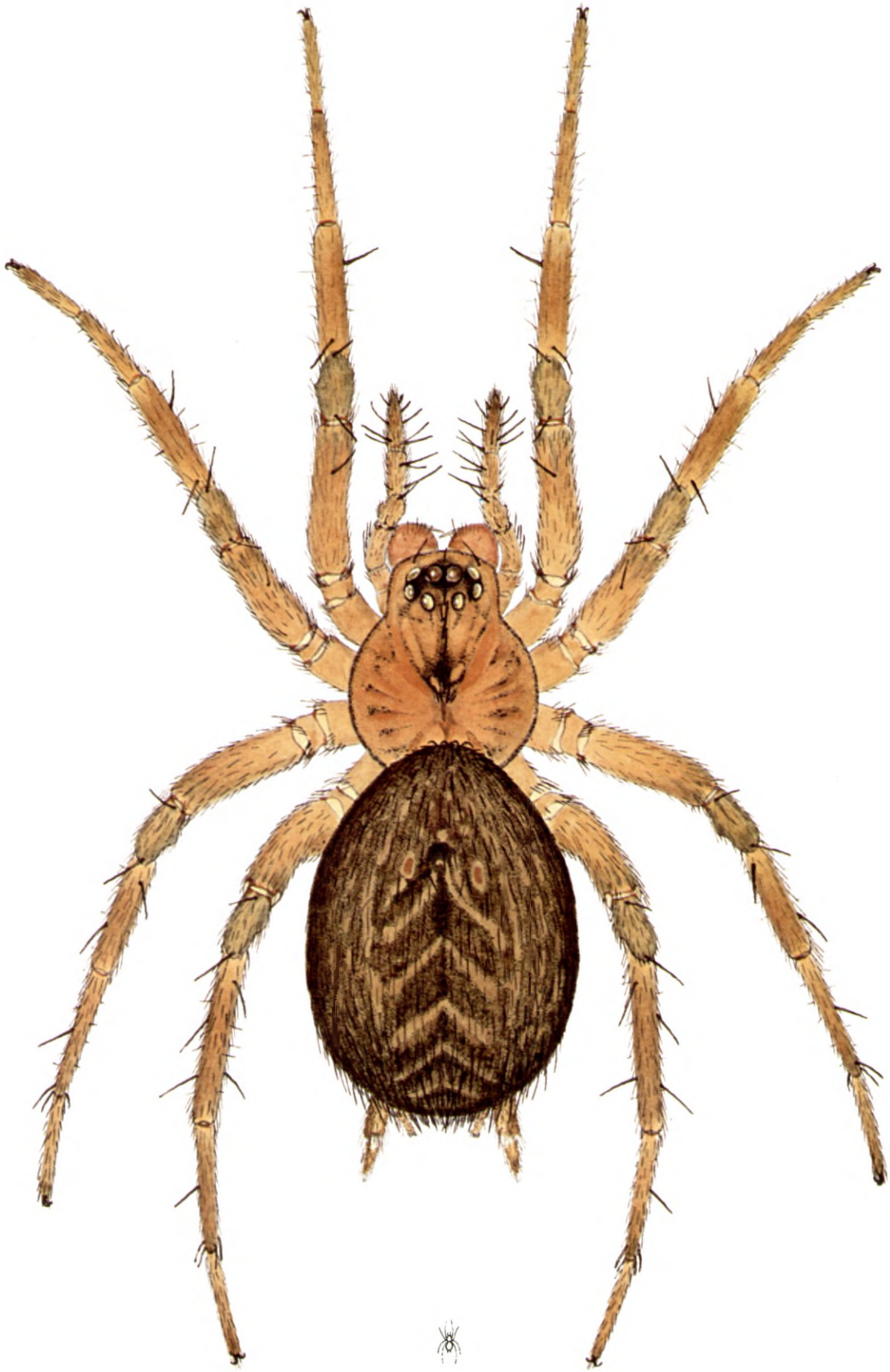
(**b**) *Cryphoeca silvicola* (C. L. Koch) ♀



(**c**) *Tegenaria duellica* Simon ♀

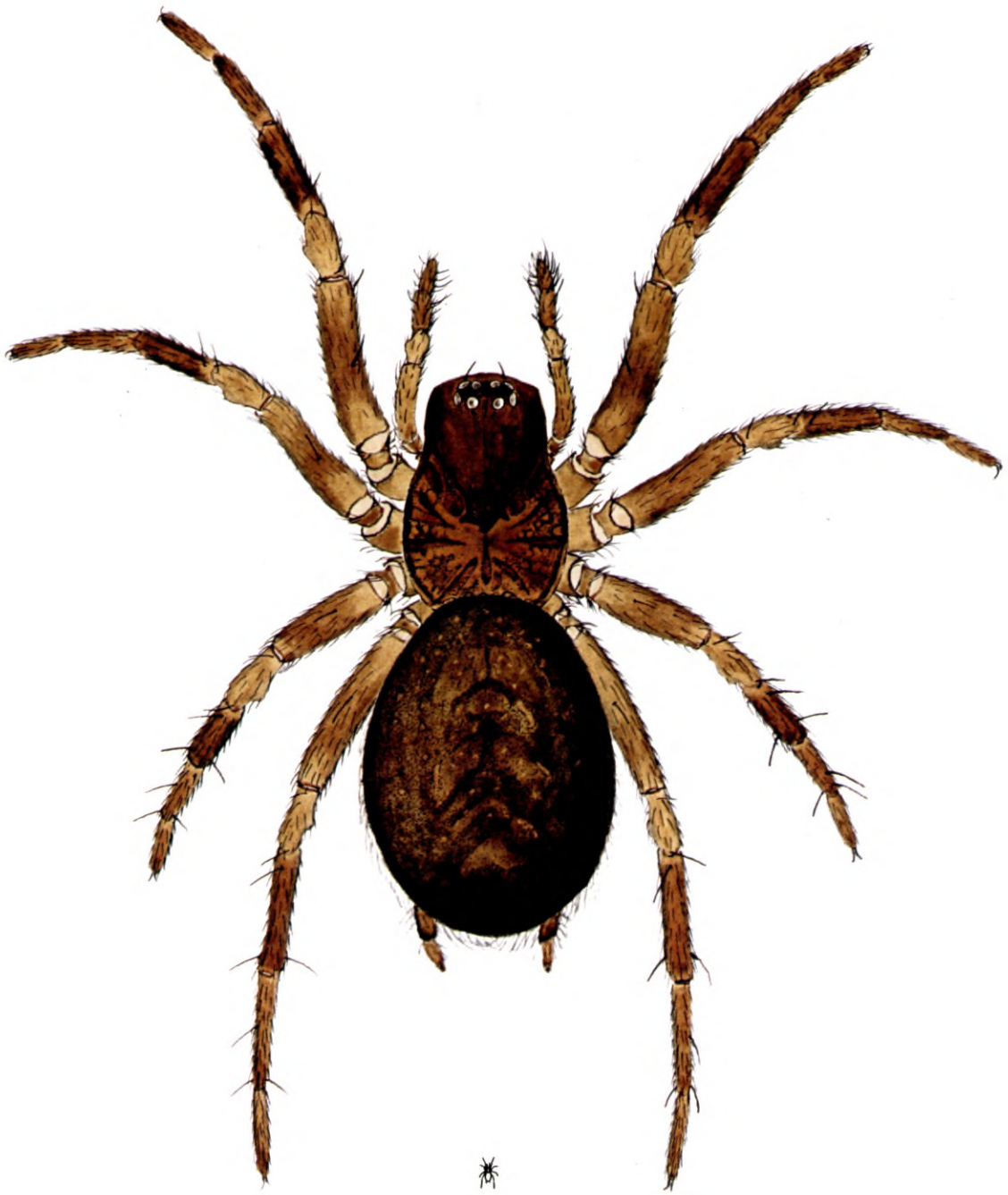


(**d**) *Cicurina cicur* (Fabricius) ♀



Antistea elegans (Blackwall) ♀

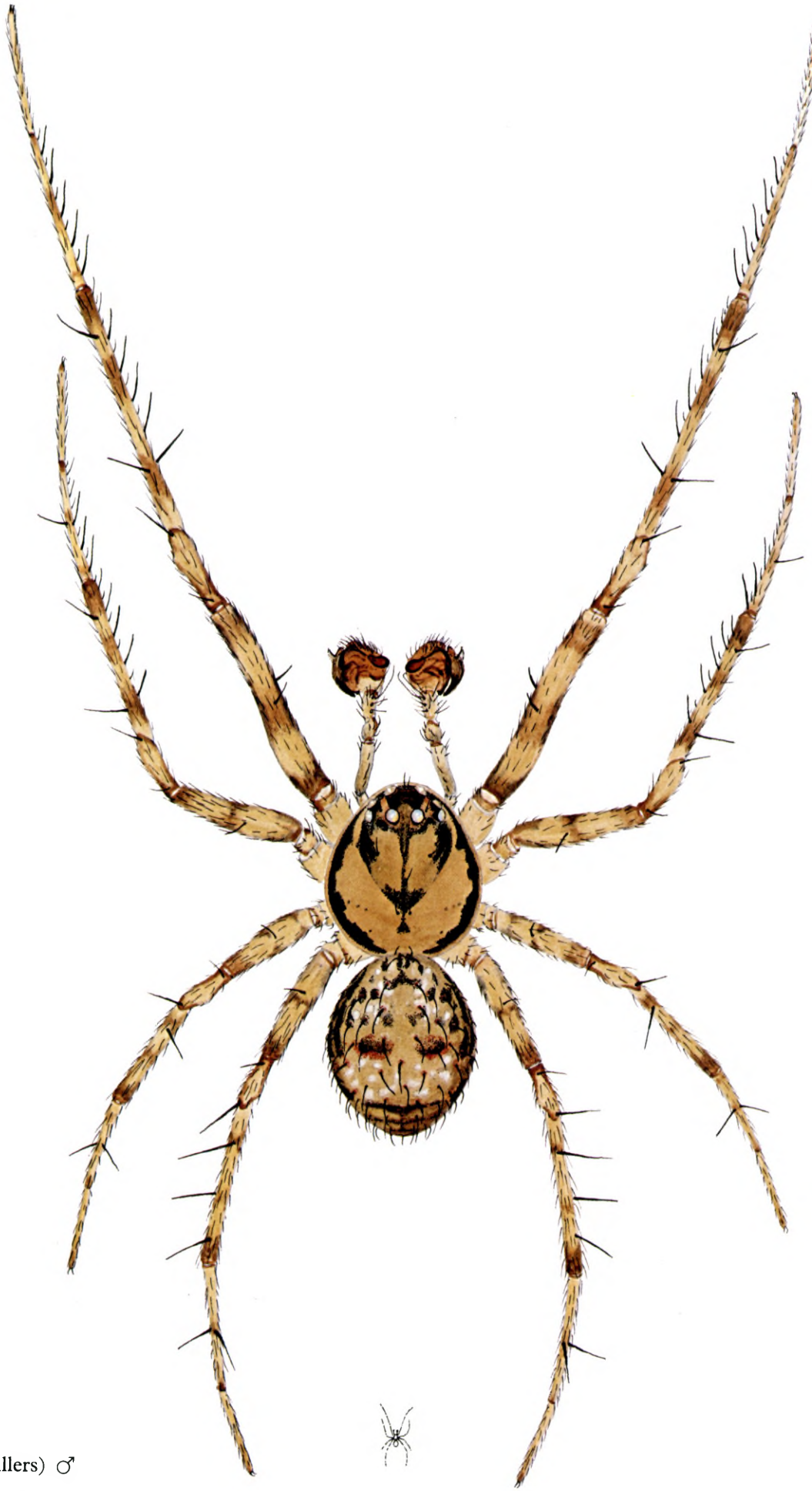
Hahnia montana (Blackwall) ♀



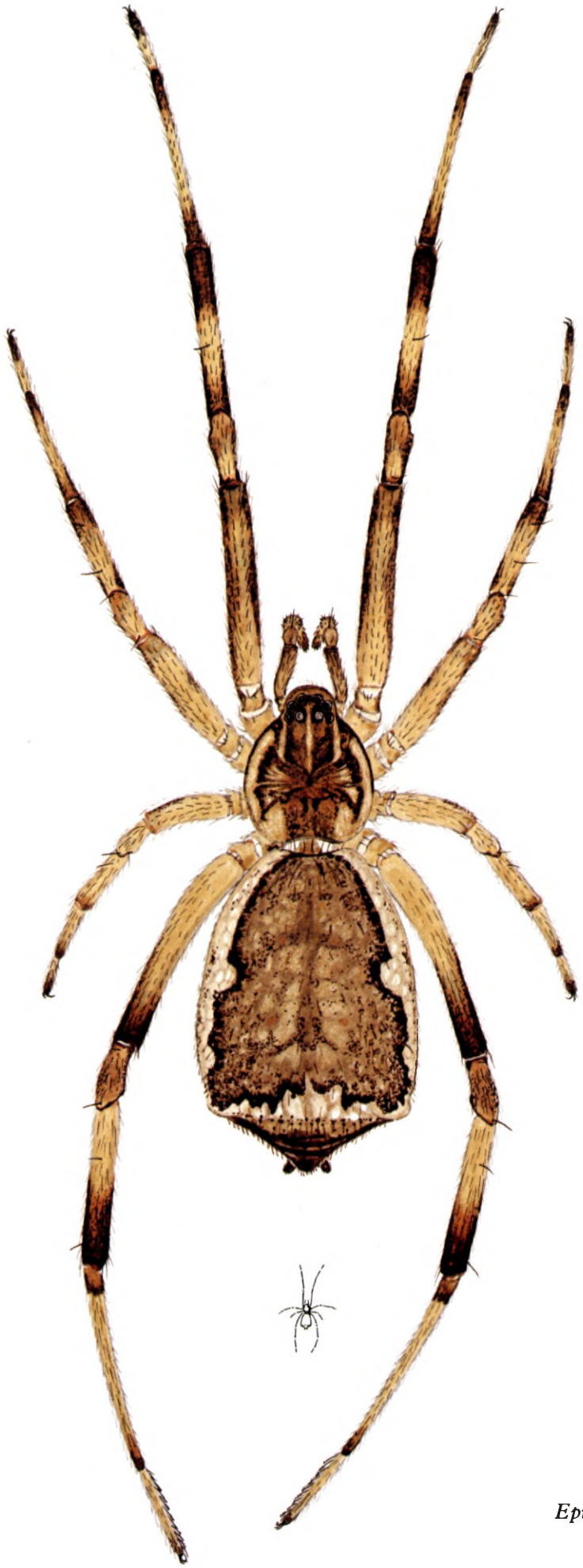
Hahnia nava (Blackwall) ♀

Hahnia nava (Blackwall) ♂

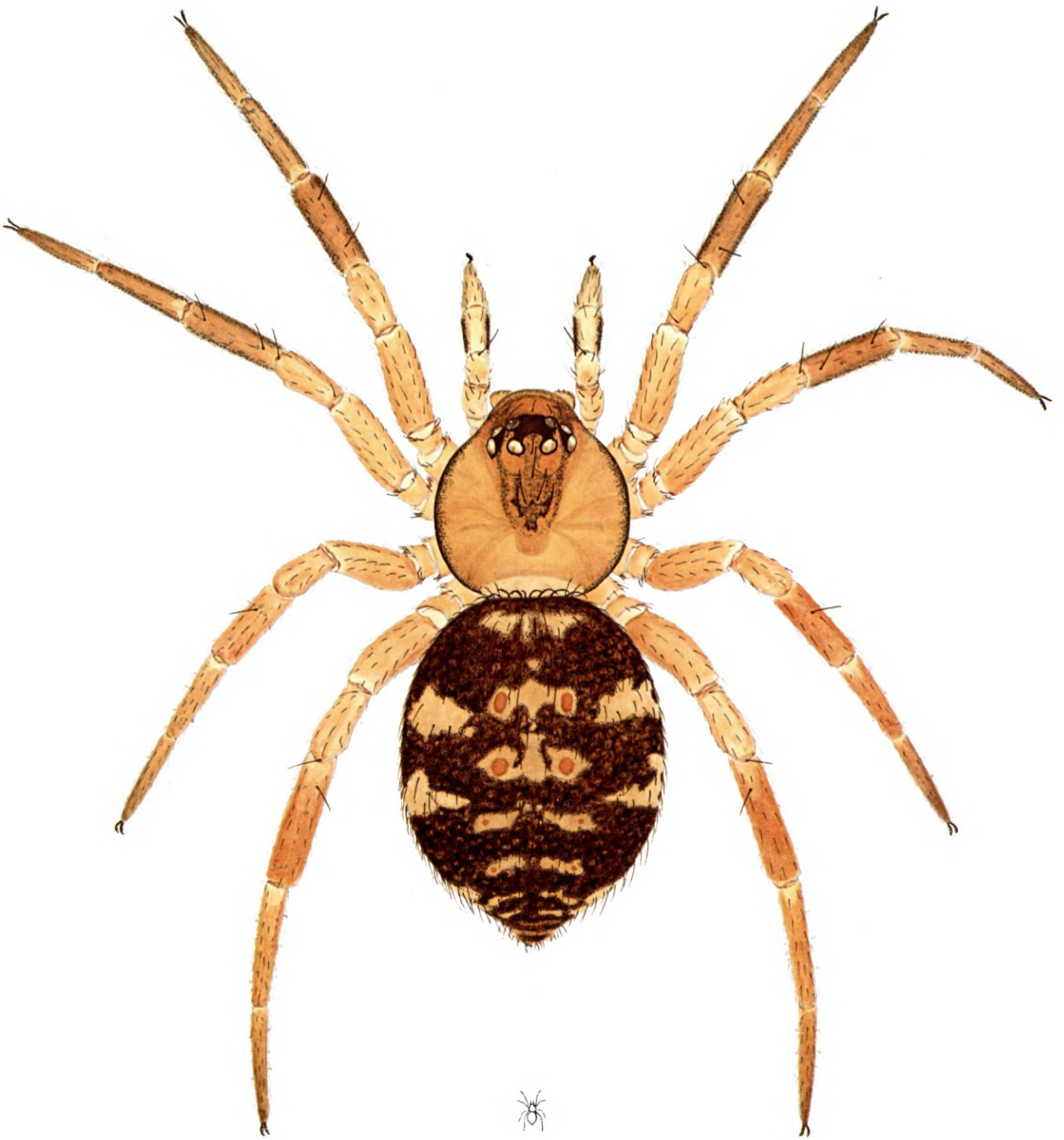
Hahnia pusilla C. L. Koch ♀



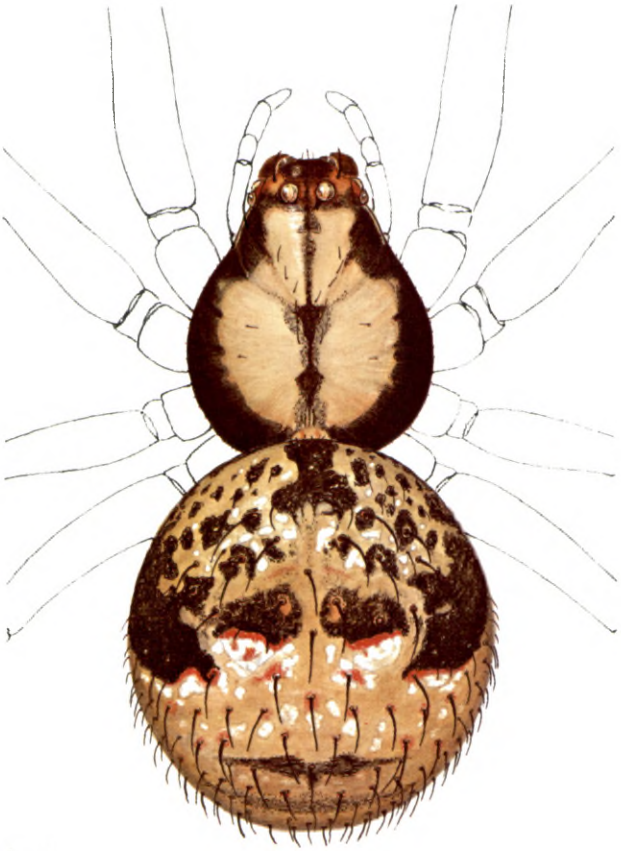
Ero furcata (Villers) ♂



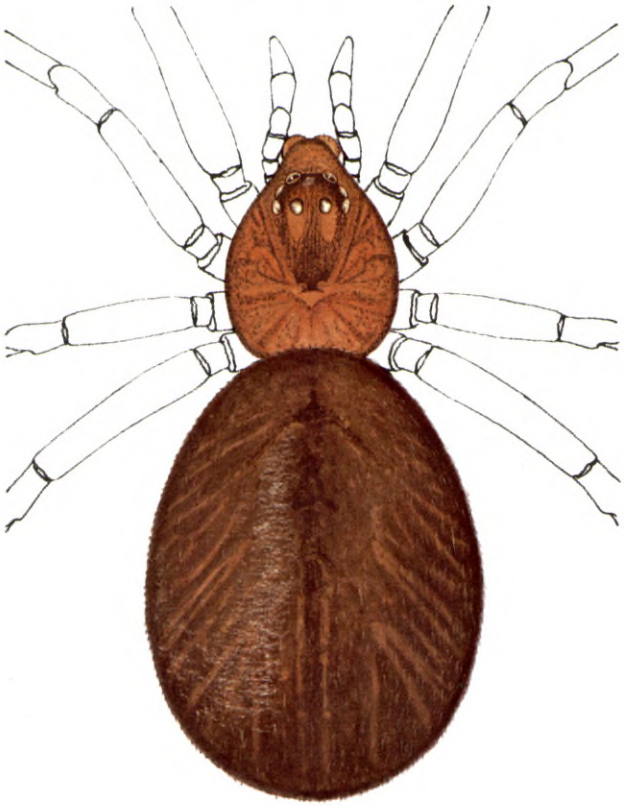
Episinus angulatus (Blackwall) ♀



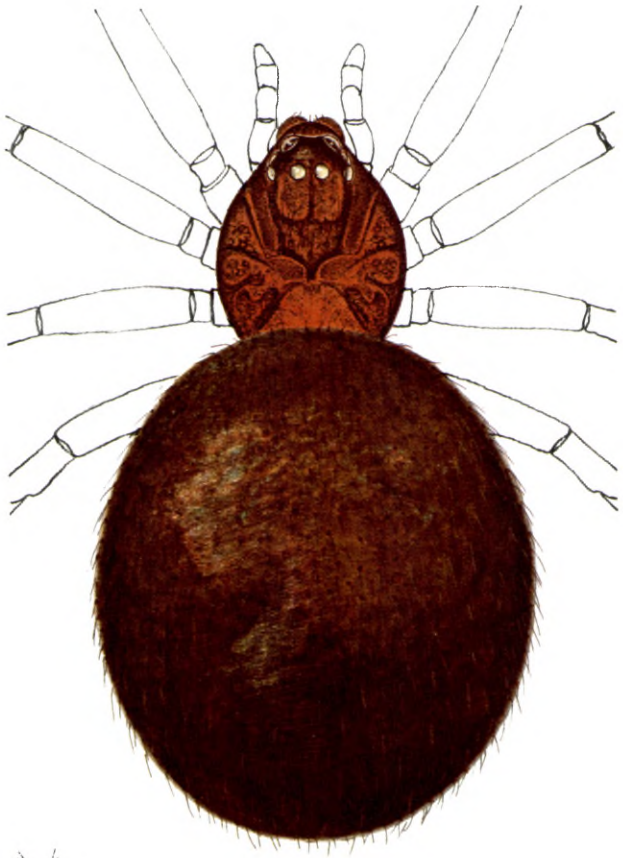
Euryopis flavomaculata (C. L. Koch) ♀



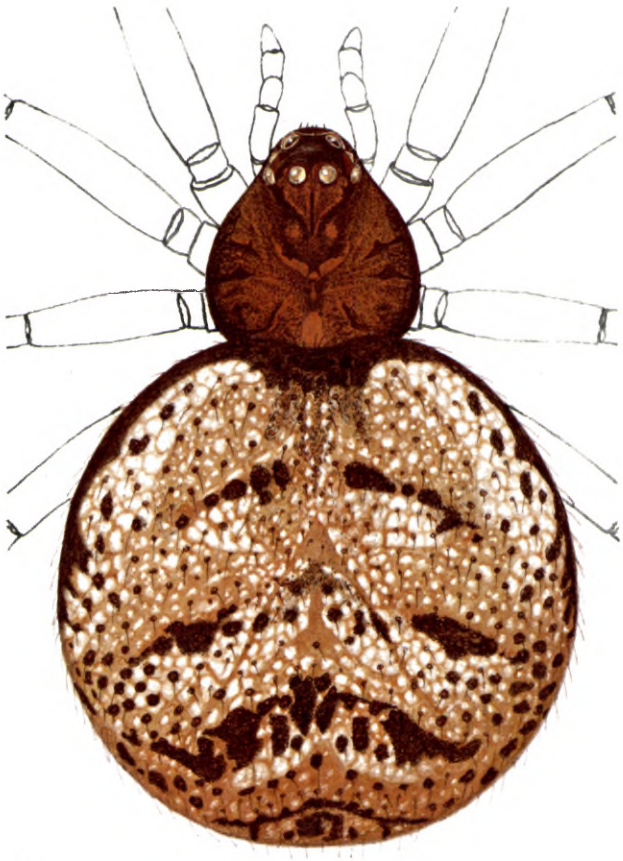
(**a**) *Ero cambridgei* Kulczynski ♀



(**b**) *Dipoena prona* (Menge) ♀

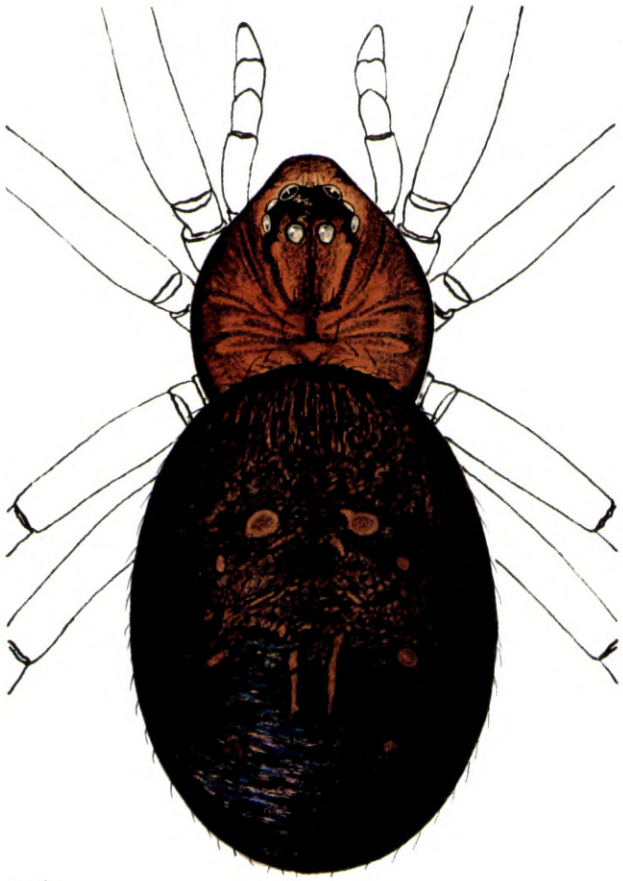


(**c**) *Dipoena tristis* (Hahn) ♀

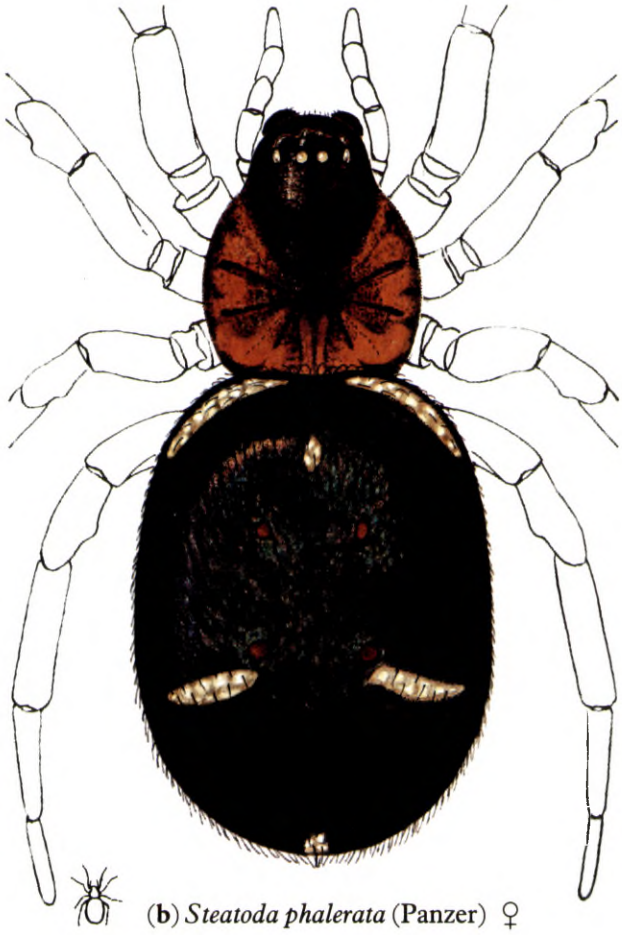


(**d**) *Dipoena melanogaster* (C. L. Koch) ♀

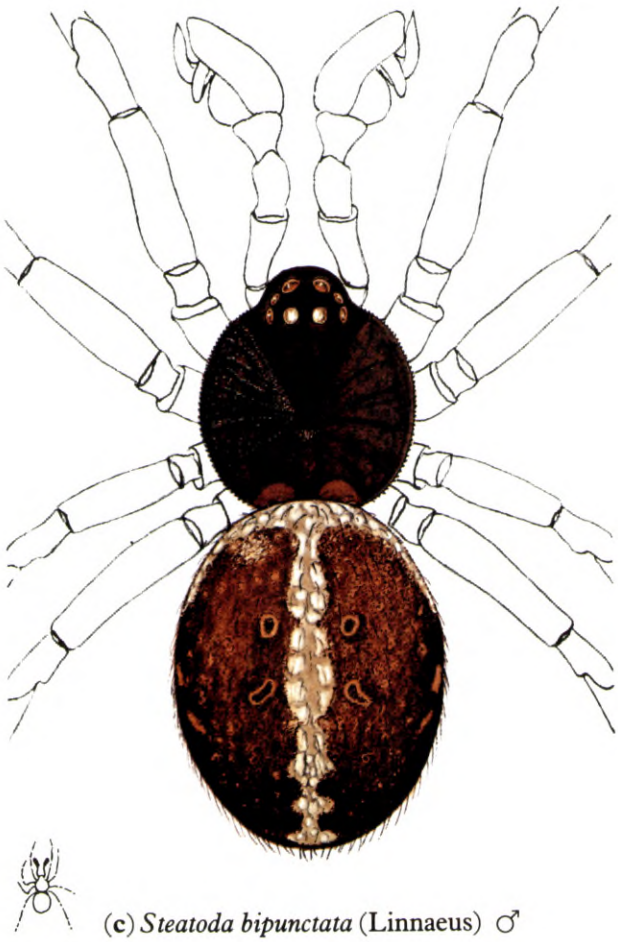
Dipoena inornata (O. P.-Cambridge) ♀



(**a**) *Dipoena torva* (Thorell) ♀



(**b**) *Steatoda phalerata* (Panzer) ♀

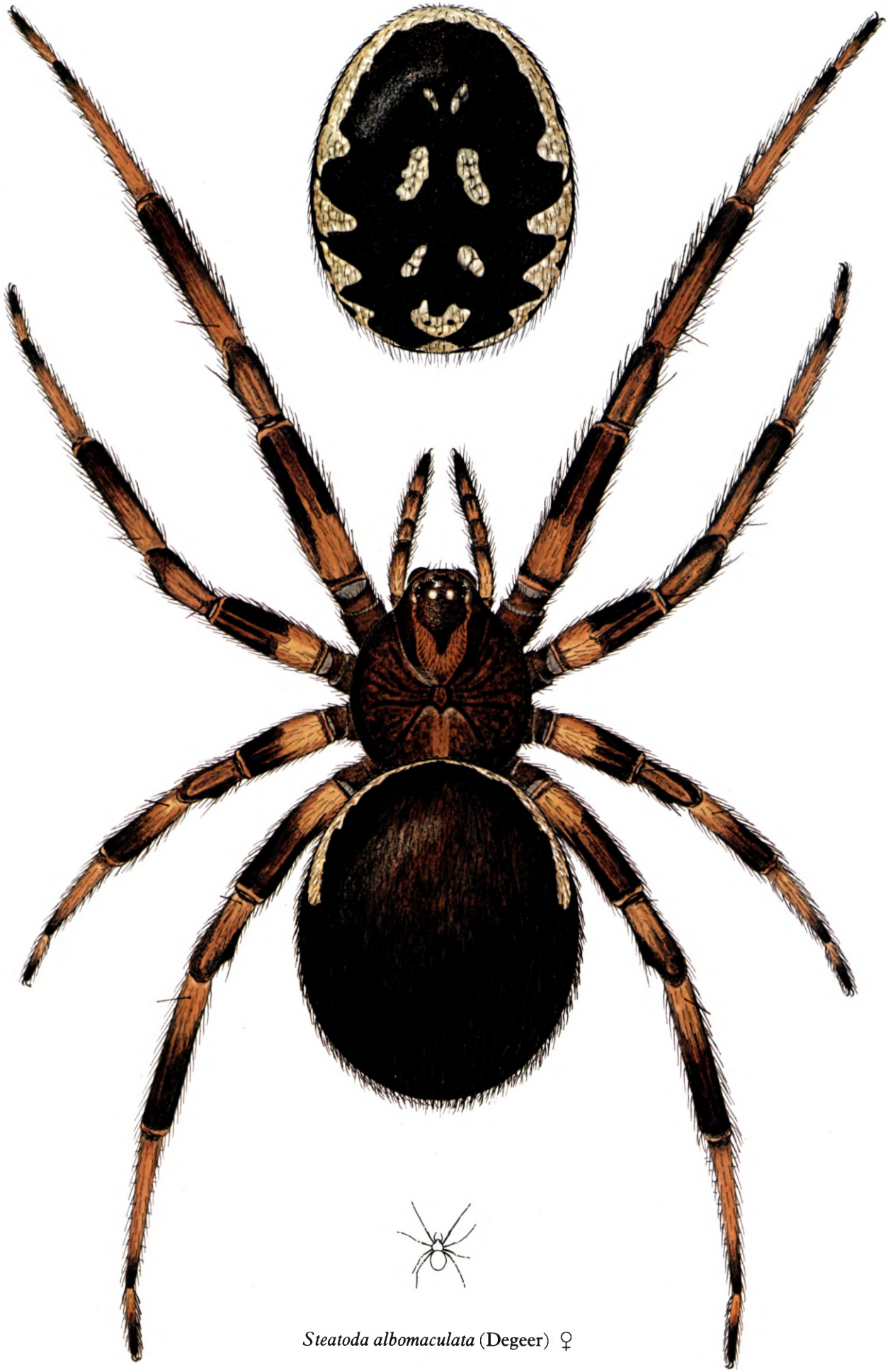


(**c**) *Steatoda bipunctata* (Linnaeus) ♂

(**d**) *Steatoda grossa* (C. L. Koch) ♀

Crustulina guttata (Wider) ♀

Crustulina sticta (O. P.-Cambridge) ♀

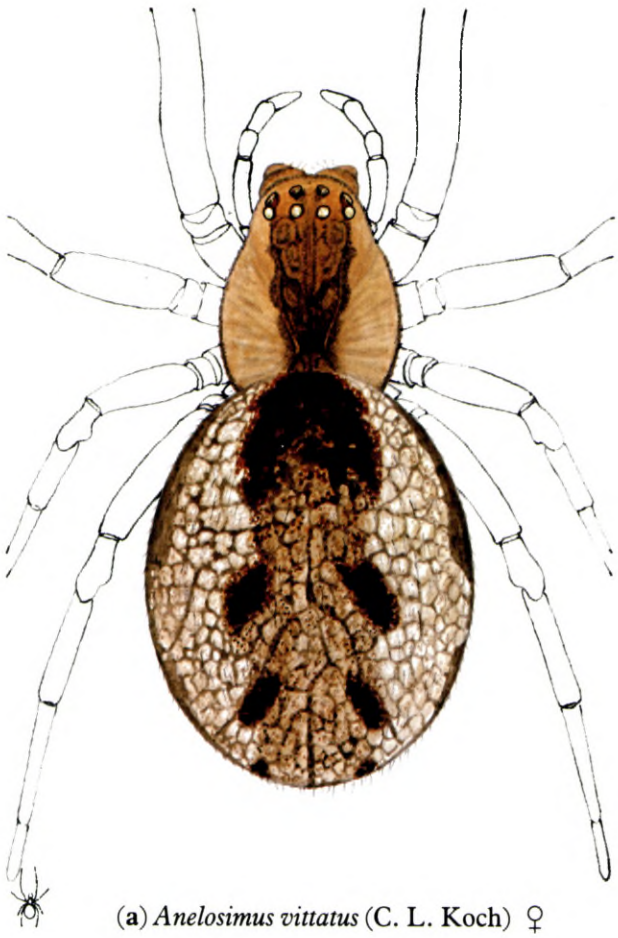


Steatoda albomaculata (Degeer) ♀

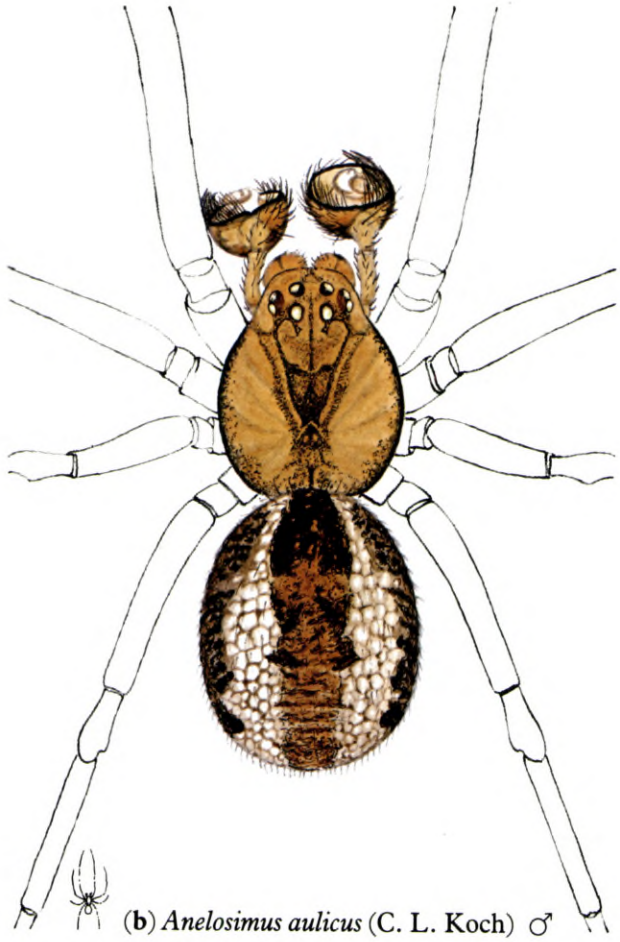
Steatoda bipunctata (Linnaeus) ♀

Anelosimus aulicus (C. L. Koch) ♀

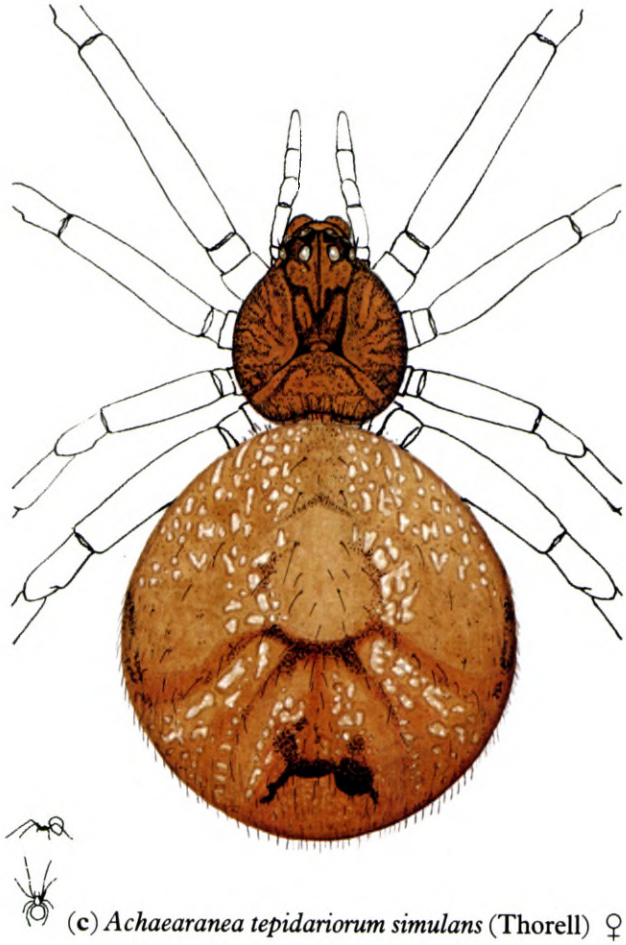
Achaearanea lunata (Clerck) ♀ and (above) abdomen from side



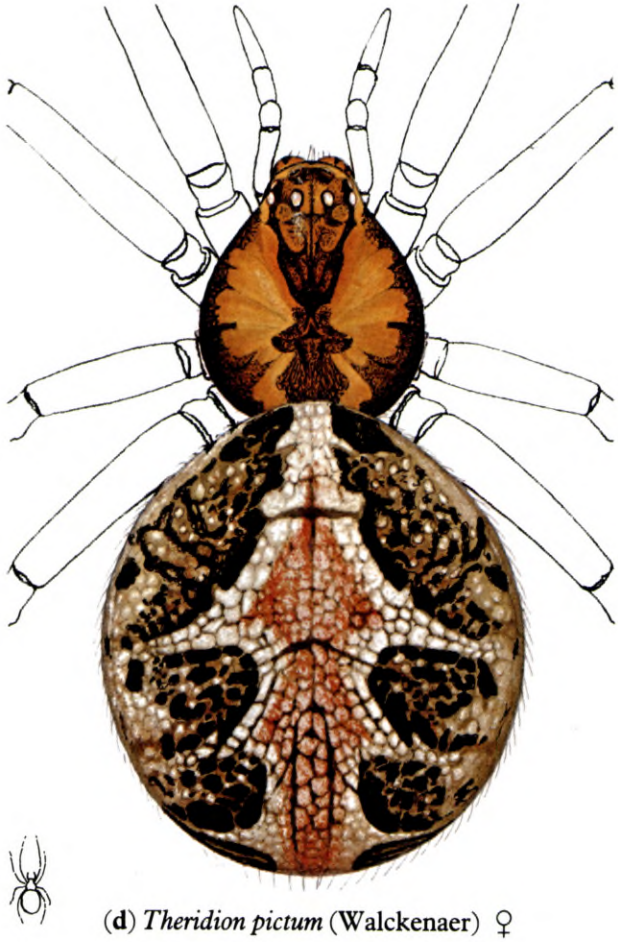
(**a**) *Anelosimus vittatus* (C. L. Koch) ♀



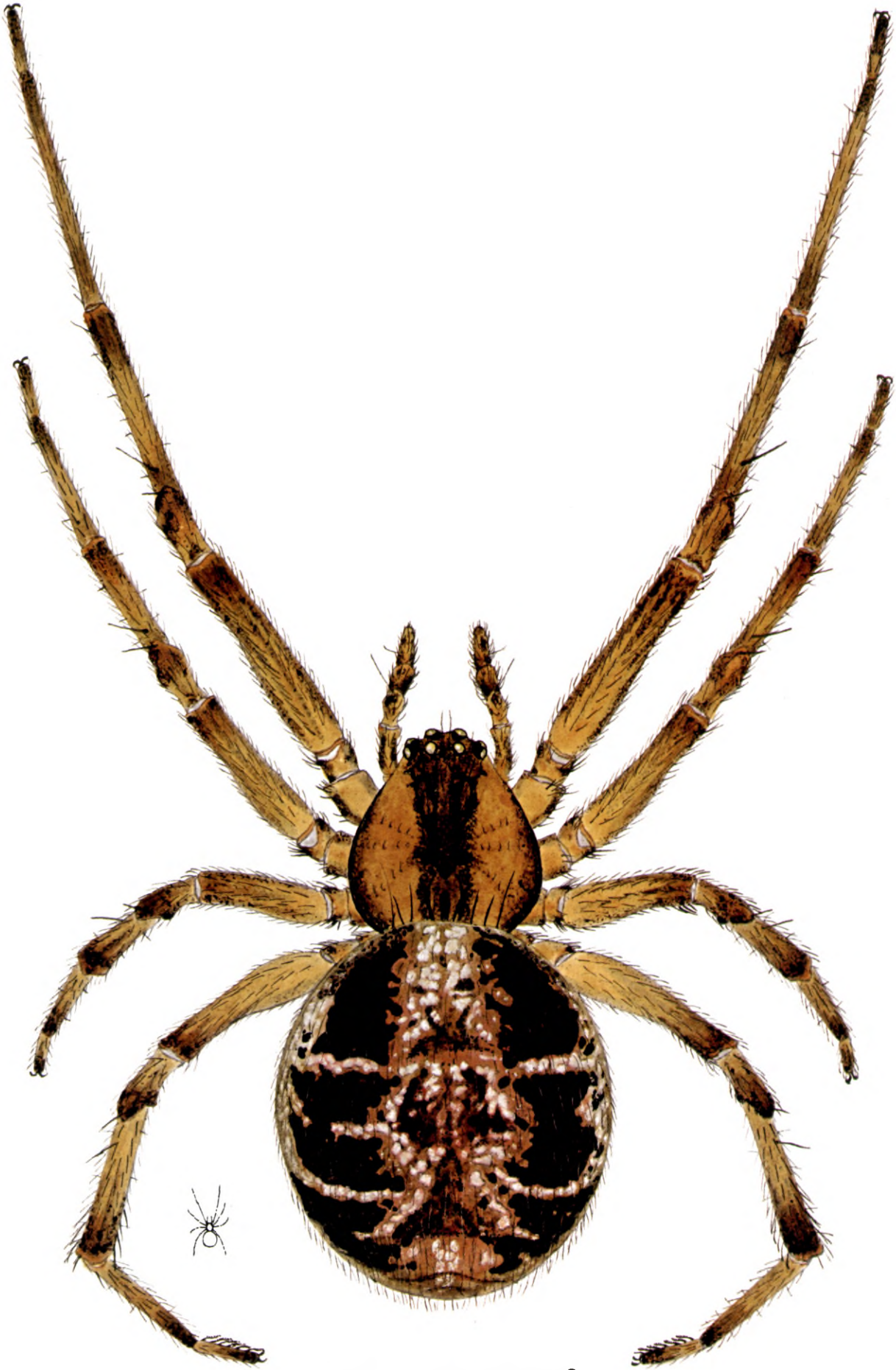
(**b**) *Anelosimus aulicus* (C. L. Koch) ♂



(**c**) *Achaearanea tepidariorum simulans* (Thorell) ♀



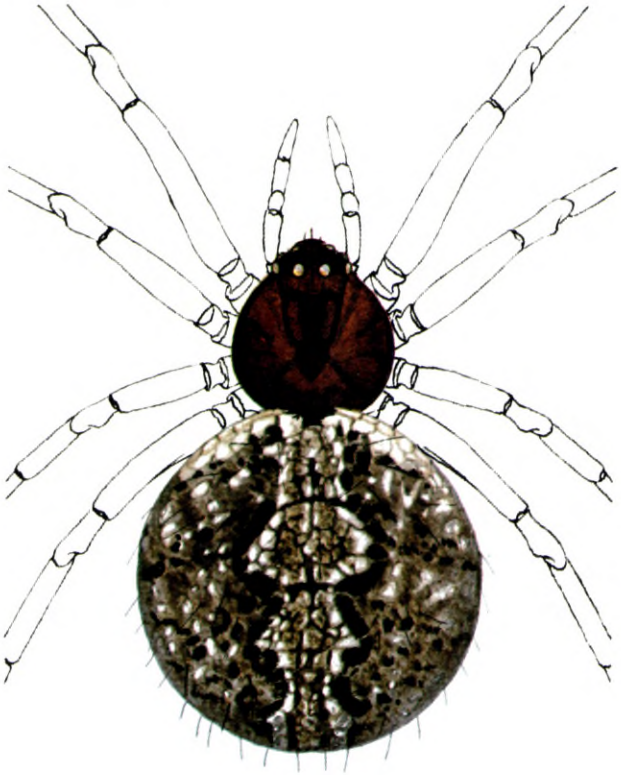
(**d**) *Theridion pictum* (Walckenaer) ♀



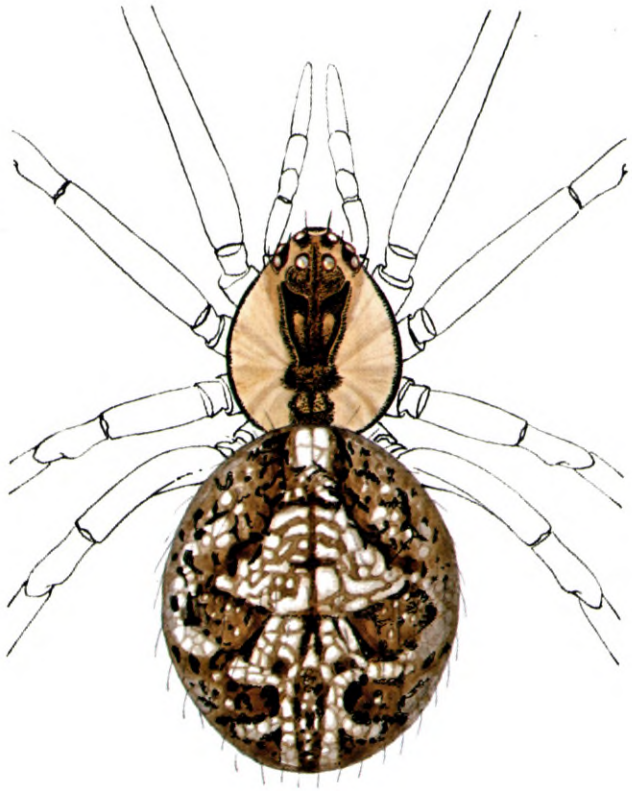
Theridion sisyphium (Clerck) ♀

Theridion blackwalli O. P.-Cambridge ♀

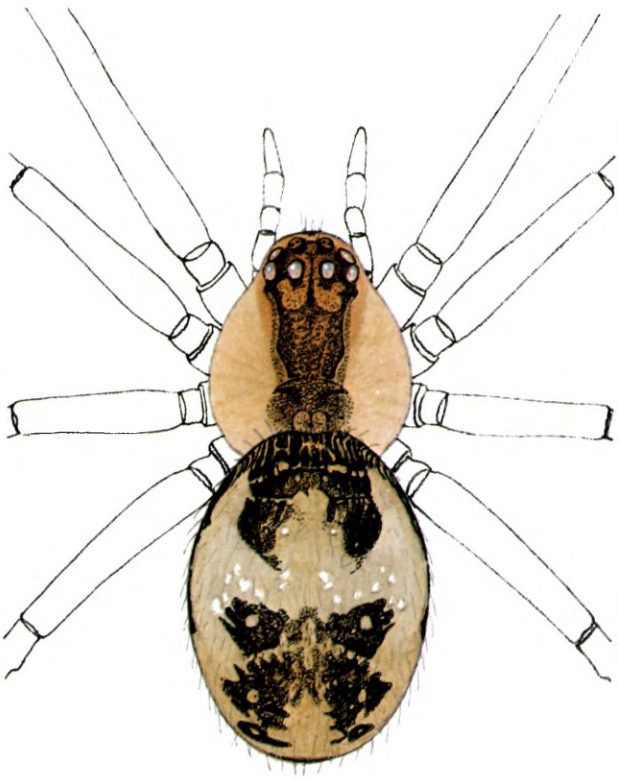
Theridion tinctum (Walckenaer) ♀



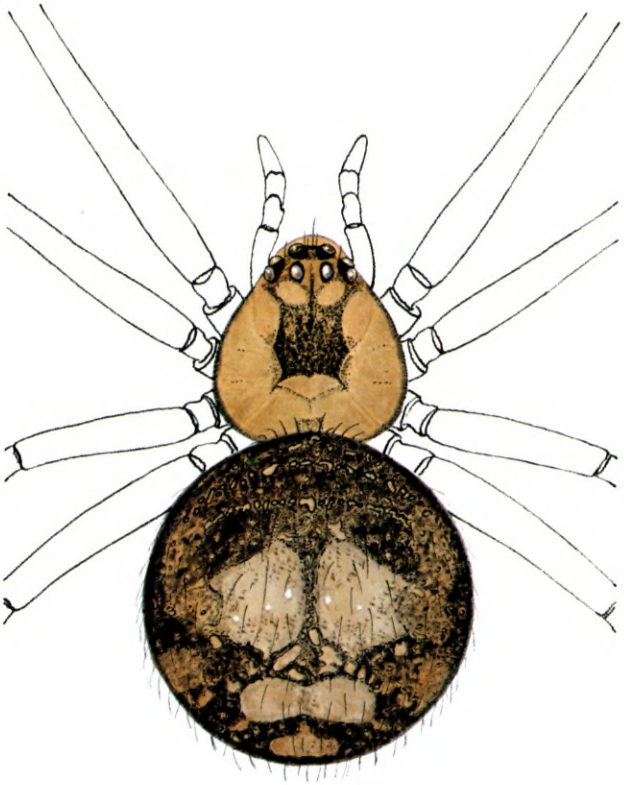
(**a**) *Theridion mystaceum* L. Koch ♀



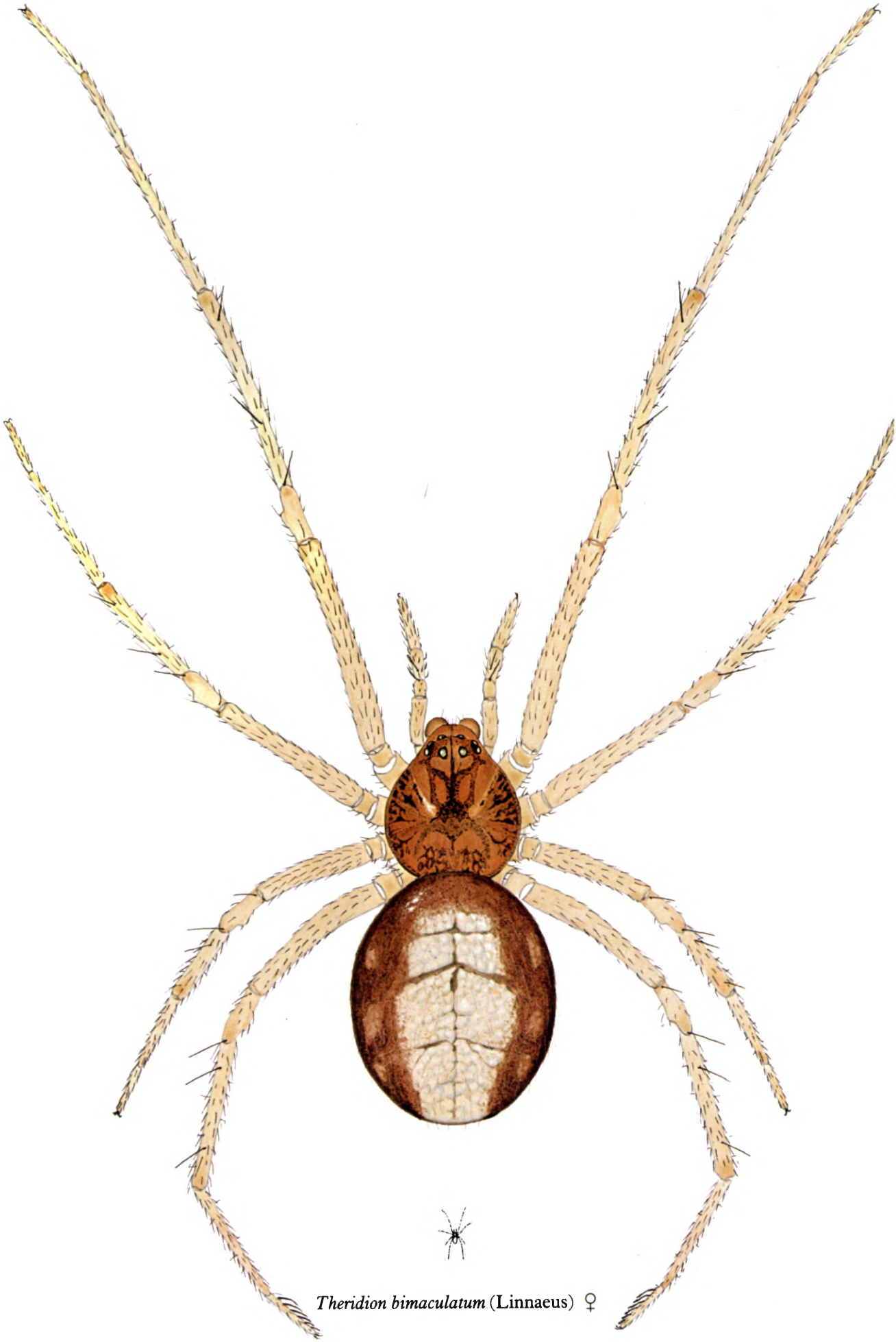
(**b**) *Theridion varians* Hahn ♀



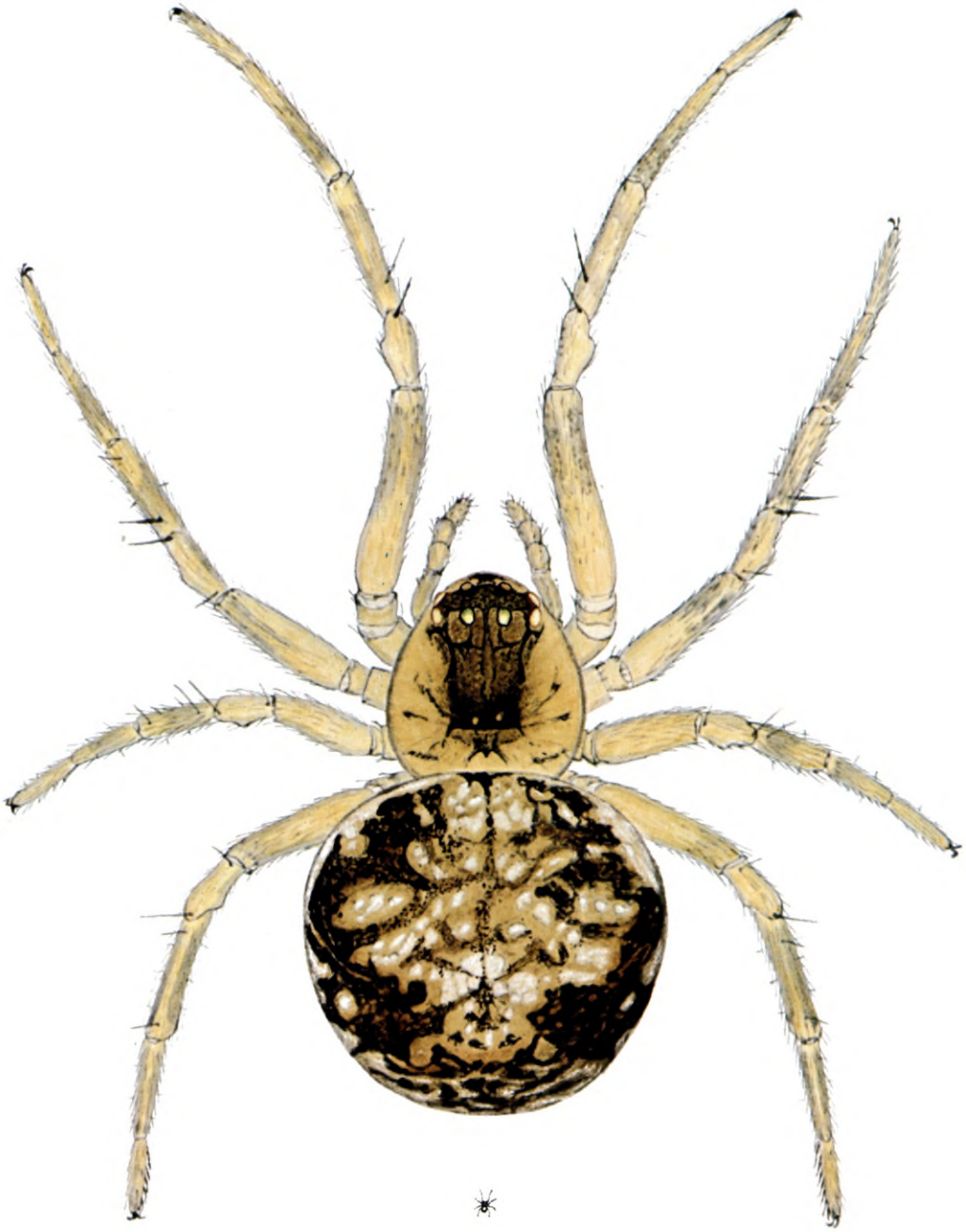
(**c**) *Theridion instabile* O. P.-Cambridge ♀



(**d**) *Theridion bellicosum* Simon ♀

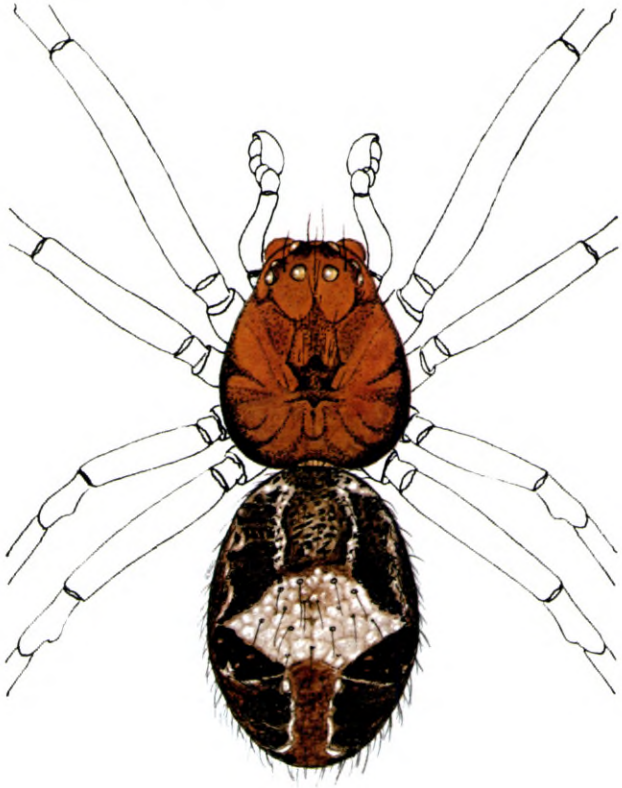


Theridion bimaculatum (Linnaeus) ♀

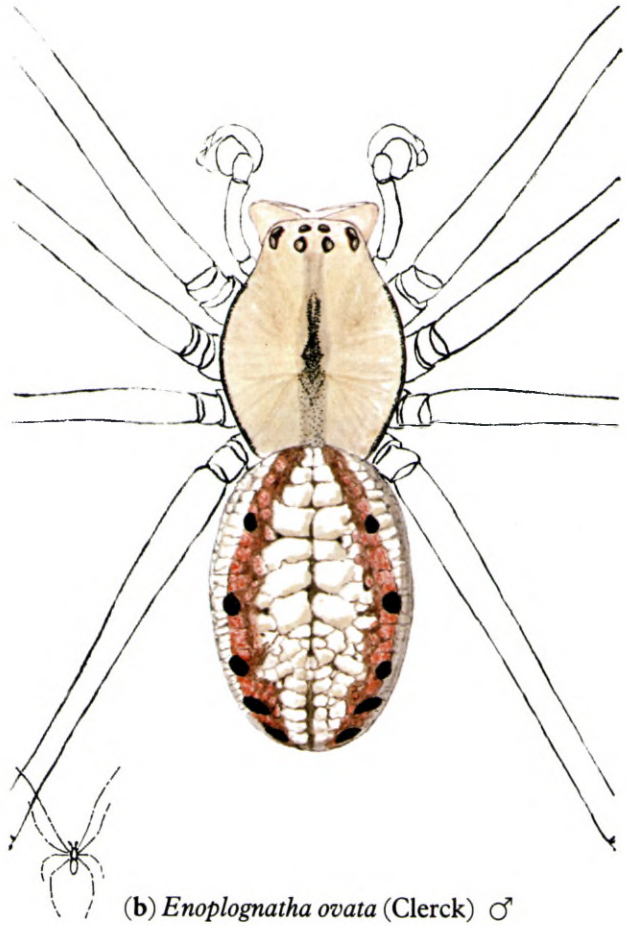


Theridion pallens Blackwall ♀

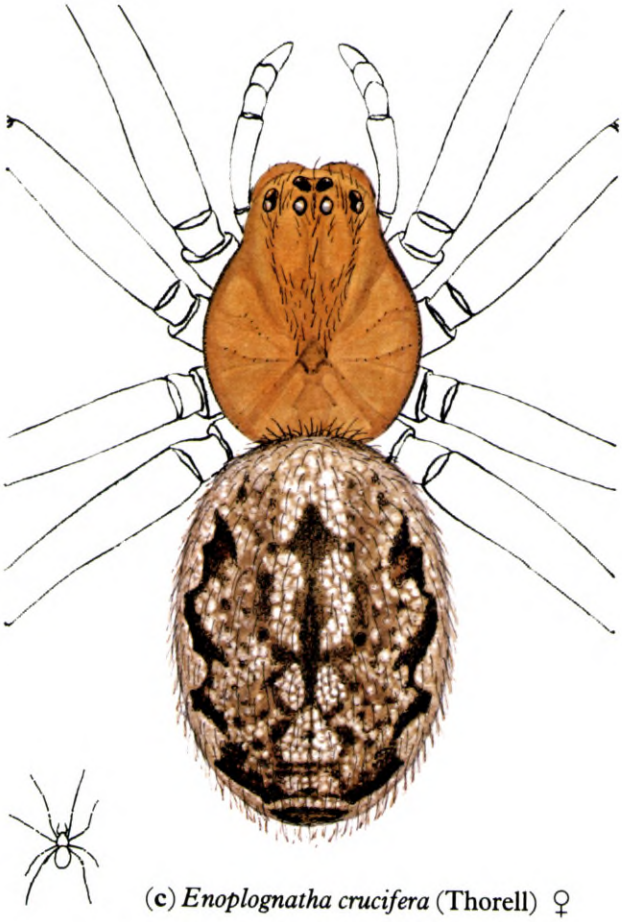
Theridion pallens Blackwall ♂



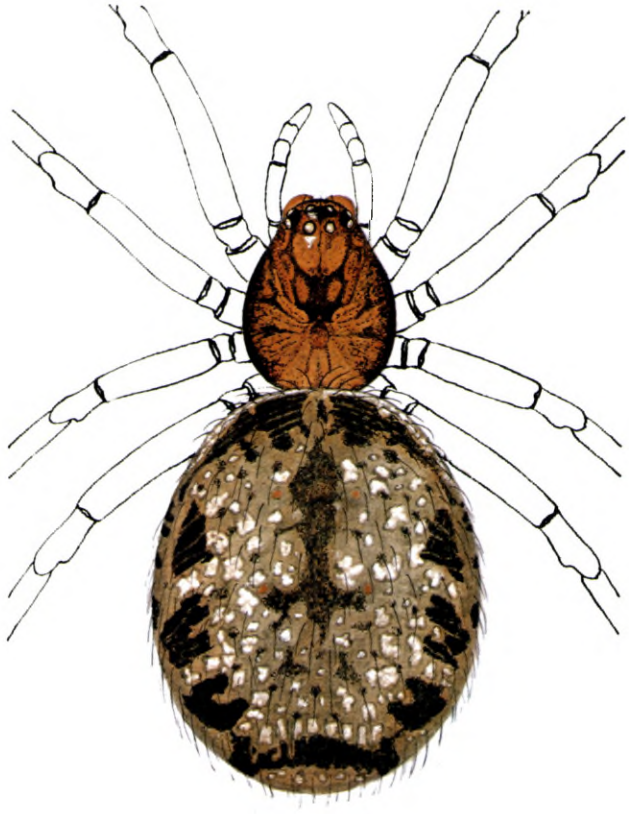
(**a**) *Theridion simile* C. L. Koch ♂



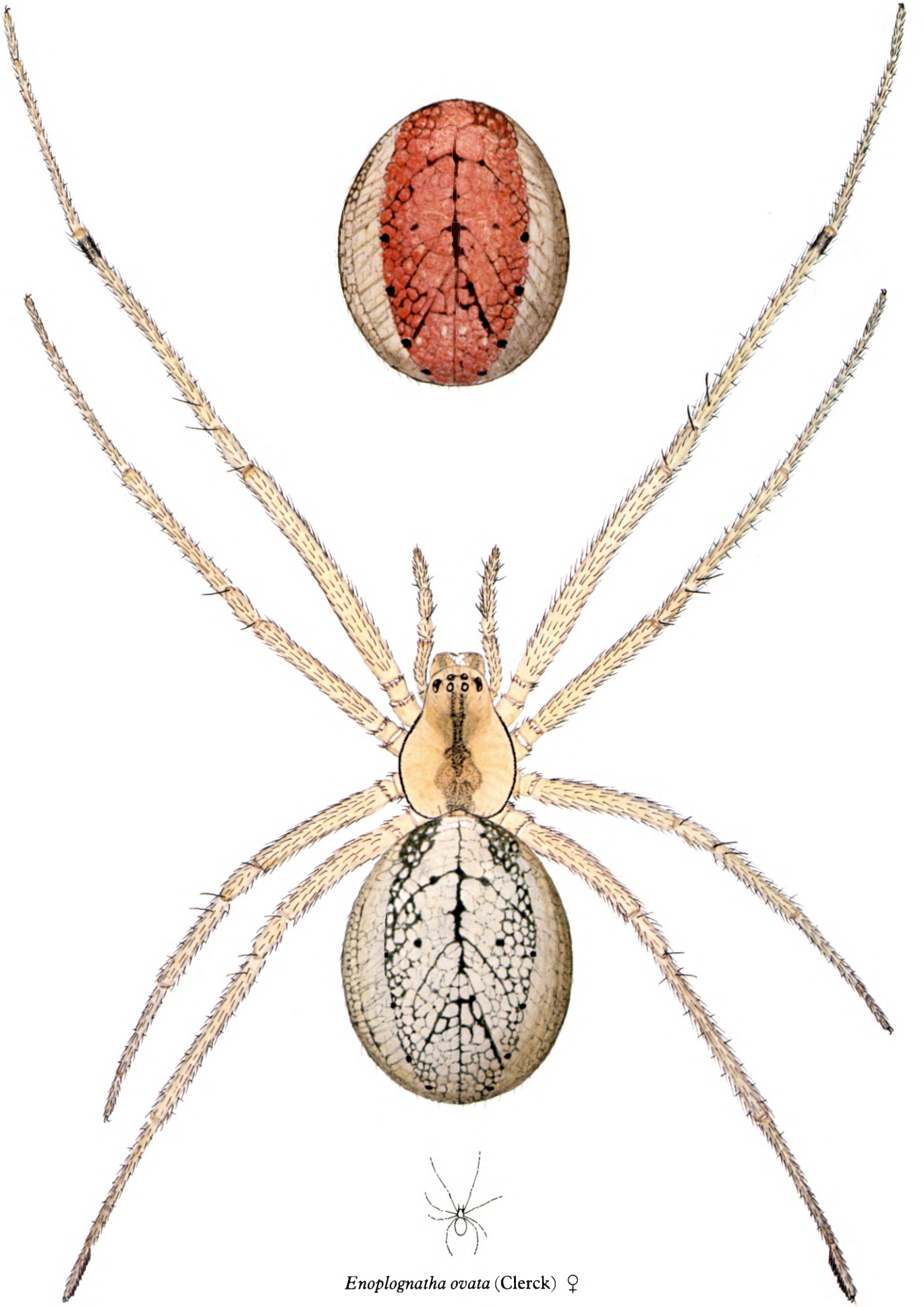
(**b**) *Enoplognatha ovata* (Clerck) ♂



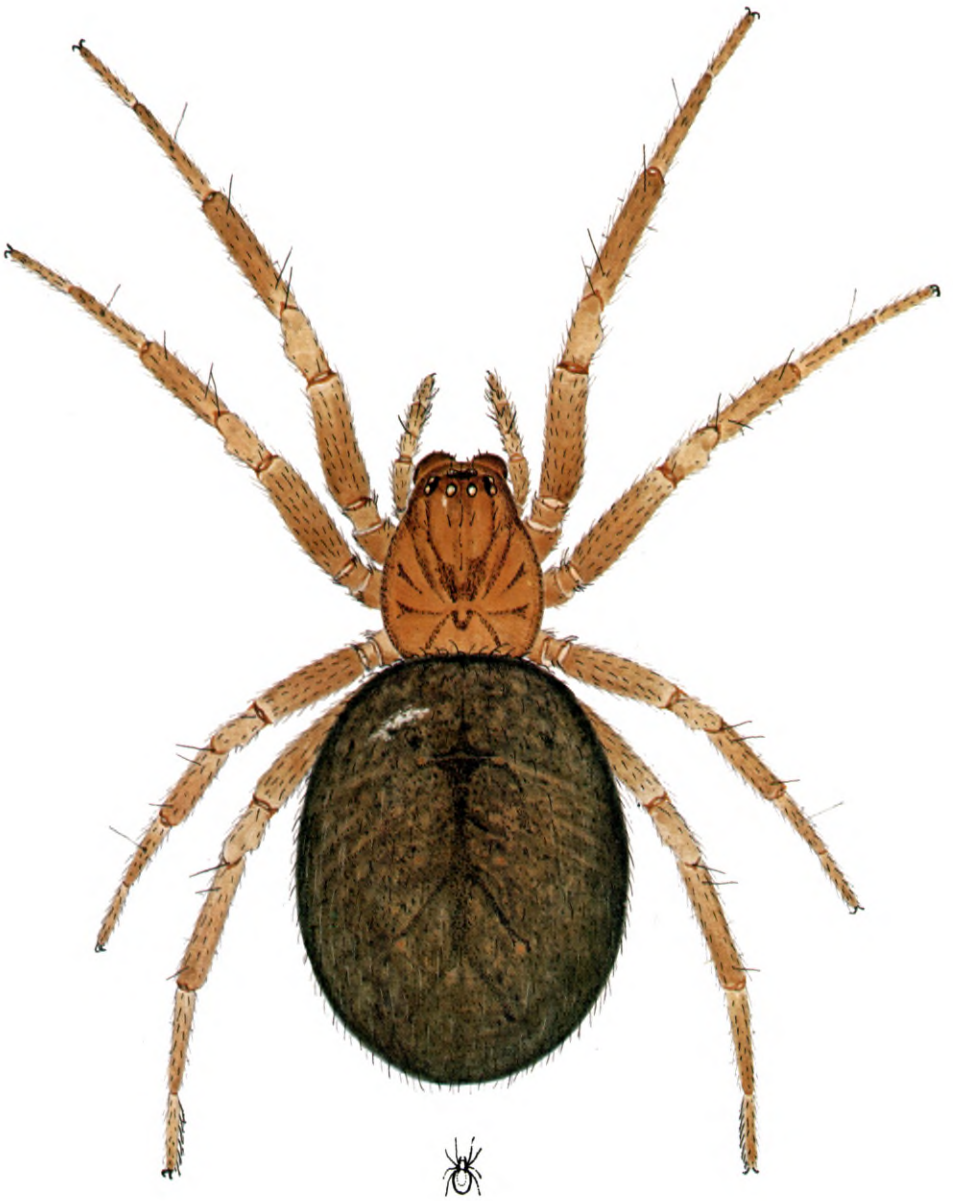
(**c**) *Enoplognatha crucifera* (Thorell) ♀



(**d**) *Enoplognatha oelandica* (Thorell) ♀



Enoplognatha ovata (Clerck) ♀



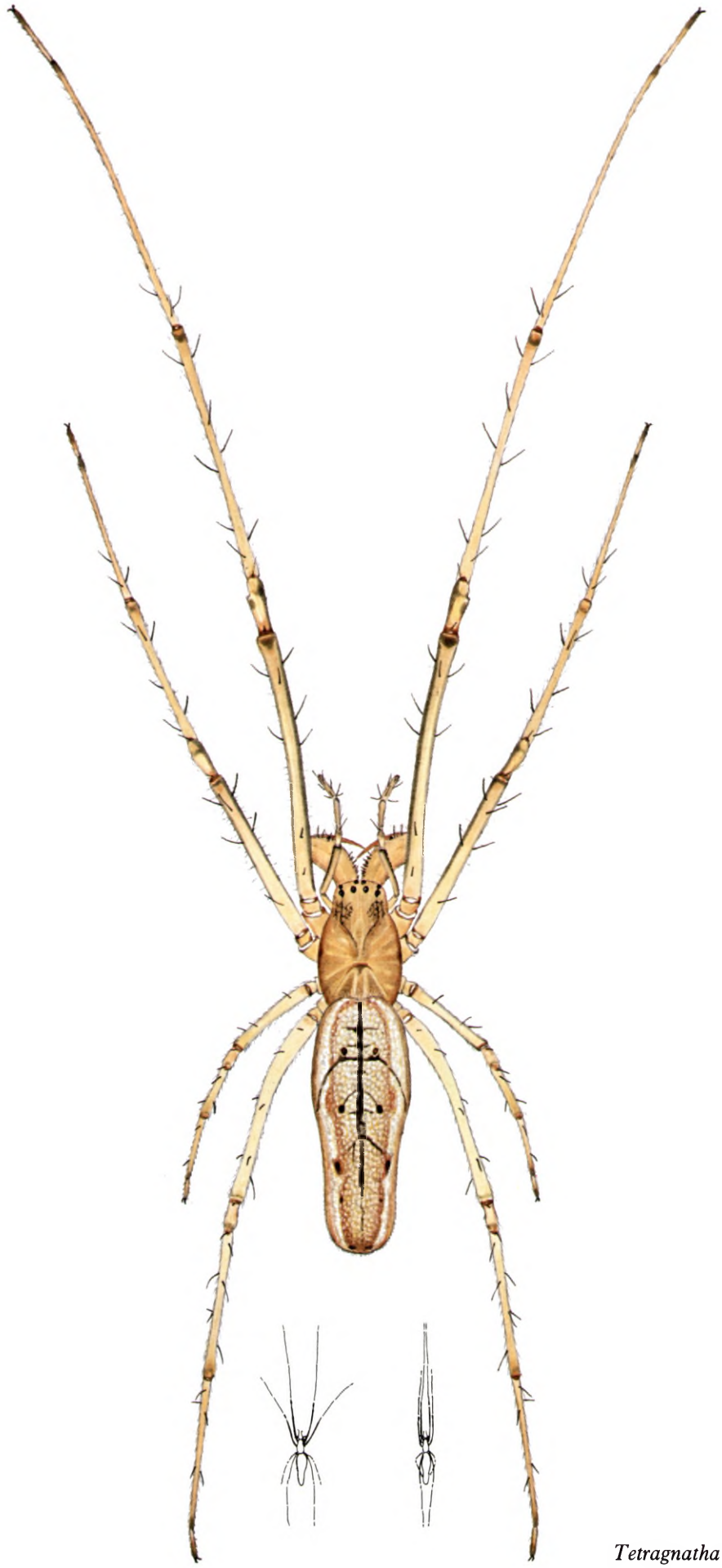
Enoplognatha thoracica (Hahn) ♀ (gravid)

Robertus lividus (Blackwall) ♀

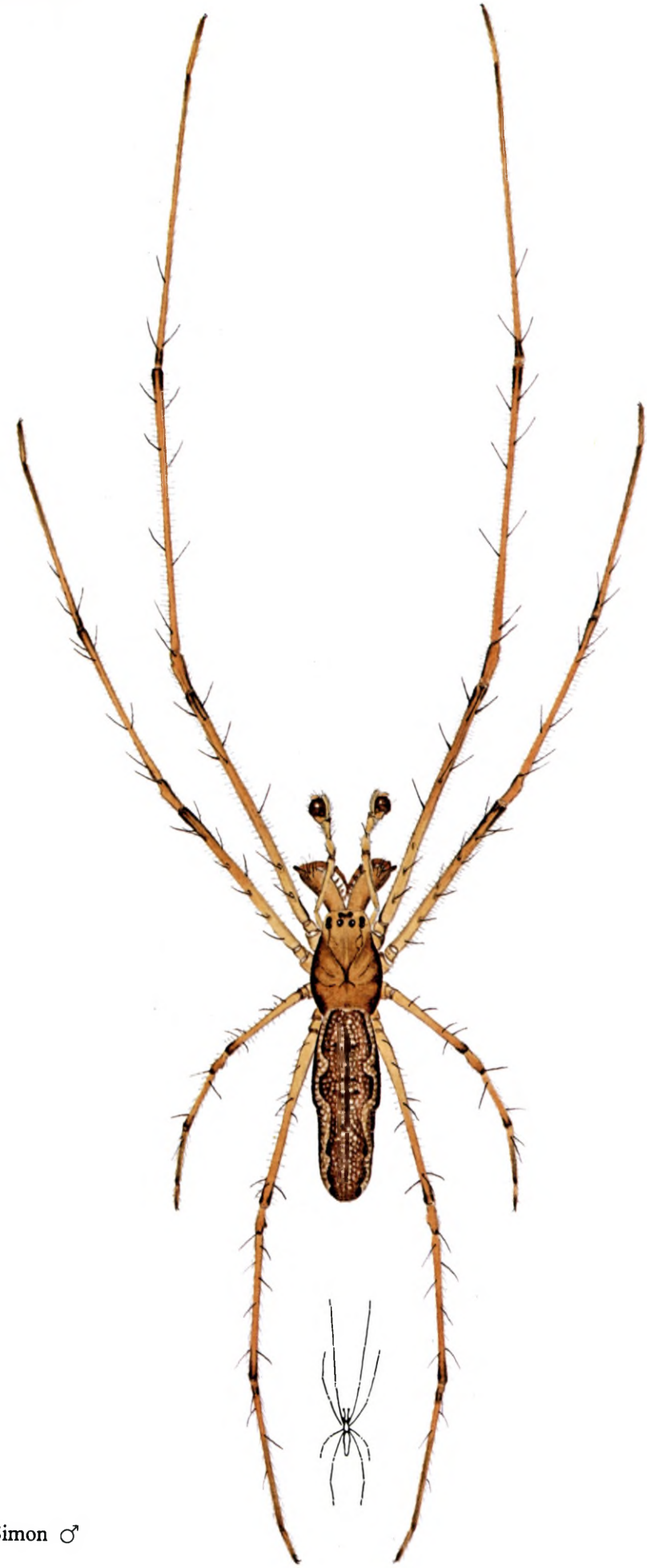
Pholcomma gibbum (Westring) ♀

Theonoe minutissima (O. P.-Cambridge) ♂

Nesticus cellulanus (Clerck) ♀

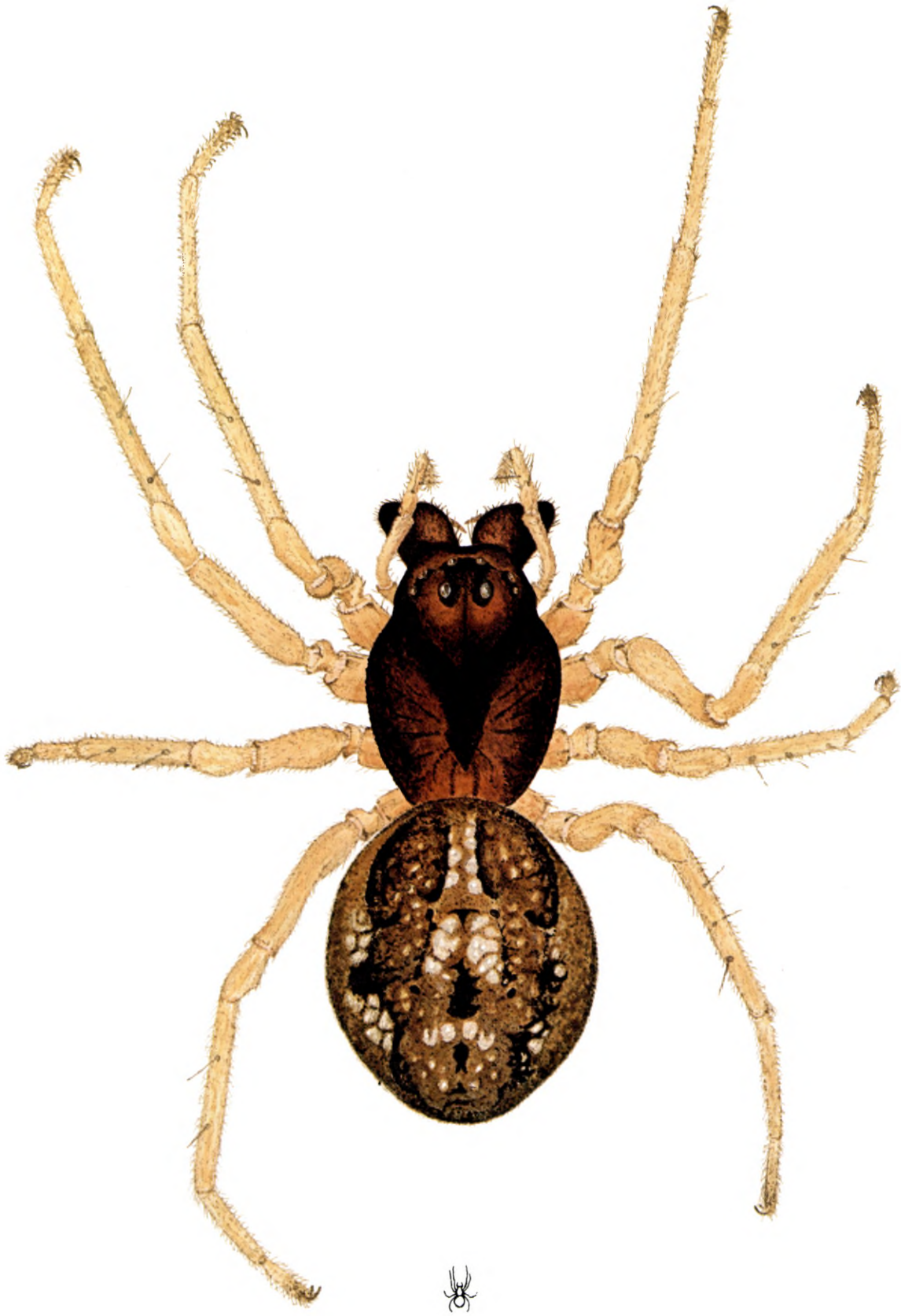


Tetragnatha extensa (Linnaeus) ♀



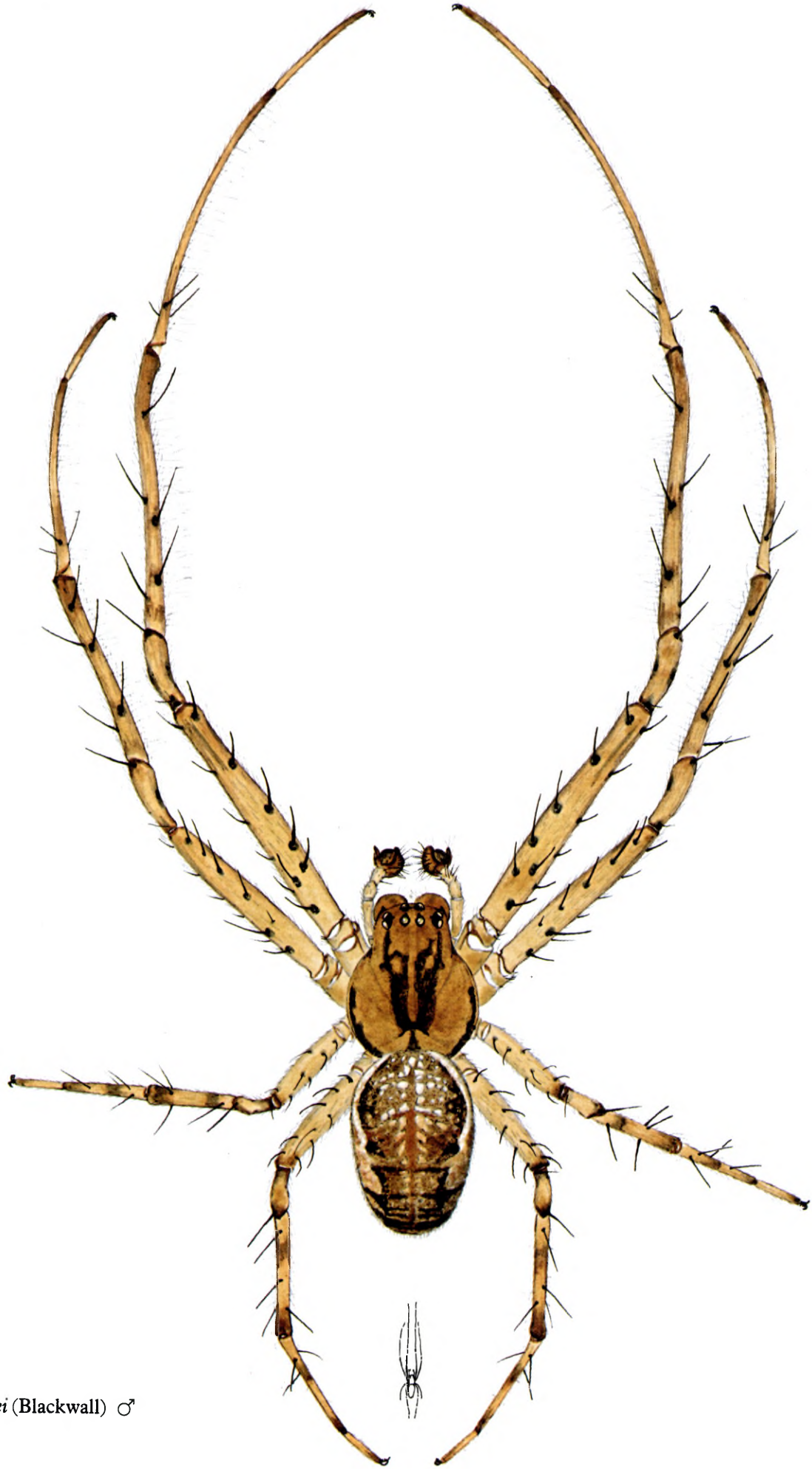
Tetragnatha montana Simon ♂

Pachygnatha clercki Sundevall ♀

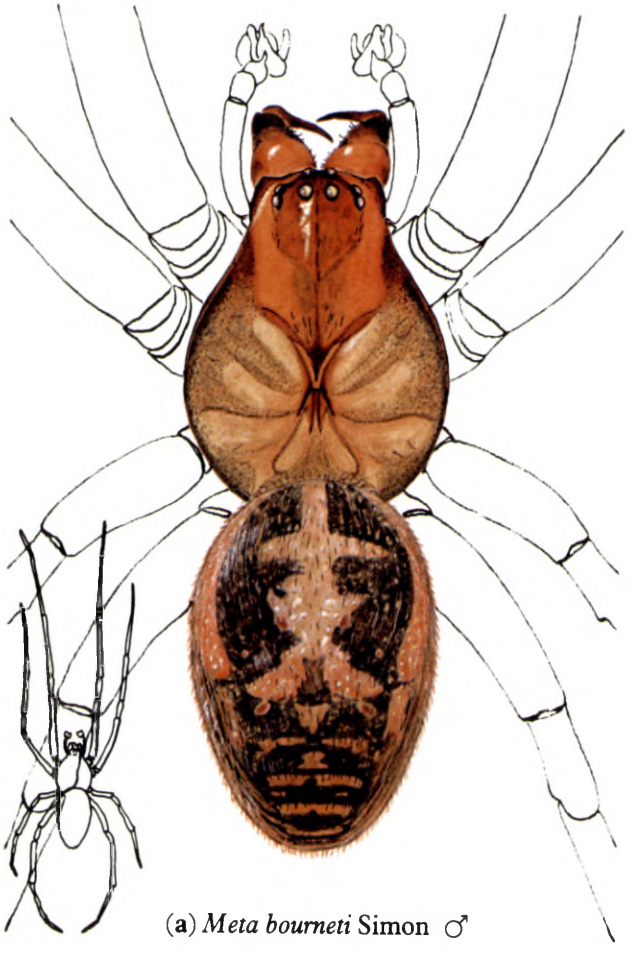


Pachygnatha degeeri Sundevall ♀

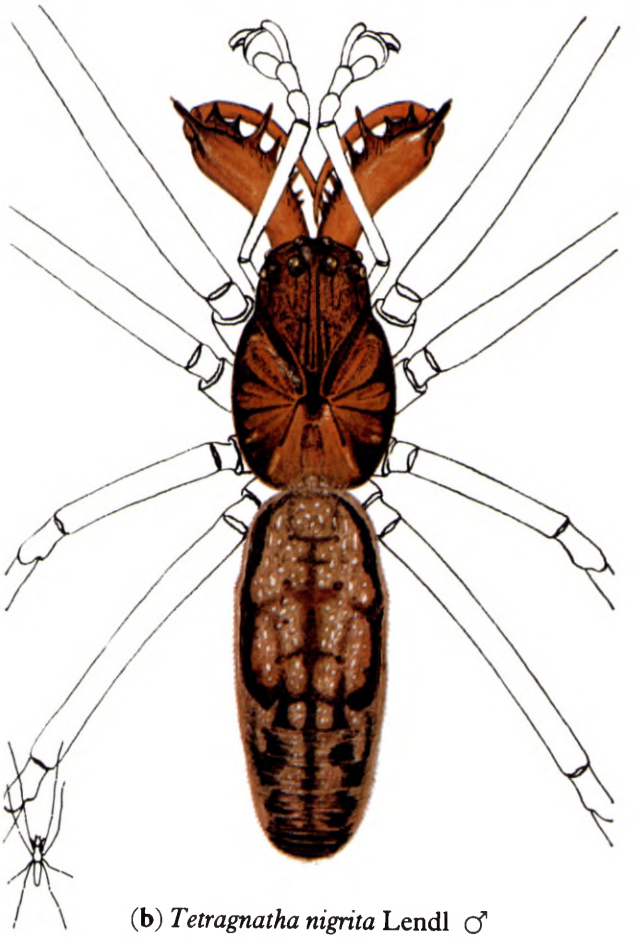
Meta mengei (Blackwall) ♀



Meta mengei (Blackwall) ♂

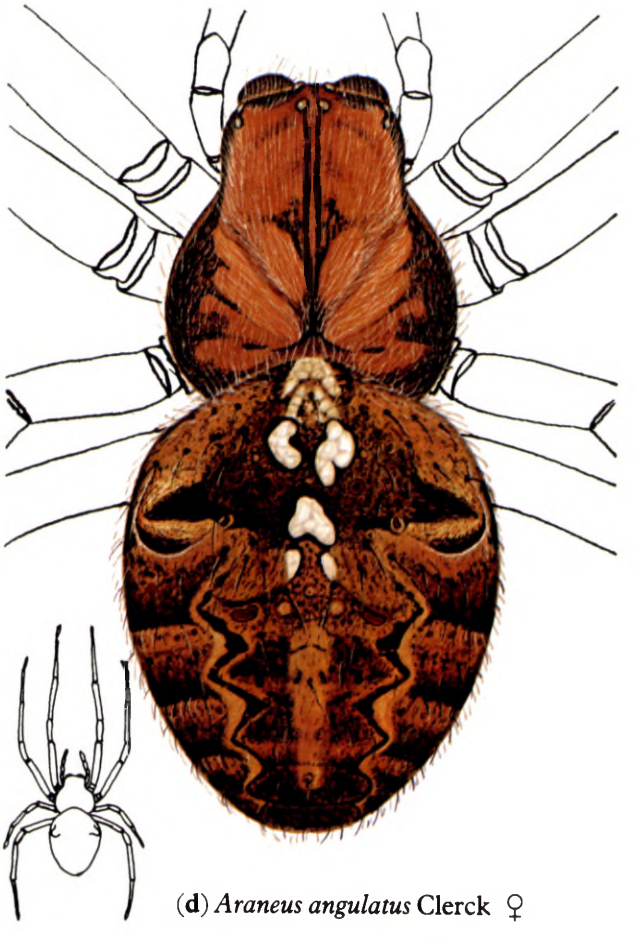


(**a**) *Meta bourneti* Simon ♂



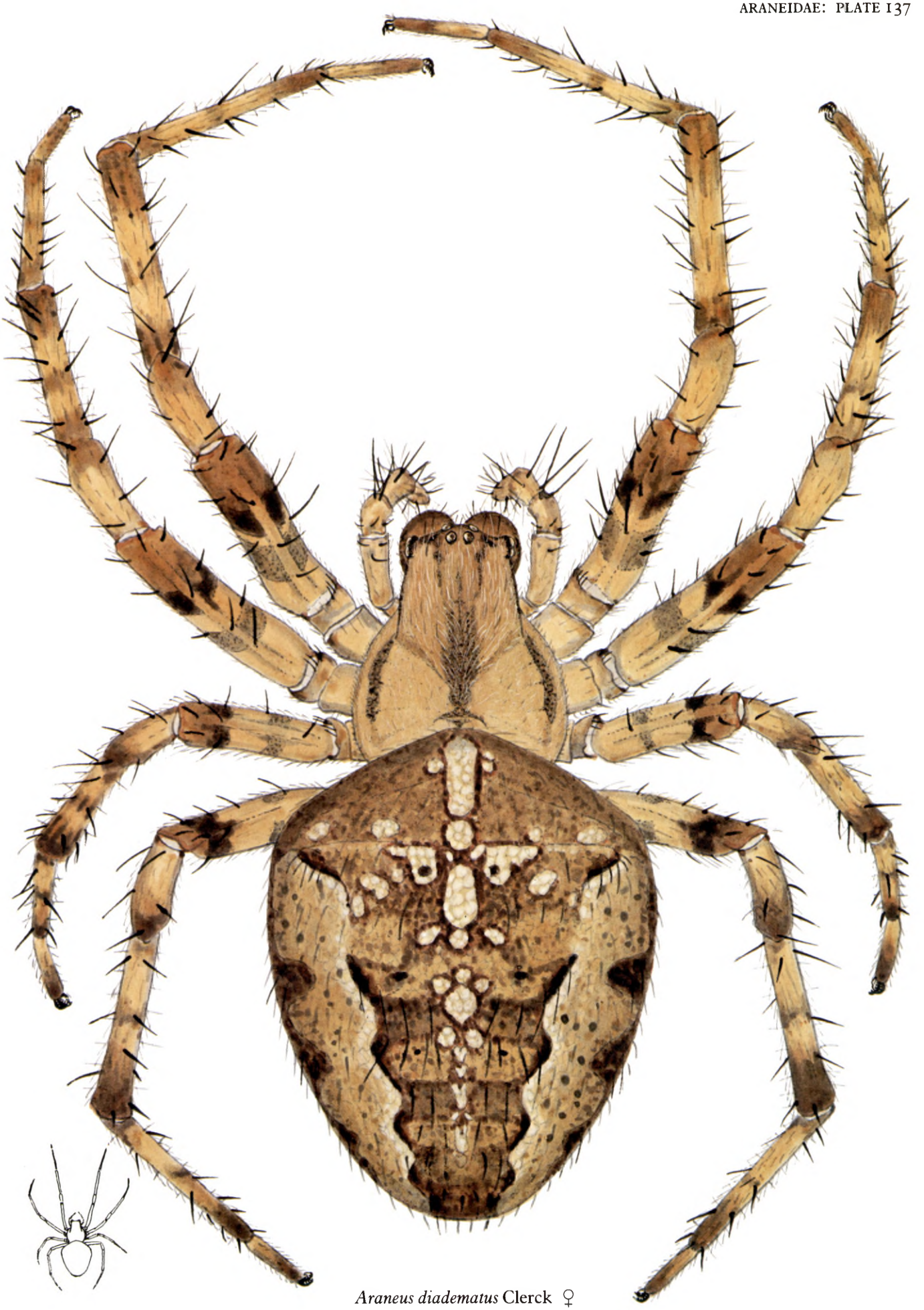
(**b**) *Tetragnatha nigrita* Lendl ♂

(**c**) *Meta merianae* (Scopoli) ♀



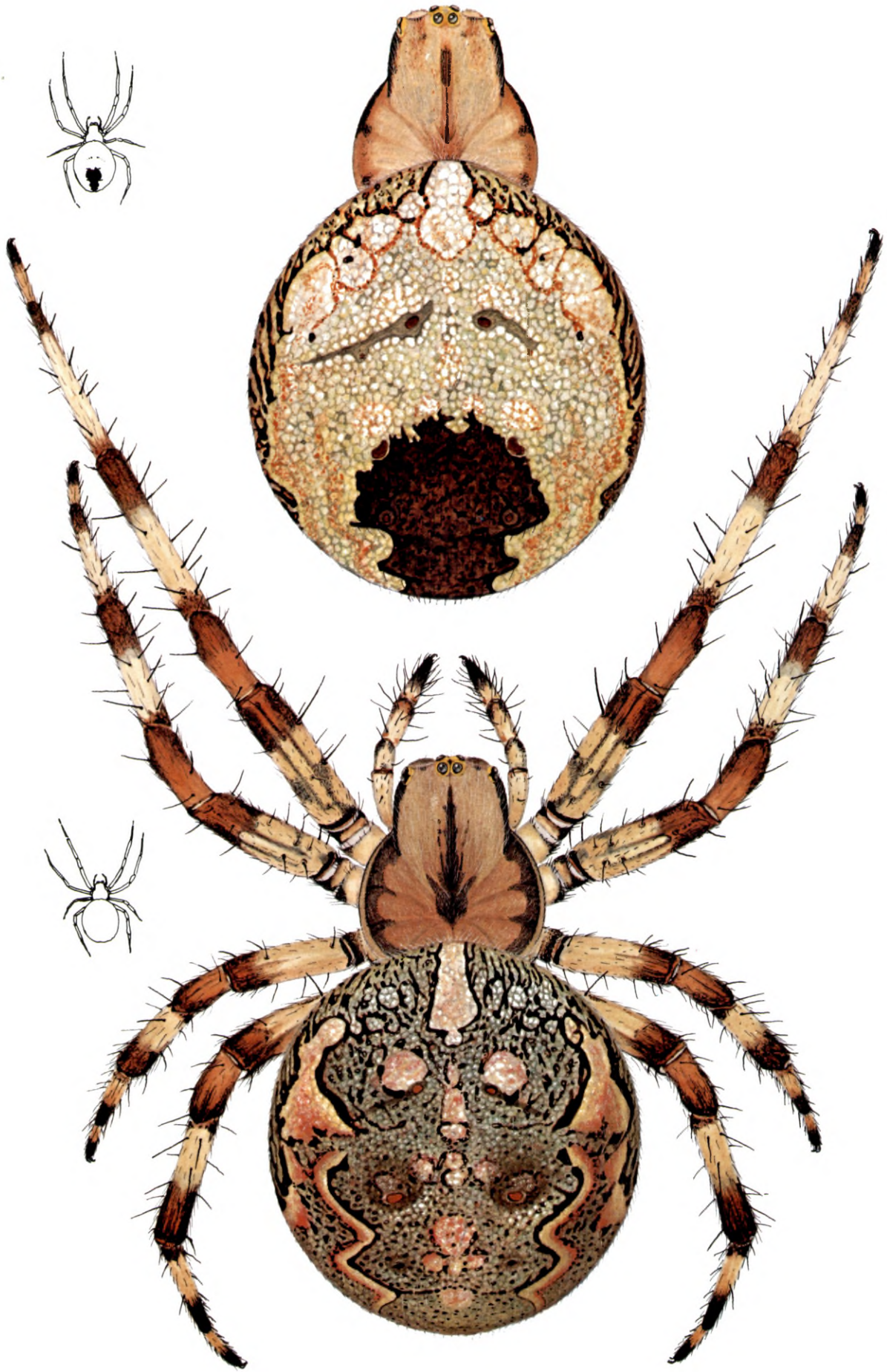
(**d**) *Araneus angulatus* Clerck ♀

Gibbaranea gibbosa (Walckenaer) ♀

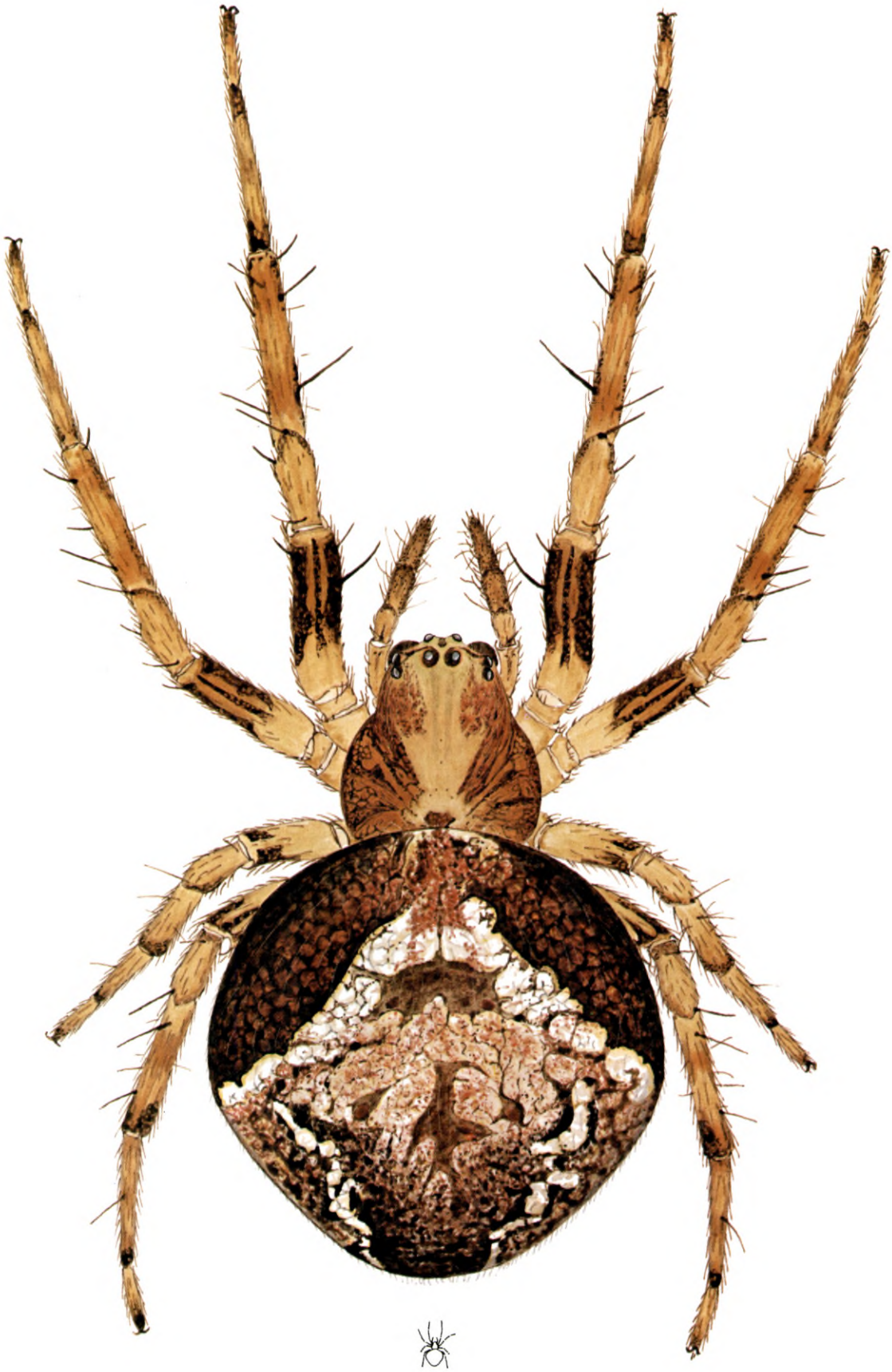


Araneus diadematus Clerck ♀

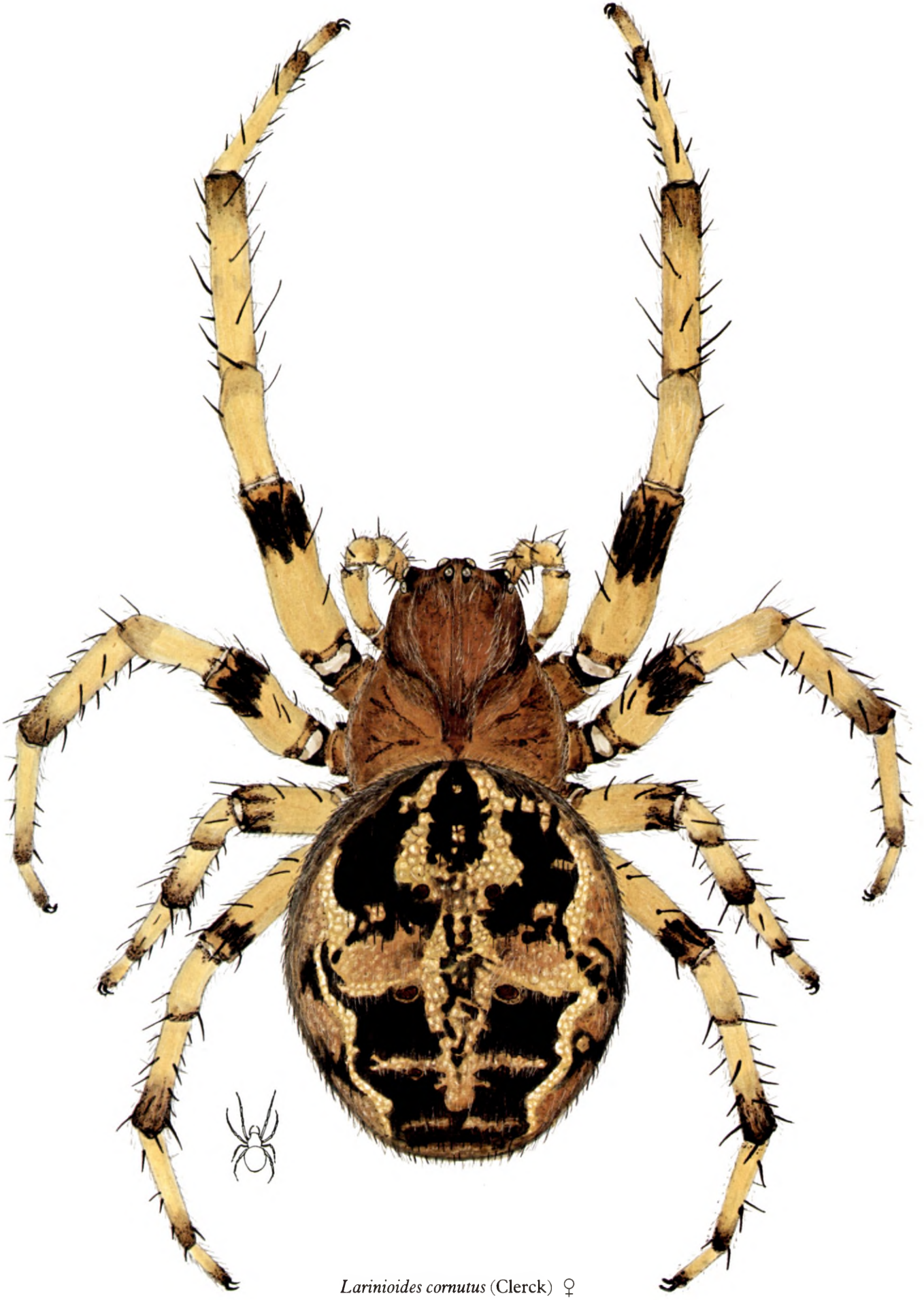
Araneus quadratus Clerck ♀



Araneus marmoreus Clerck ♀



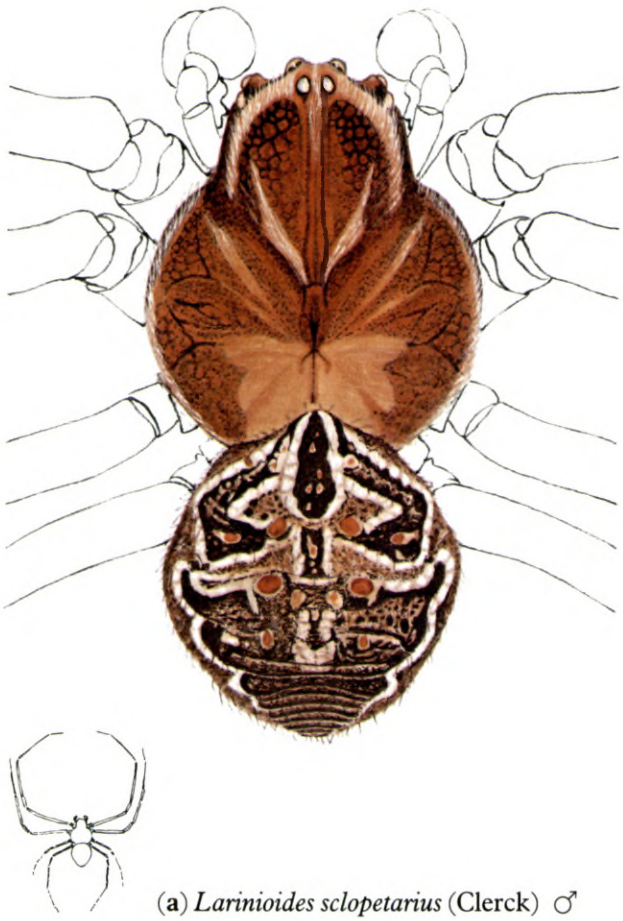
Araneus sturmi (Hahn) ♀



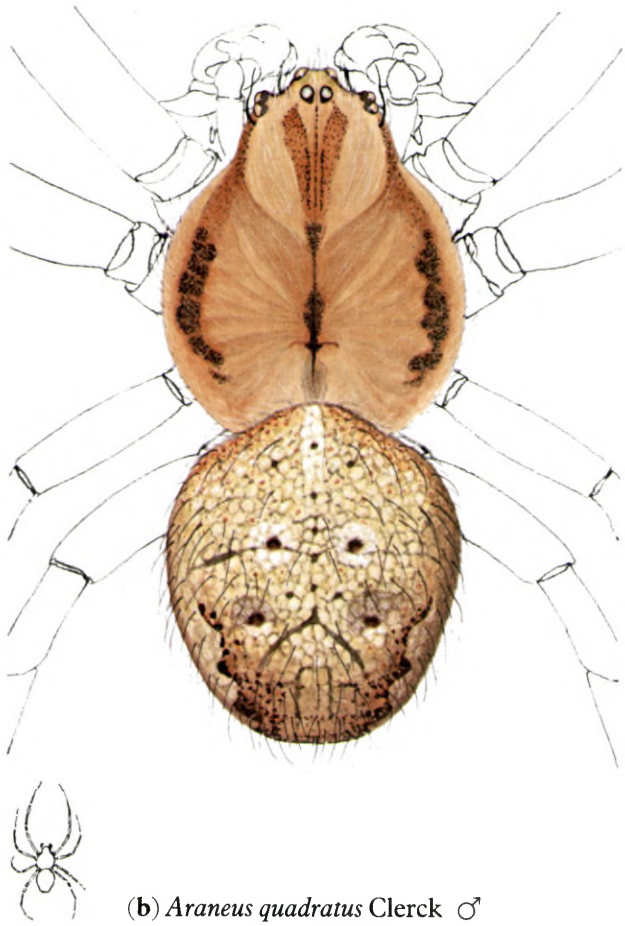
Larinioides cornutus (Clerck) ♀

Larinioides patagiatus (Clerck) ♀

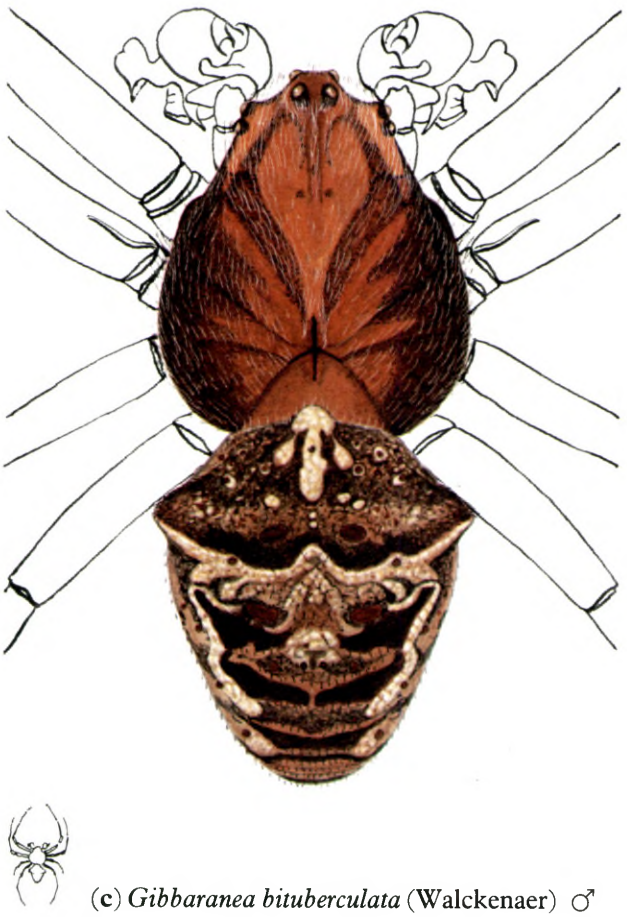
Nuctenea umbratica (Clerck) ♀



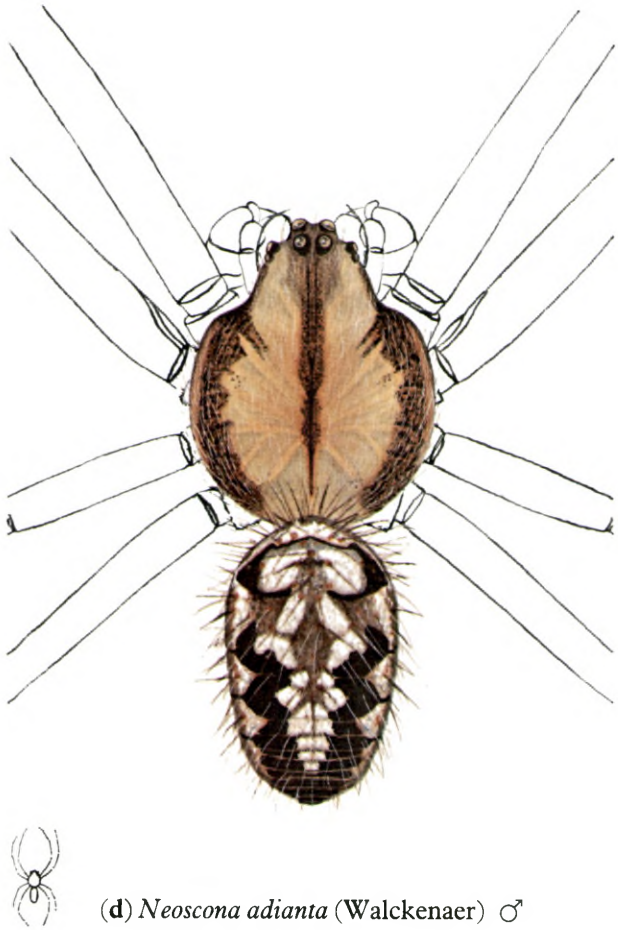
(**a**) *Larinioides sclopetarius* (Clerck) ♂



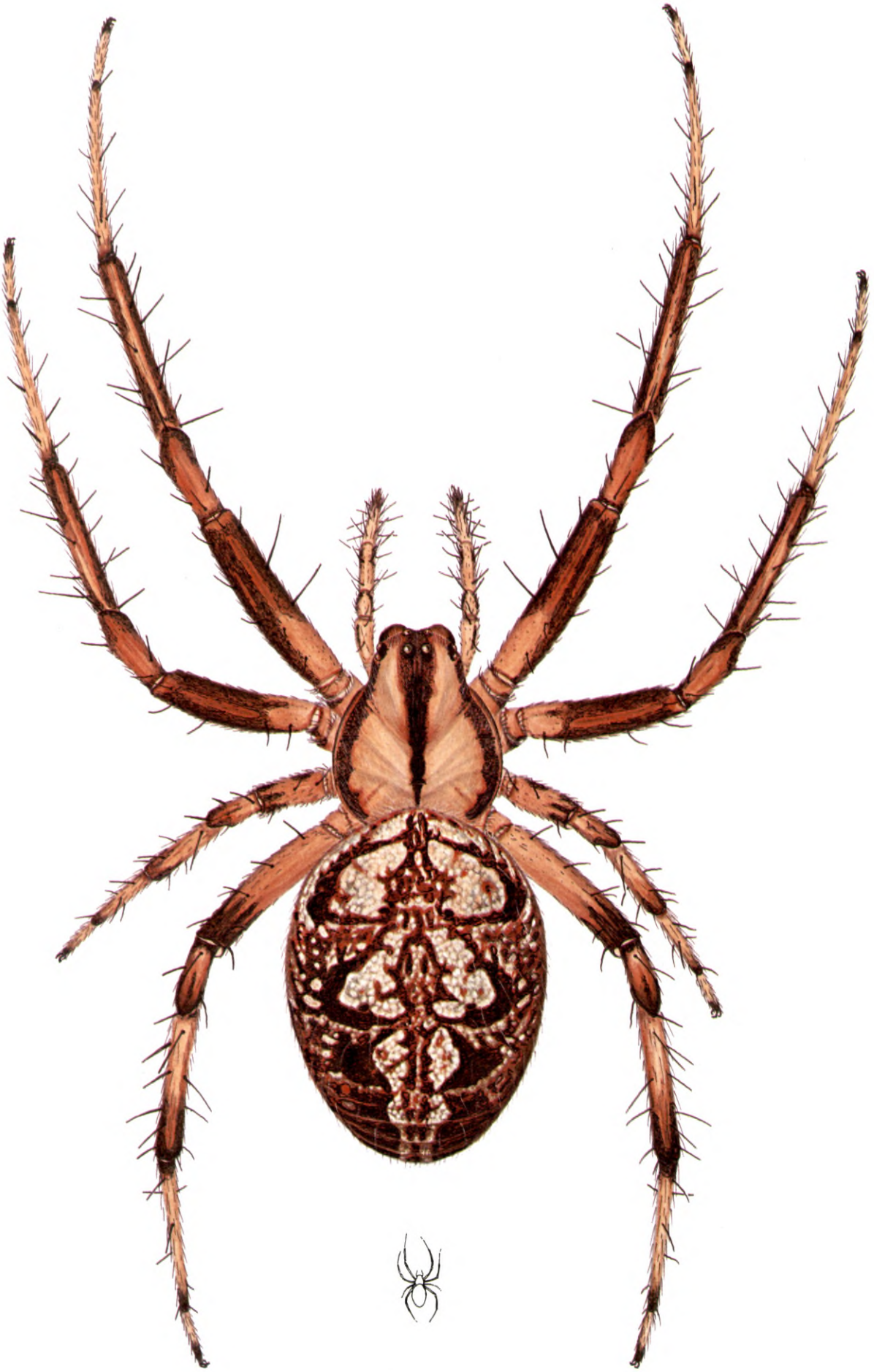
(**b**) *Araneus quadratus* Clerck ♂



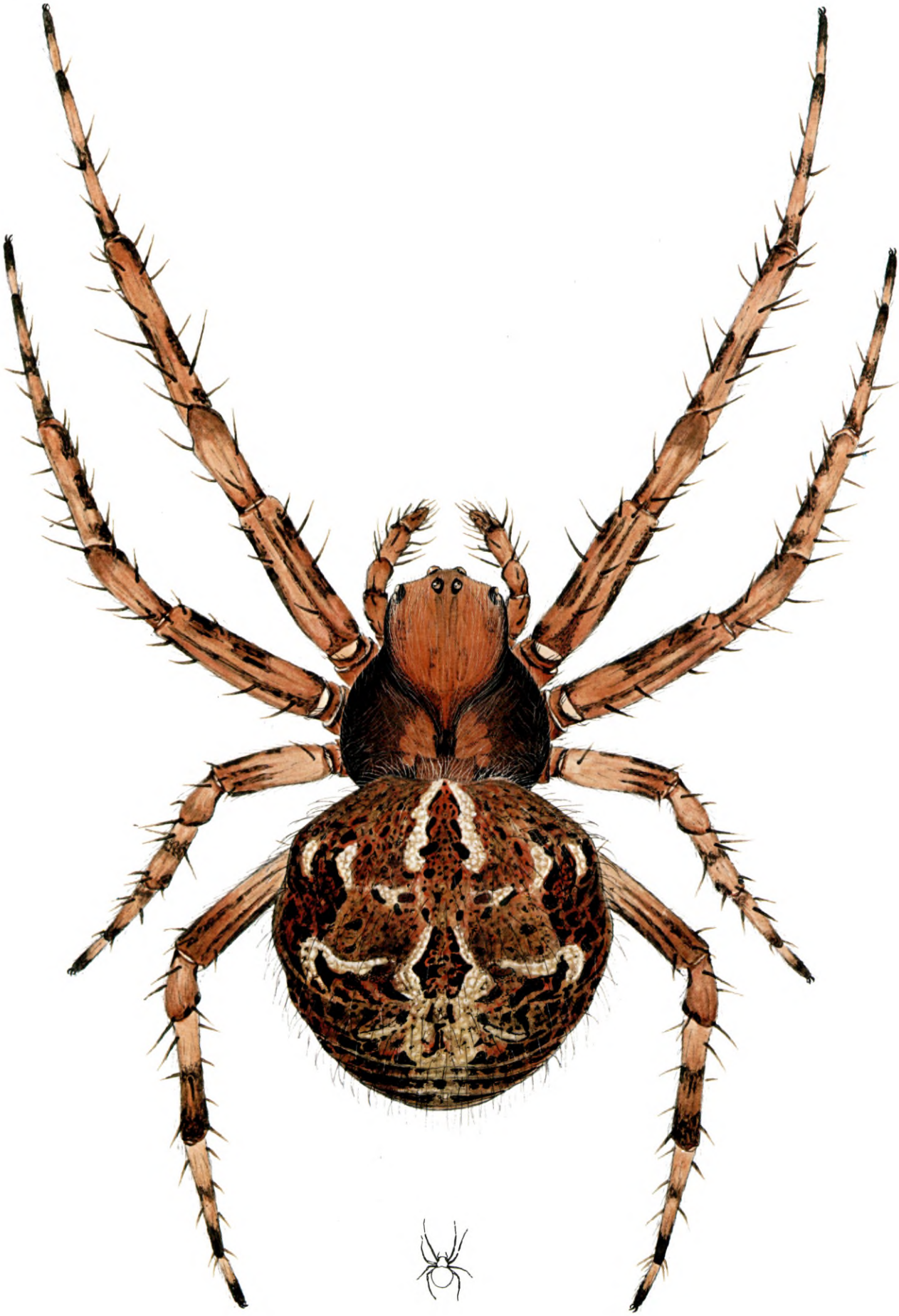
(**c**) *Gibbaranea bituberculata* (Walckenaer) ♂



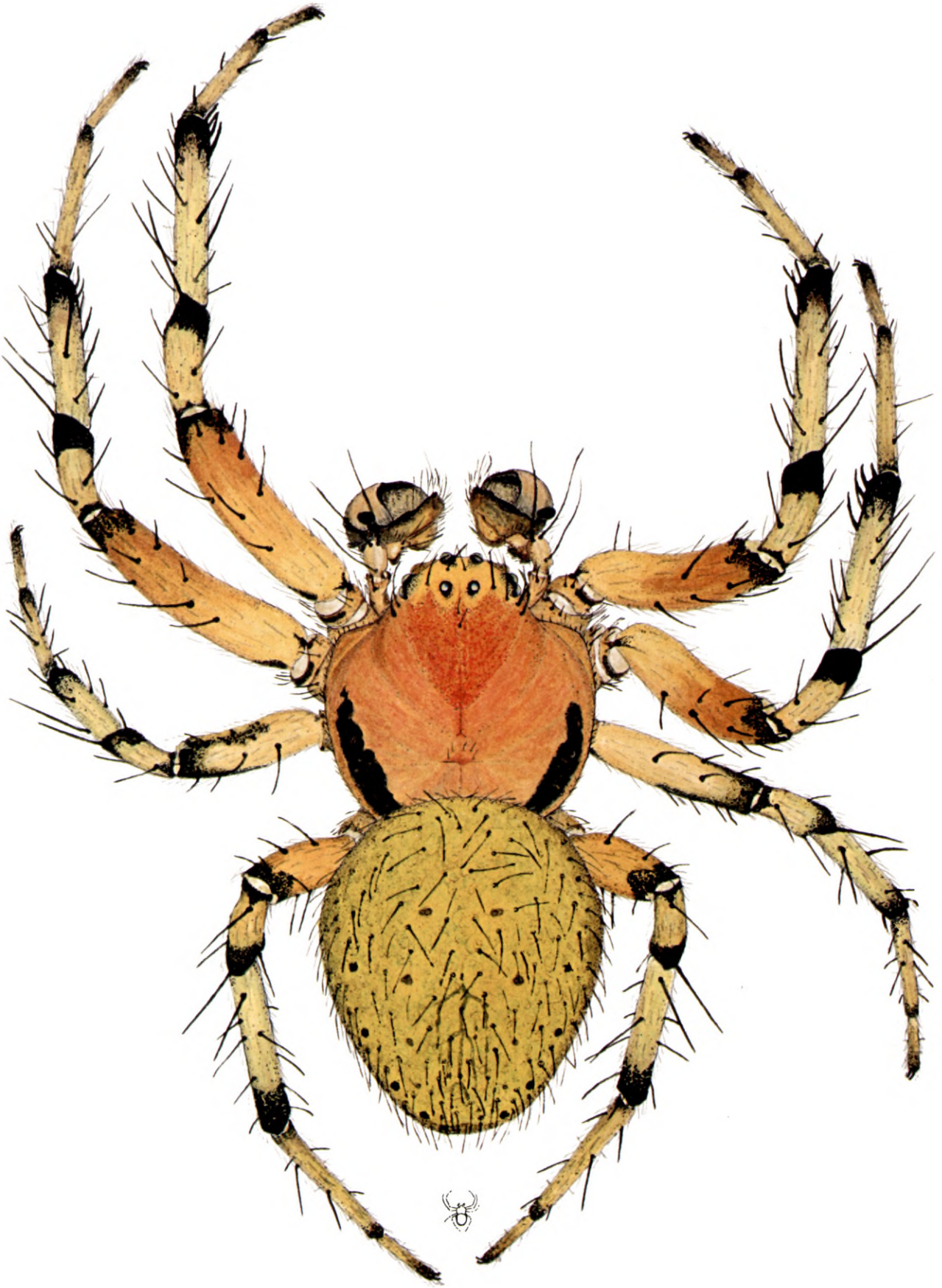
(**d**) *Neoscona adianta* (Walckenaer) ♂



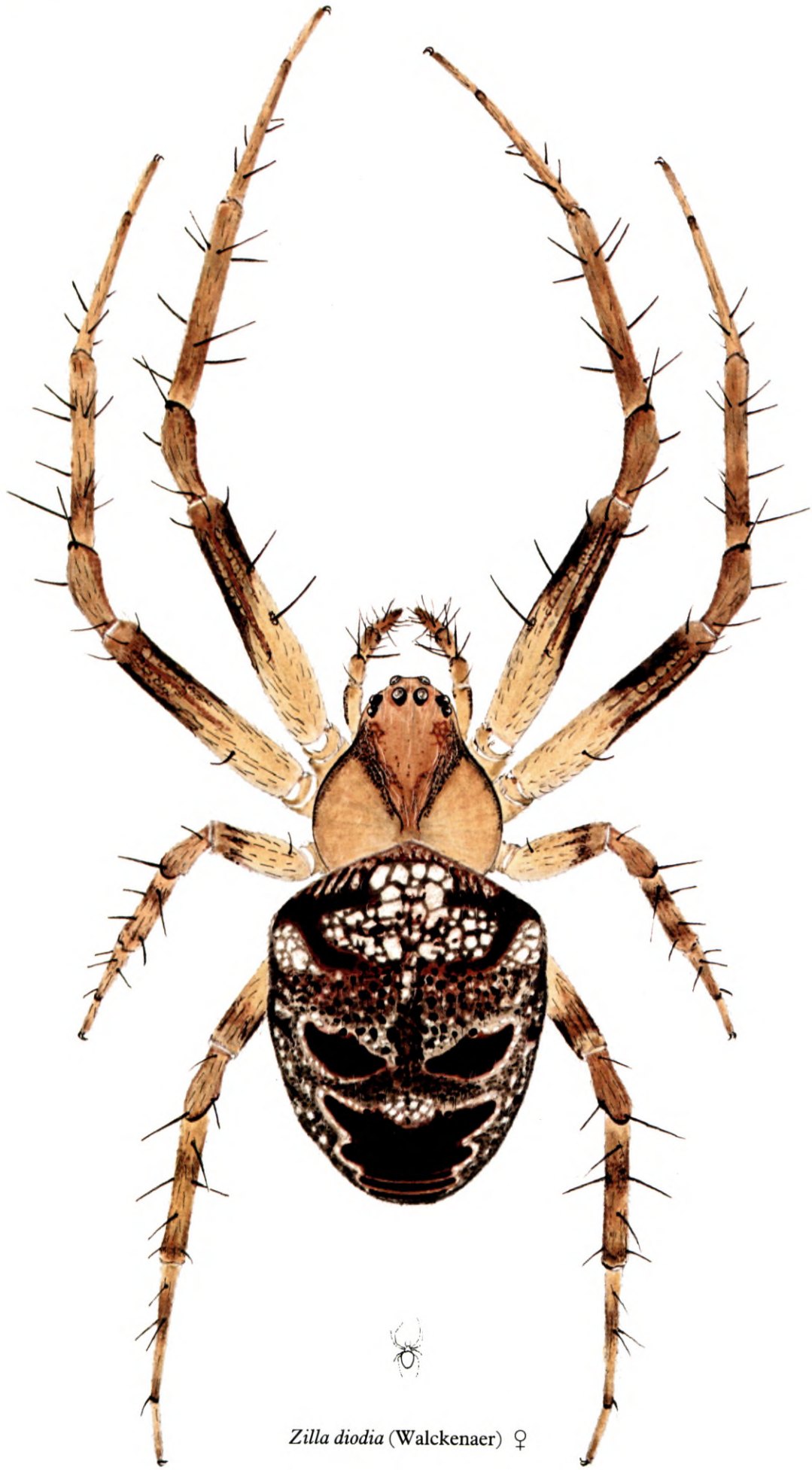
Neoscona adianta (Walckenaer) ♀



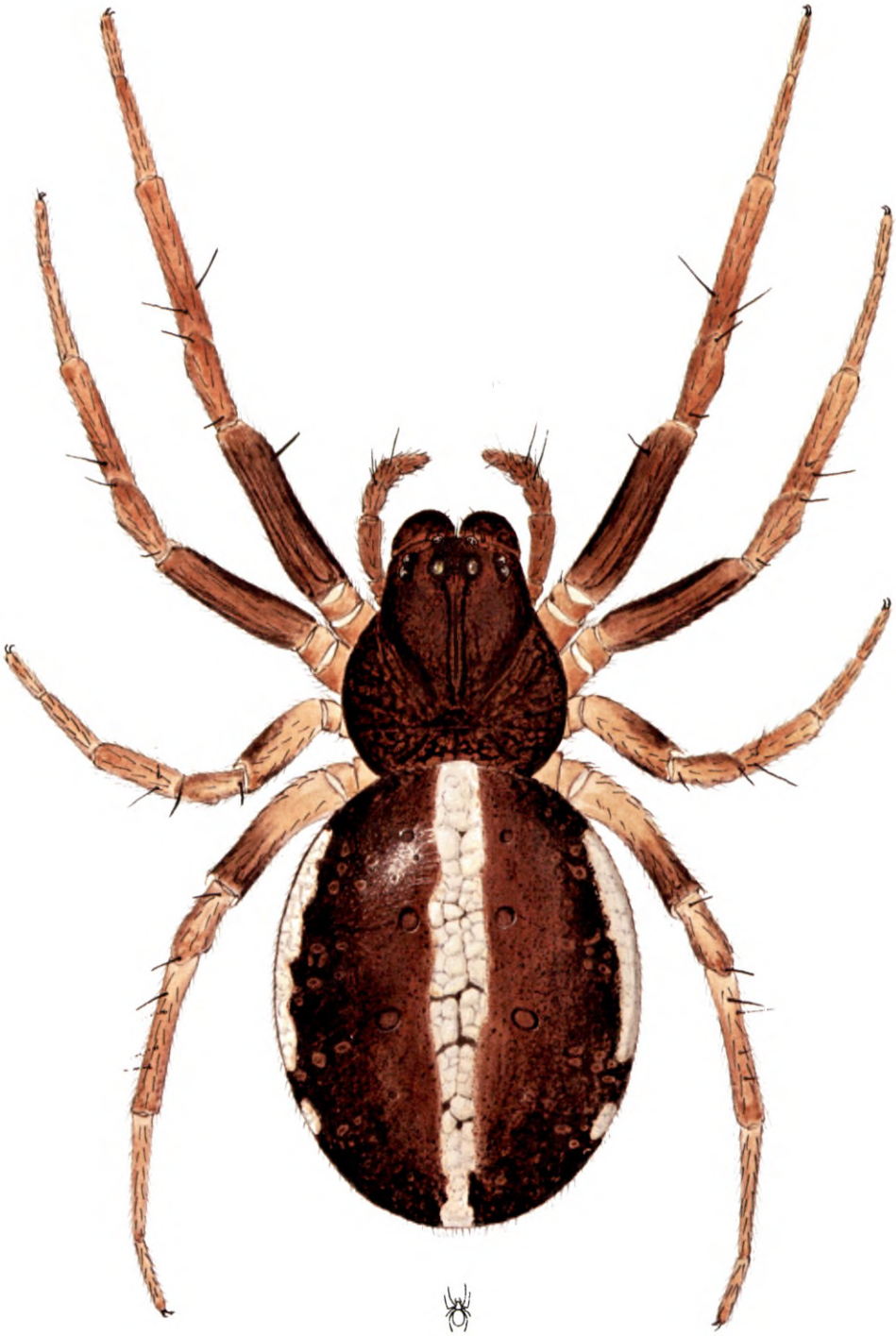
Agalenatea redii (Scopoli) ♀



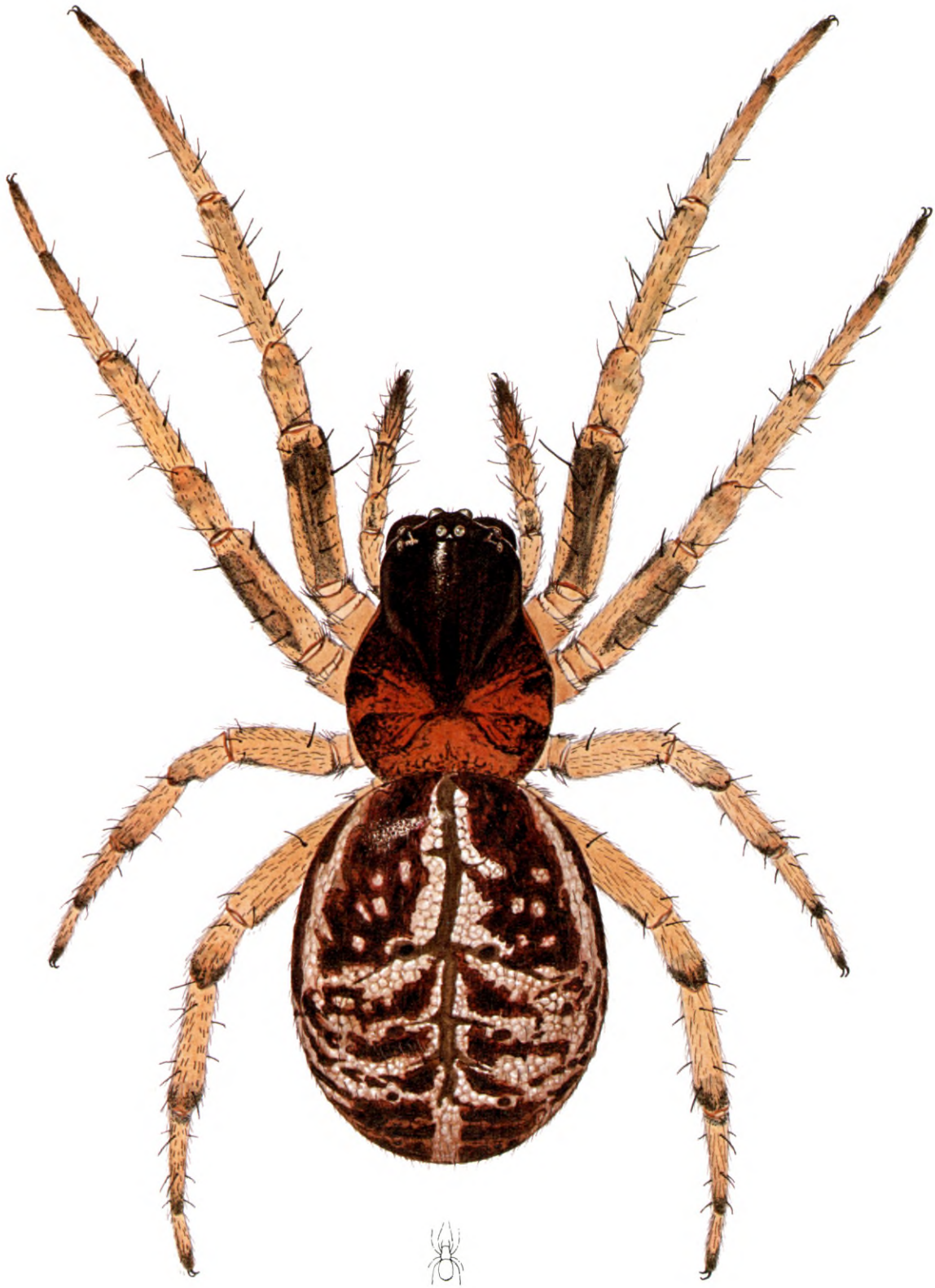
Araniella opistographa (Kulczynski) ♂



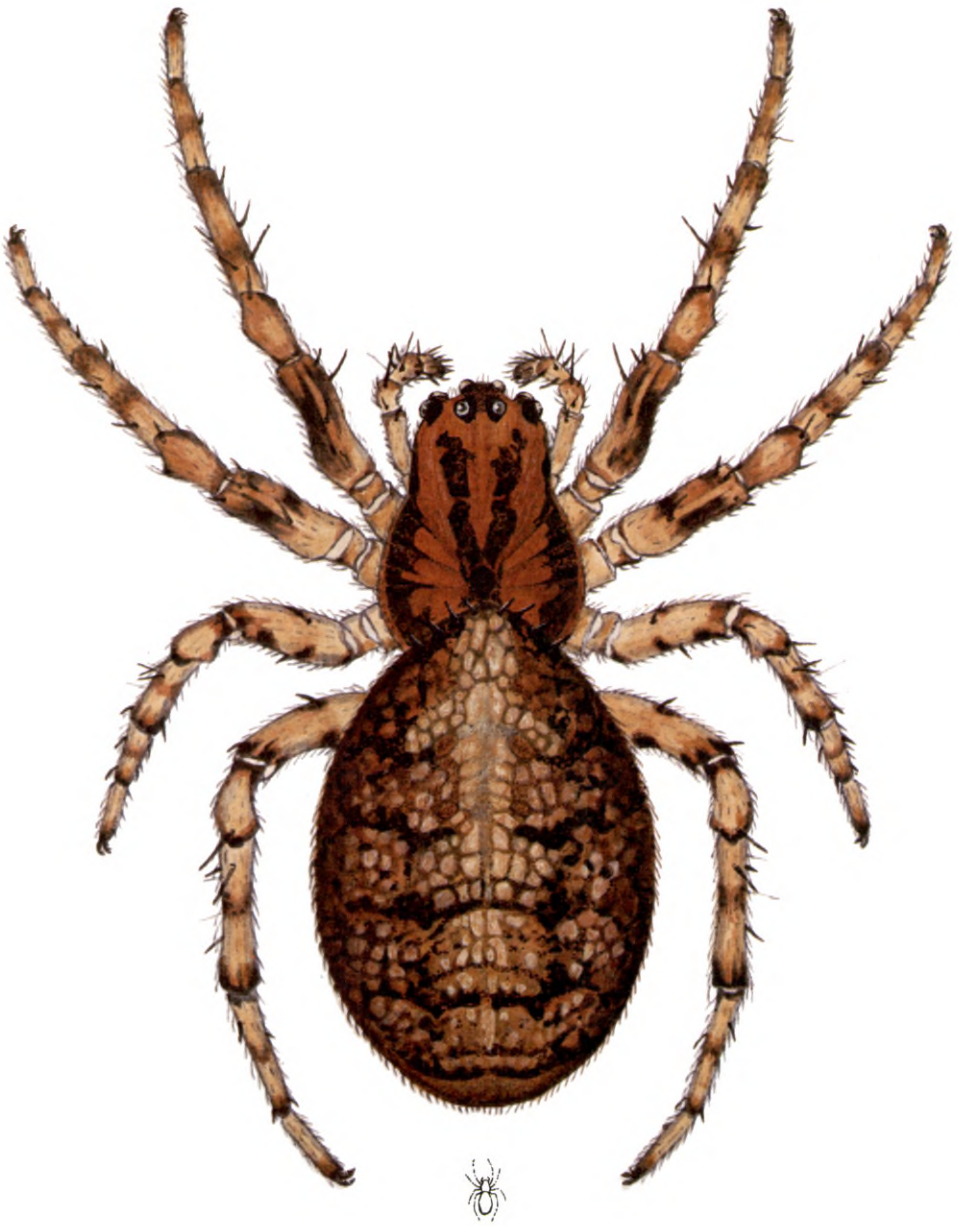
Zilla diodia (Walckenaer) ♀



Hypsosinga sanguinea (C. L. Koch) ♀

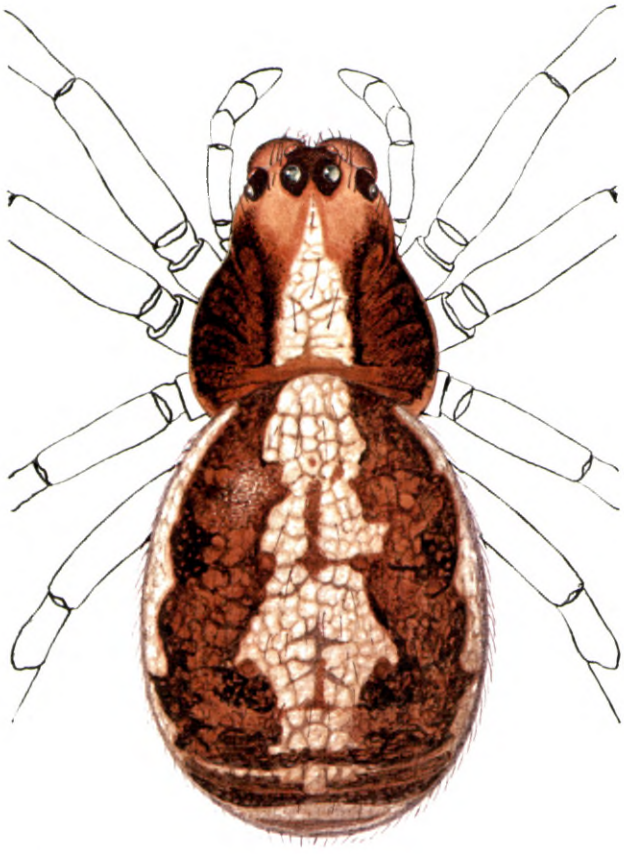


Singa hamata (Clerck) ♀

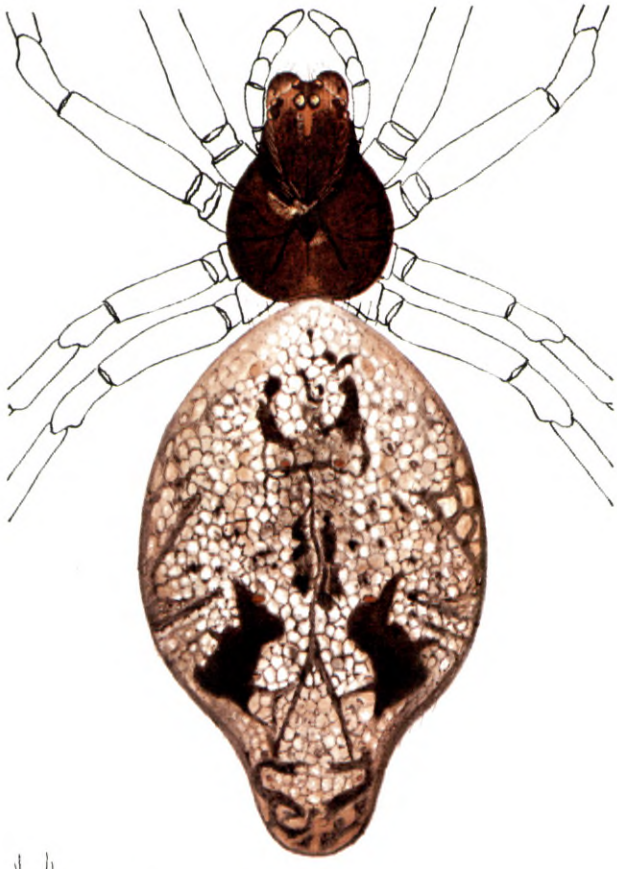


Cercidia prominens (Westring) ♀

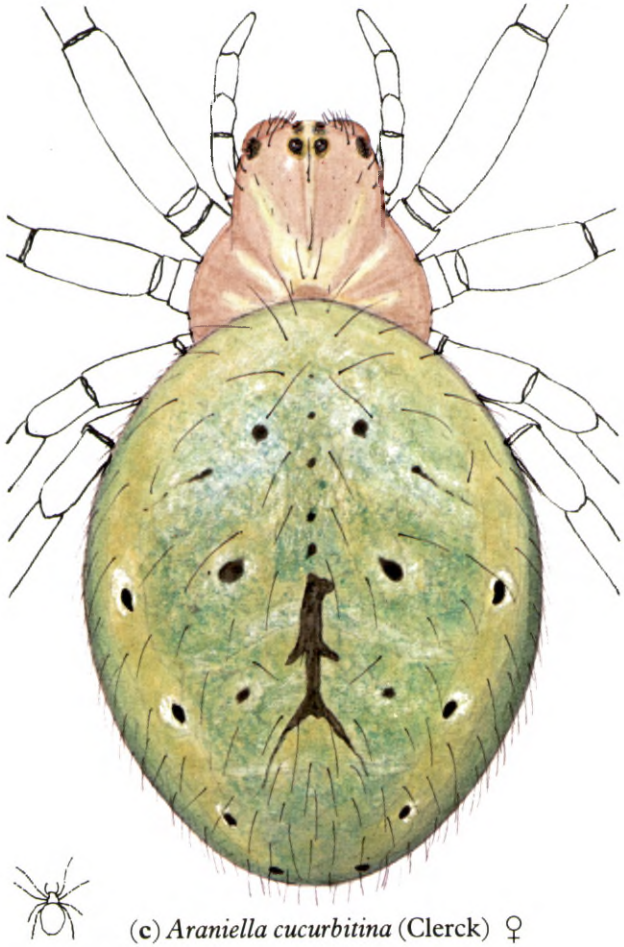
Zygiella x-notata (Clerck) ♀



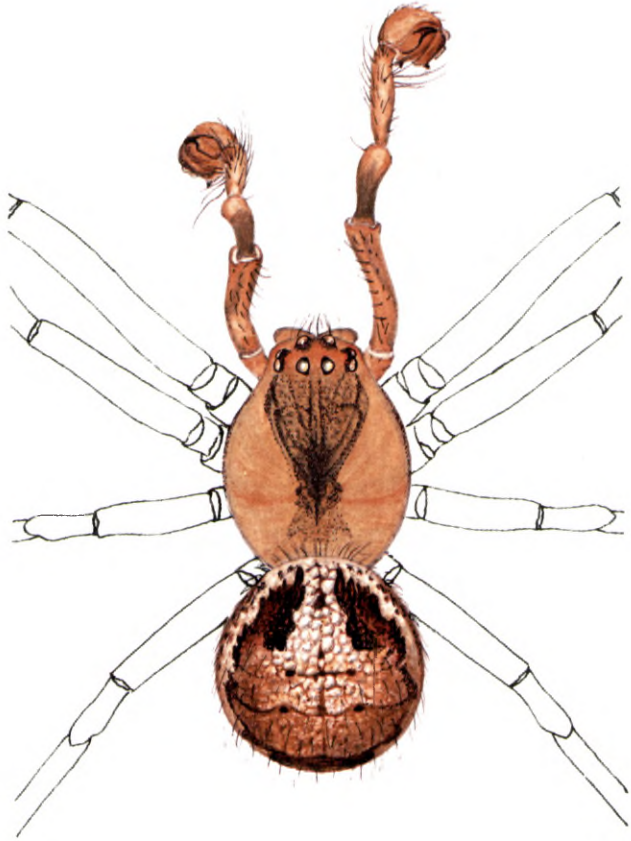
(**a**) *Hypsosinga albovittata* (Westring) ♀



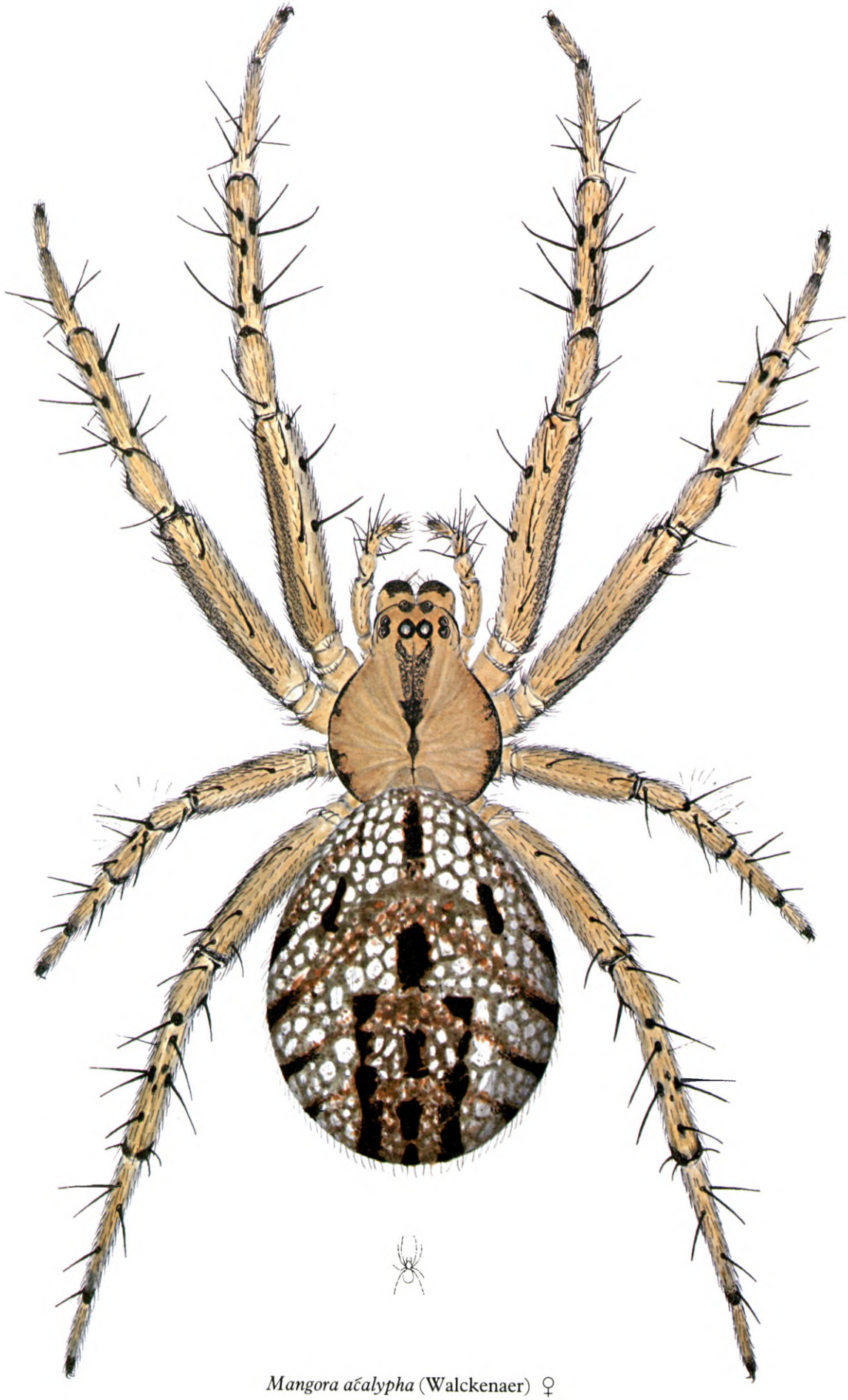
(**b**) *Cyclosa conica* (Pallas) ♀



(**c**) *Araniella cucurbitina* (Clerck) ♀

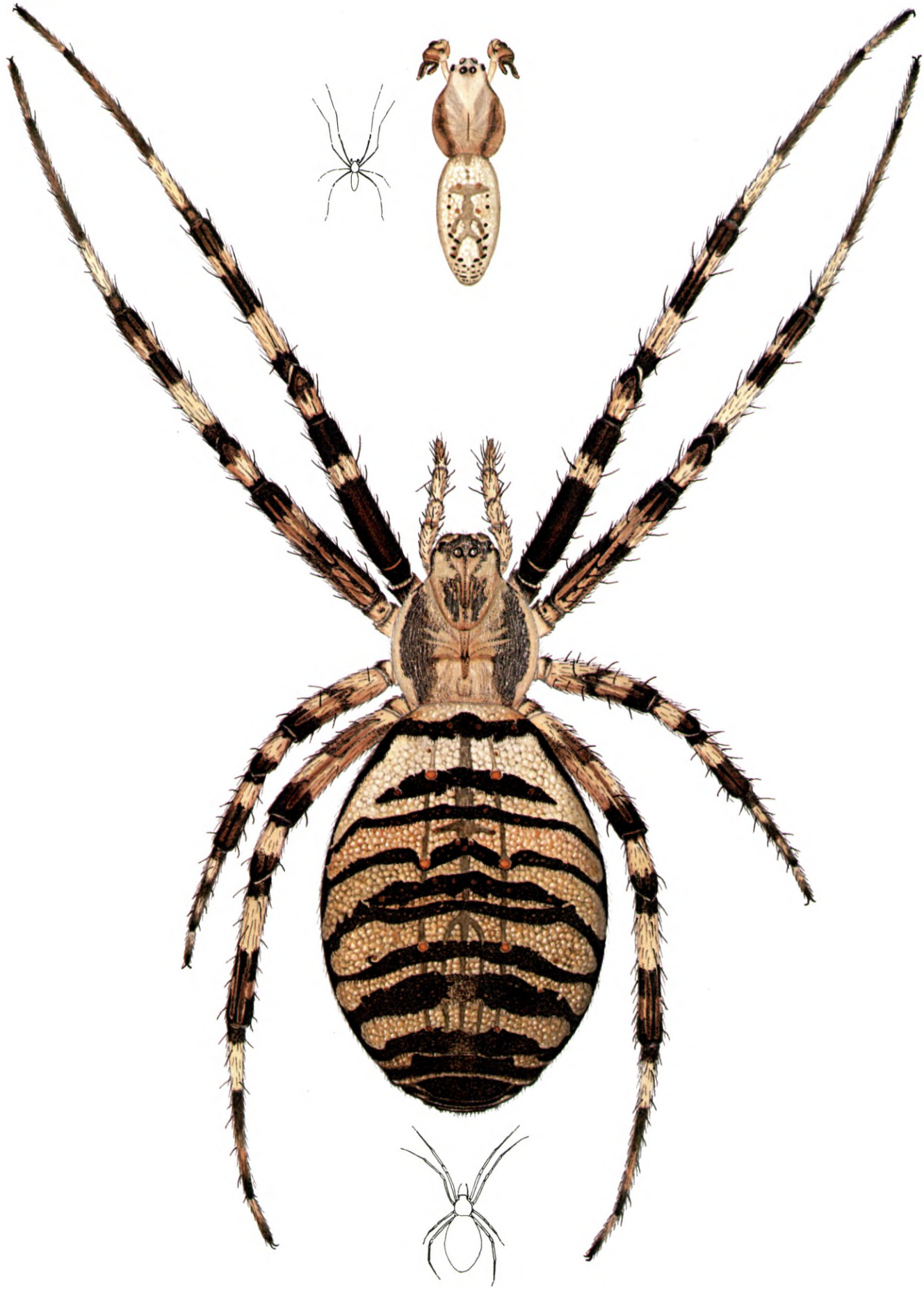


(**d**) *Zygiella atrica* (C. L. Koch) ♂



Mangora acalypha (Walckenaer) ♀

Cyclosa conica (Pallas) ♂



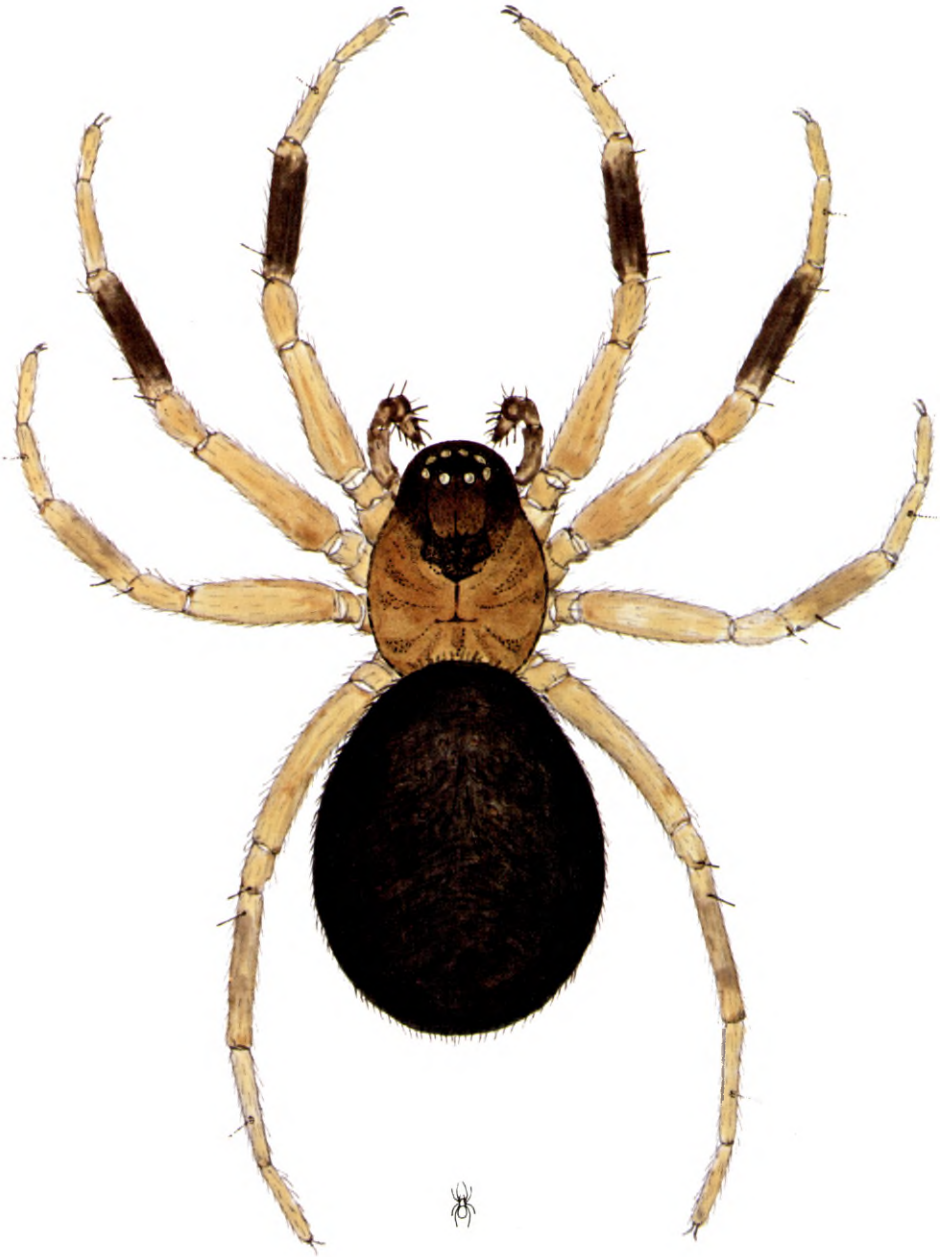
Argiope bruennichi (Scopoli) ♀ (gravid) and ♂ (above)

Theridiosoma gemmosum (L. Koch) ♀

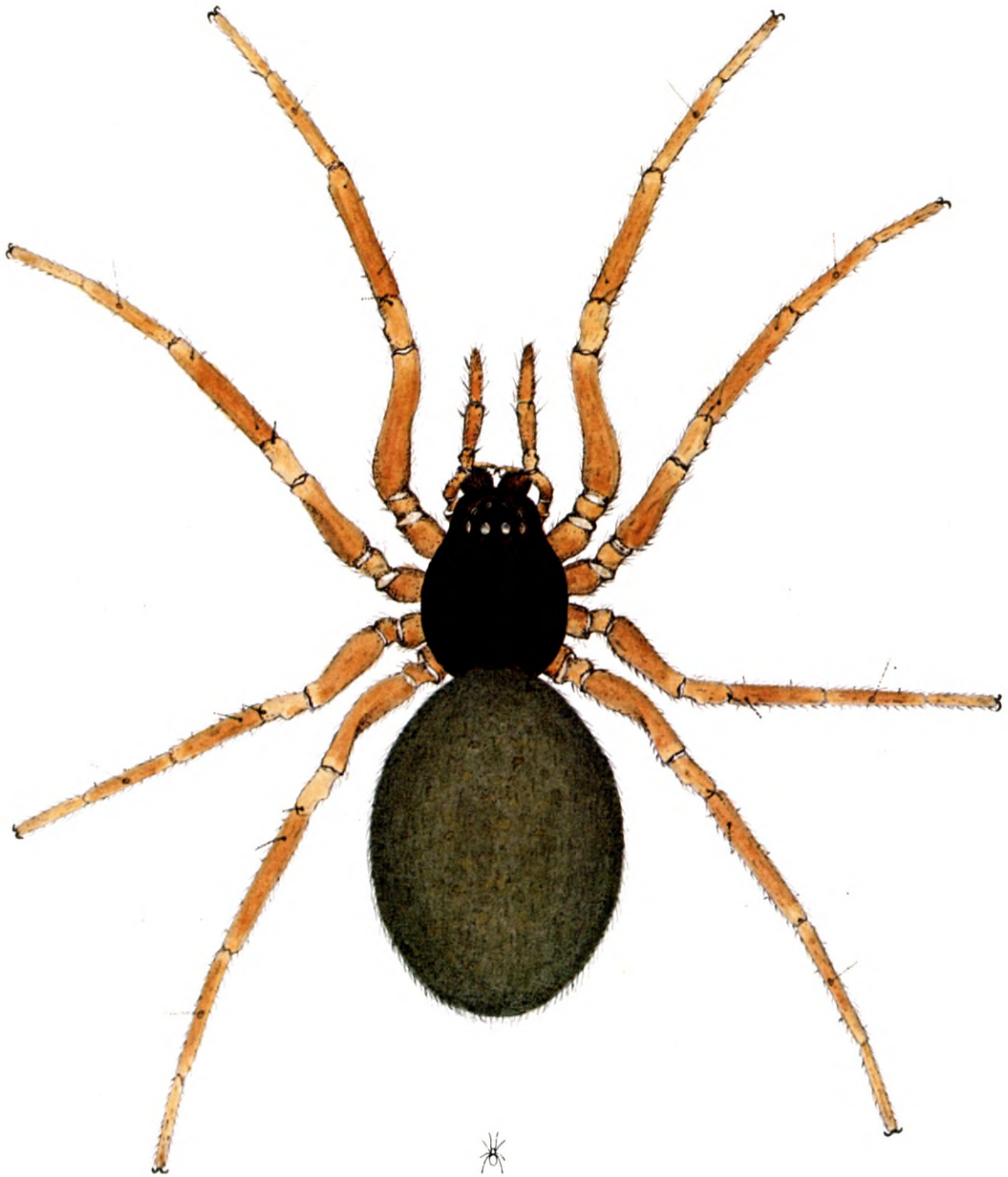
Ceratinella brevipes (Westring) ♀

Ceratinella scabrosa (O. P.-Cambridge) ♀

Walckenaeria acuminata Blackwall ♀ and (above) carapaces from side

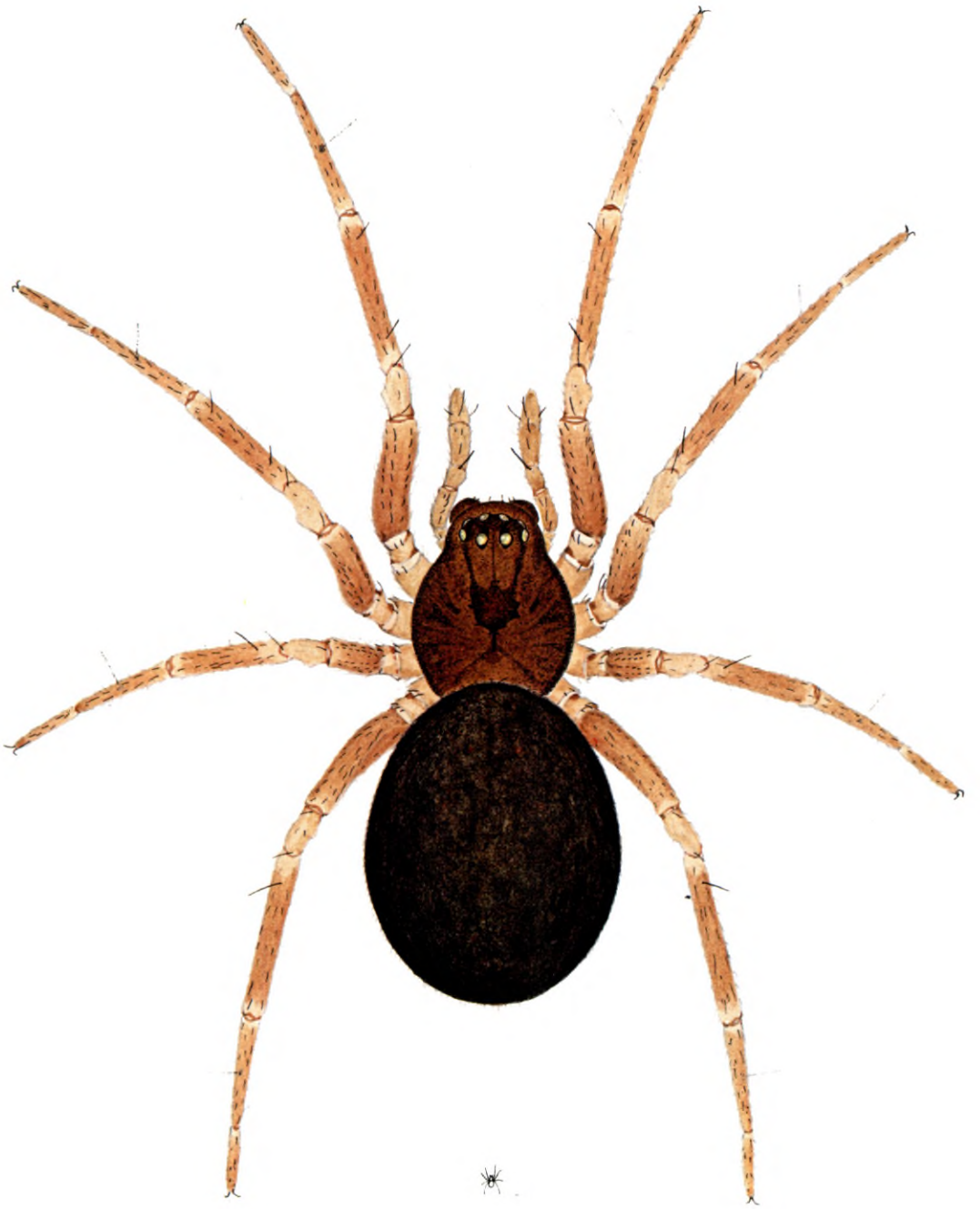


Walckenaeria atrotibialis (O. P.-Cambridge) ♀



Walckenaeria cuspidata Blackwall ♀

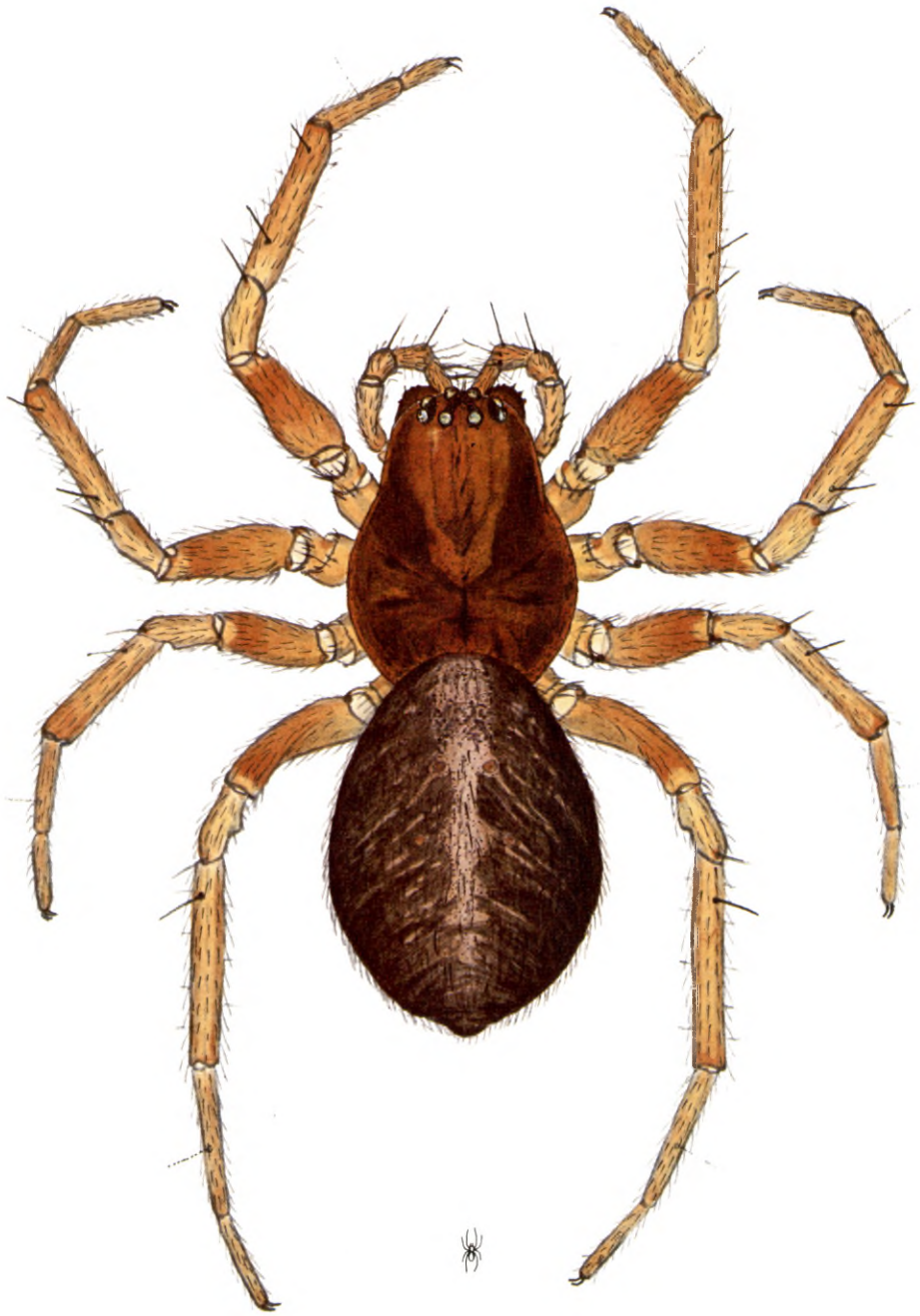
Dicymbium nigrum (Blackwall) ♀



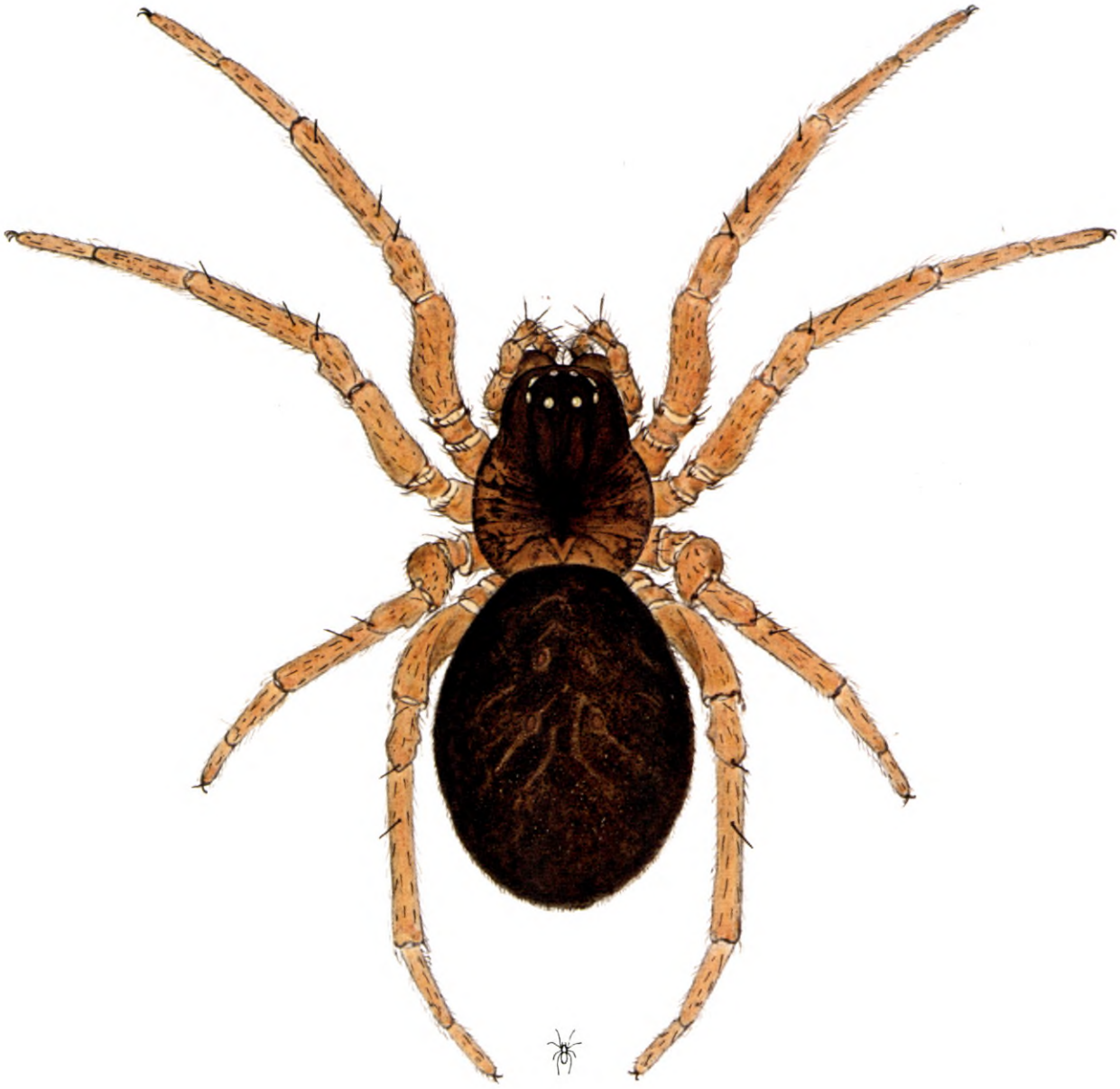
Entelecara erythropus (Westring) ♀

Moebelia penicillata (Westring) ♀

Hylyphantes graminicola (Sundevall) ♂



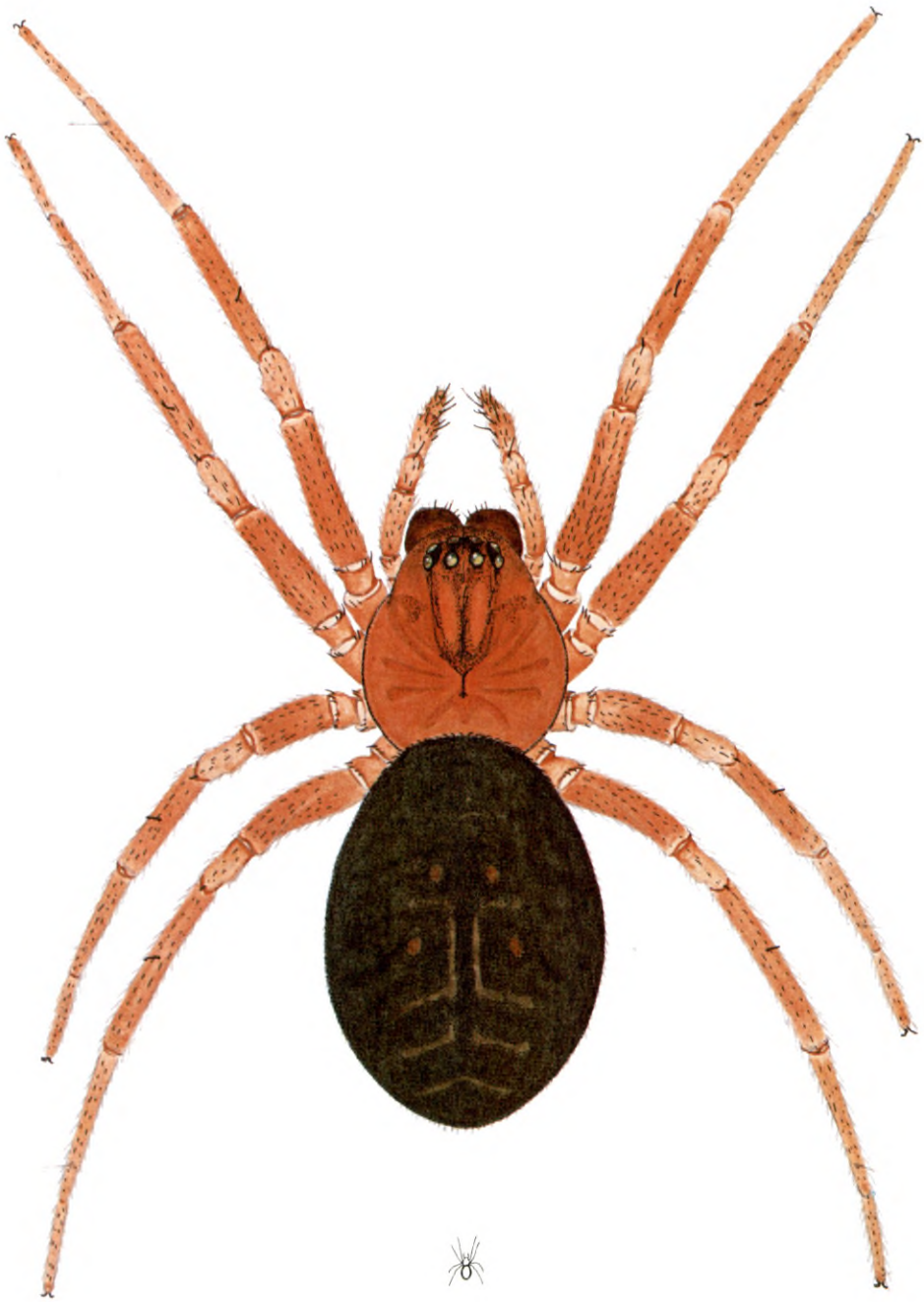
Gnathonarium dentatum (Wider) ♀



Tmeticus affinis (Blackwall) ♀

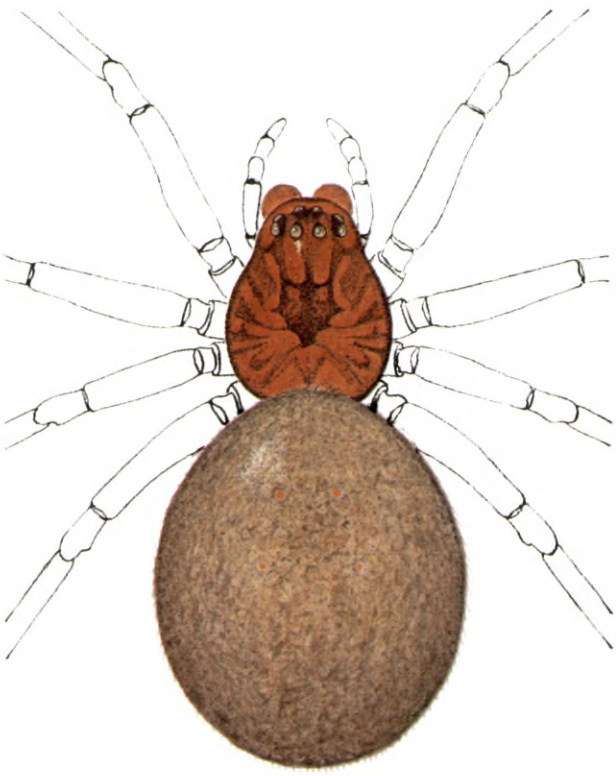
Gongylidium rufipes (Sundevall) ♀

Dismodicus bifrons (Blackwall) ♀

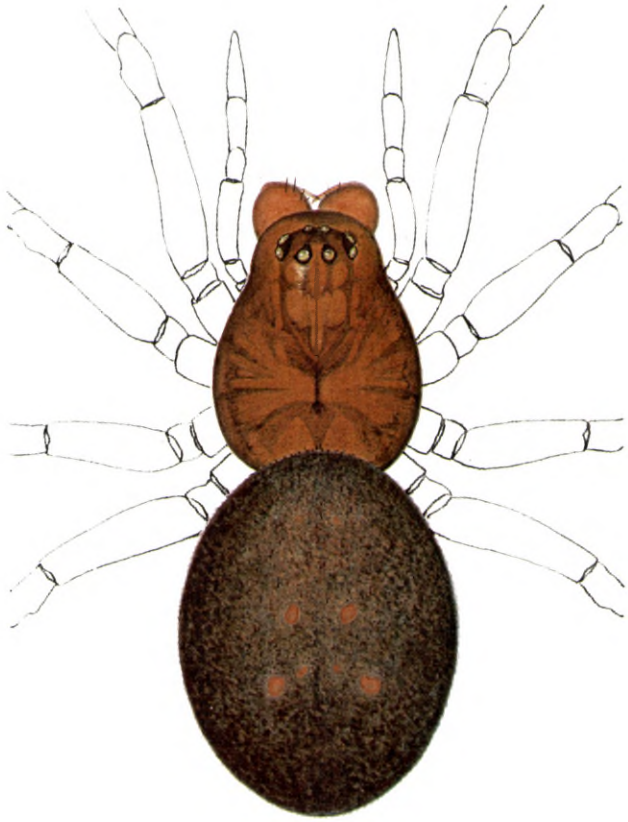


Hypomma bituberculatum (Wider) ♀

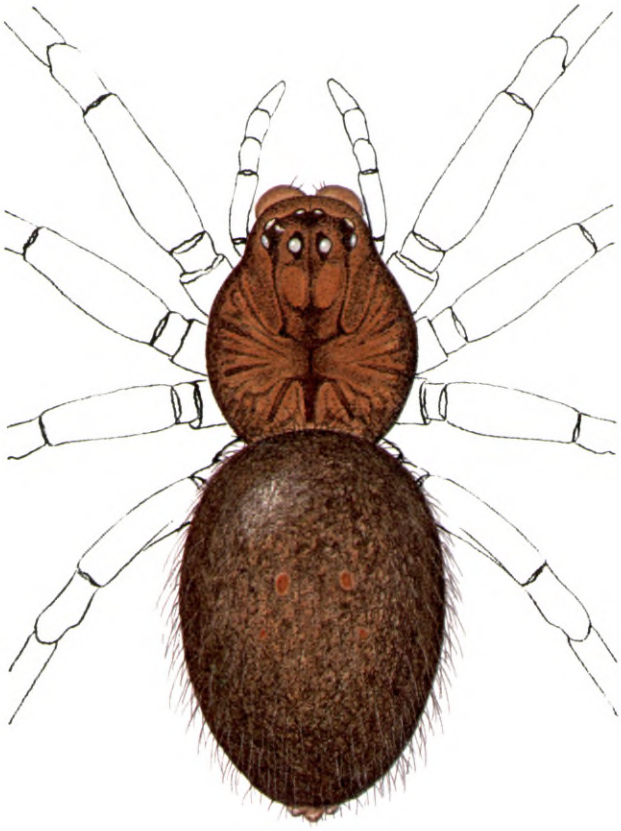
Metopobactrus prominulus (O. P.-Cambridge) ♀



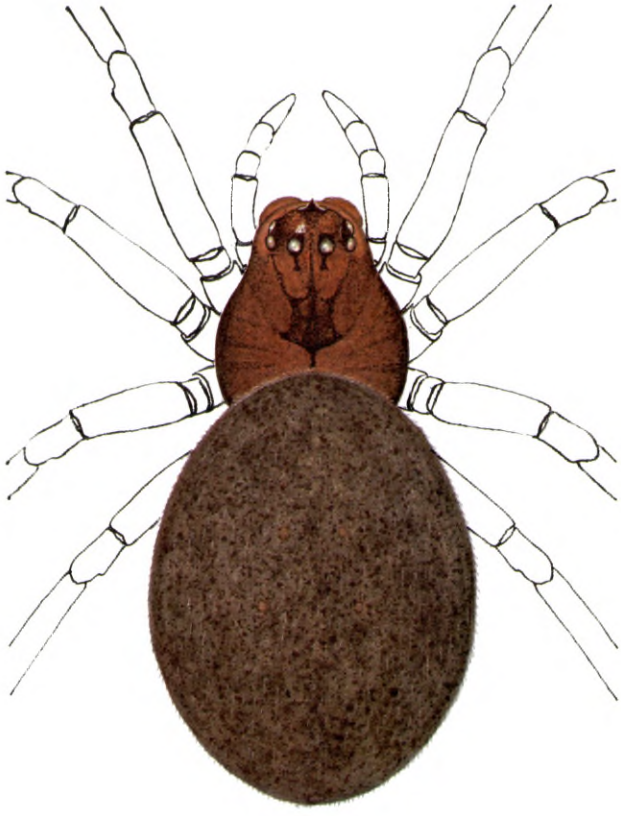
(**a**) *Hybocoptus decollatus* (Simon) ♀



(**b**) *Baryphyma pratense* (Blackwall) ♀

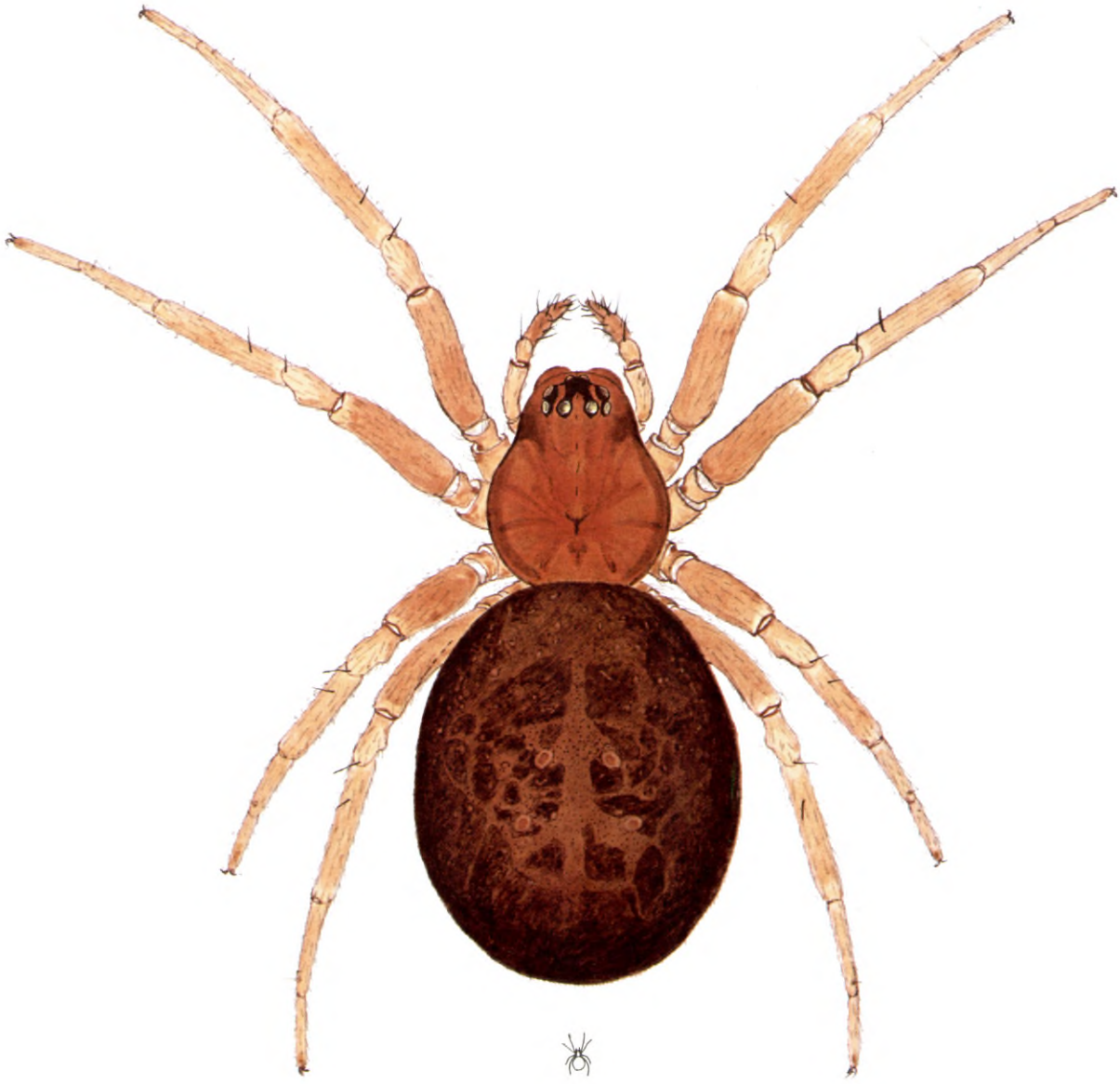


(**c**) *Baryphyma gowerense* (Locket) ♀

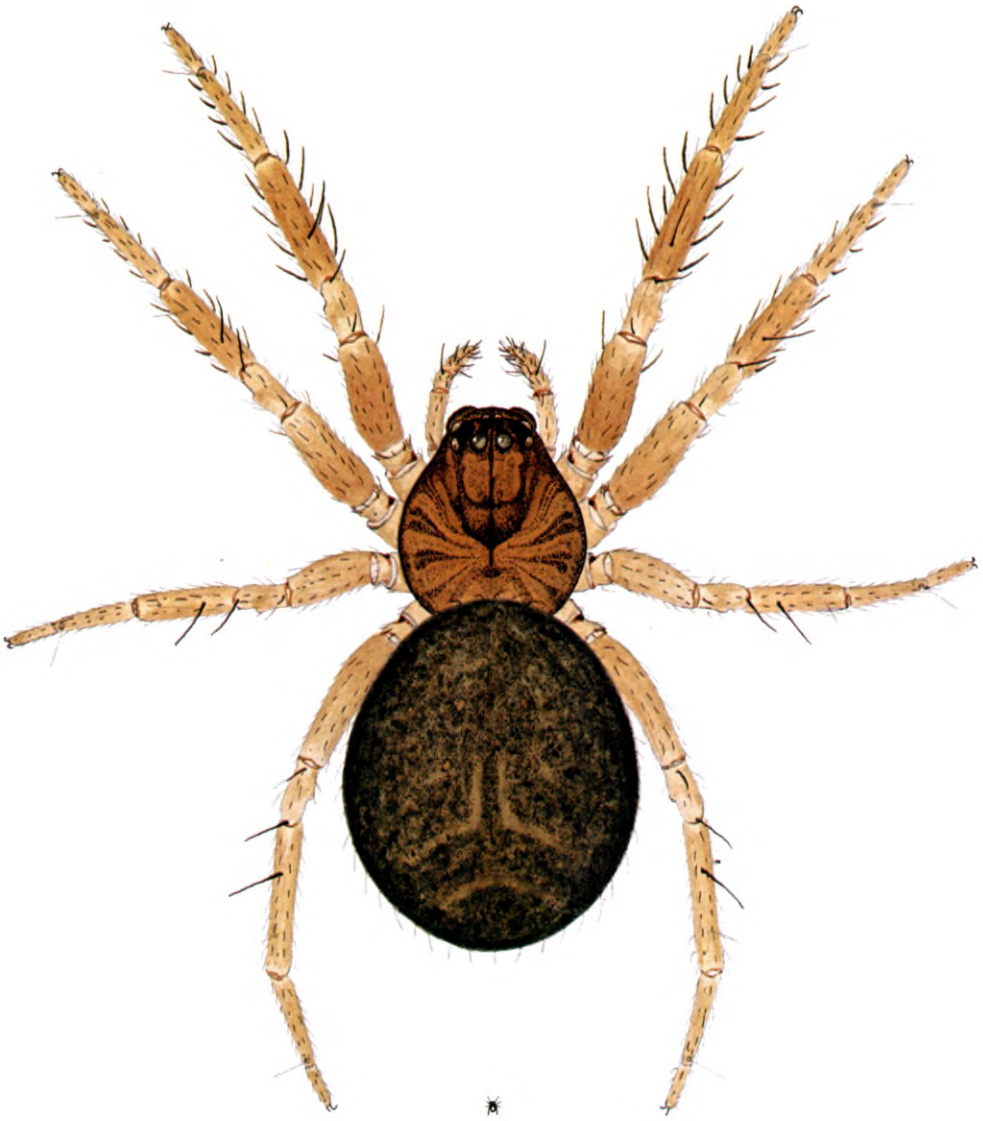


(**d**) *Baryphyma duffeyi* (Millidge) ♀

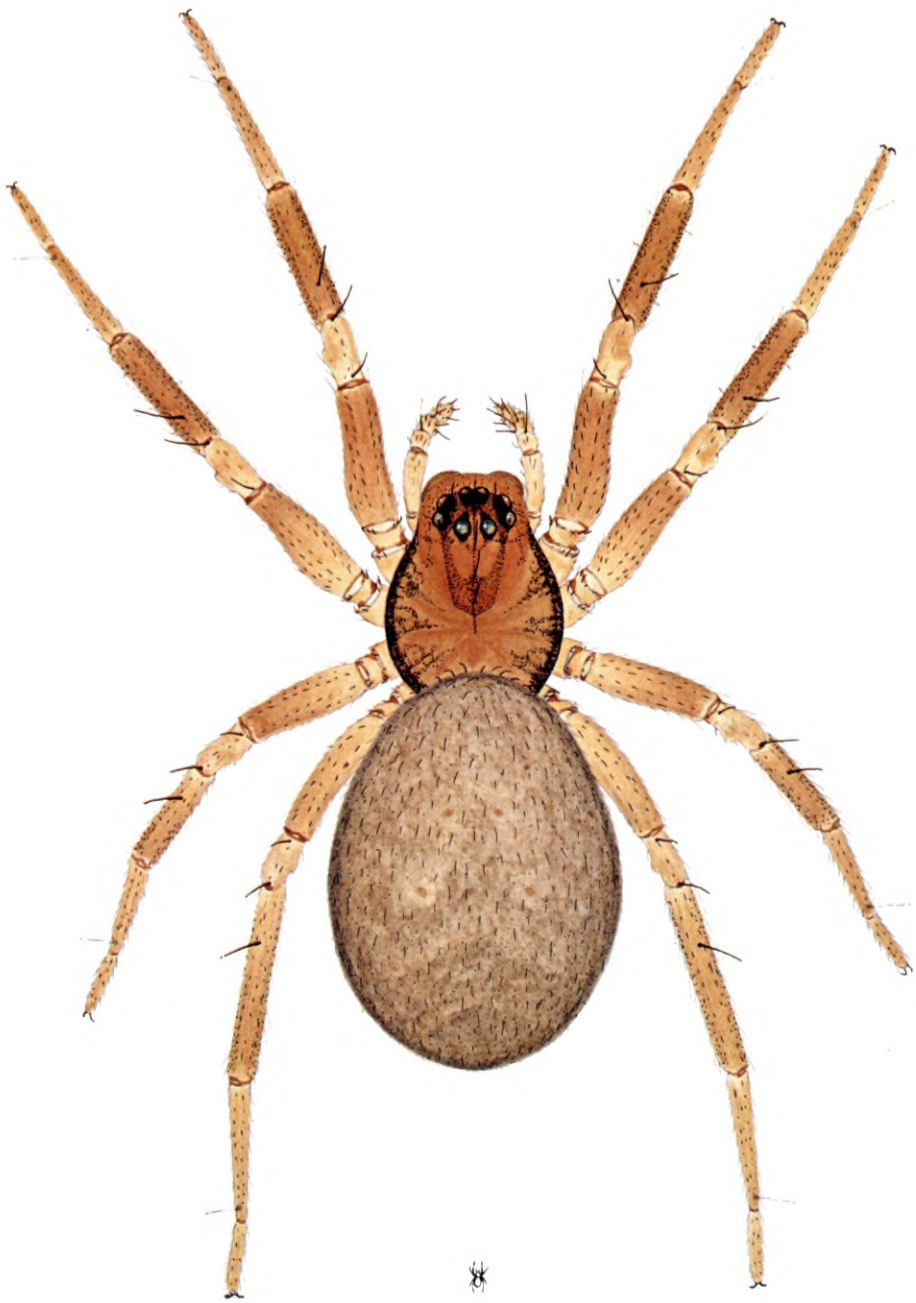
Baryphyma maritimum (Crocker & Parker) ♀



Gonatium rubens (Blackwall) ♀

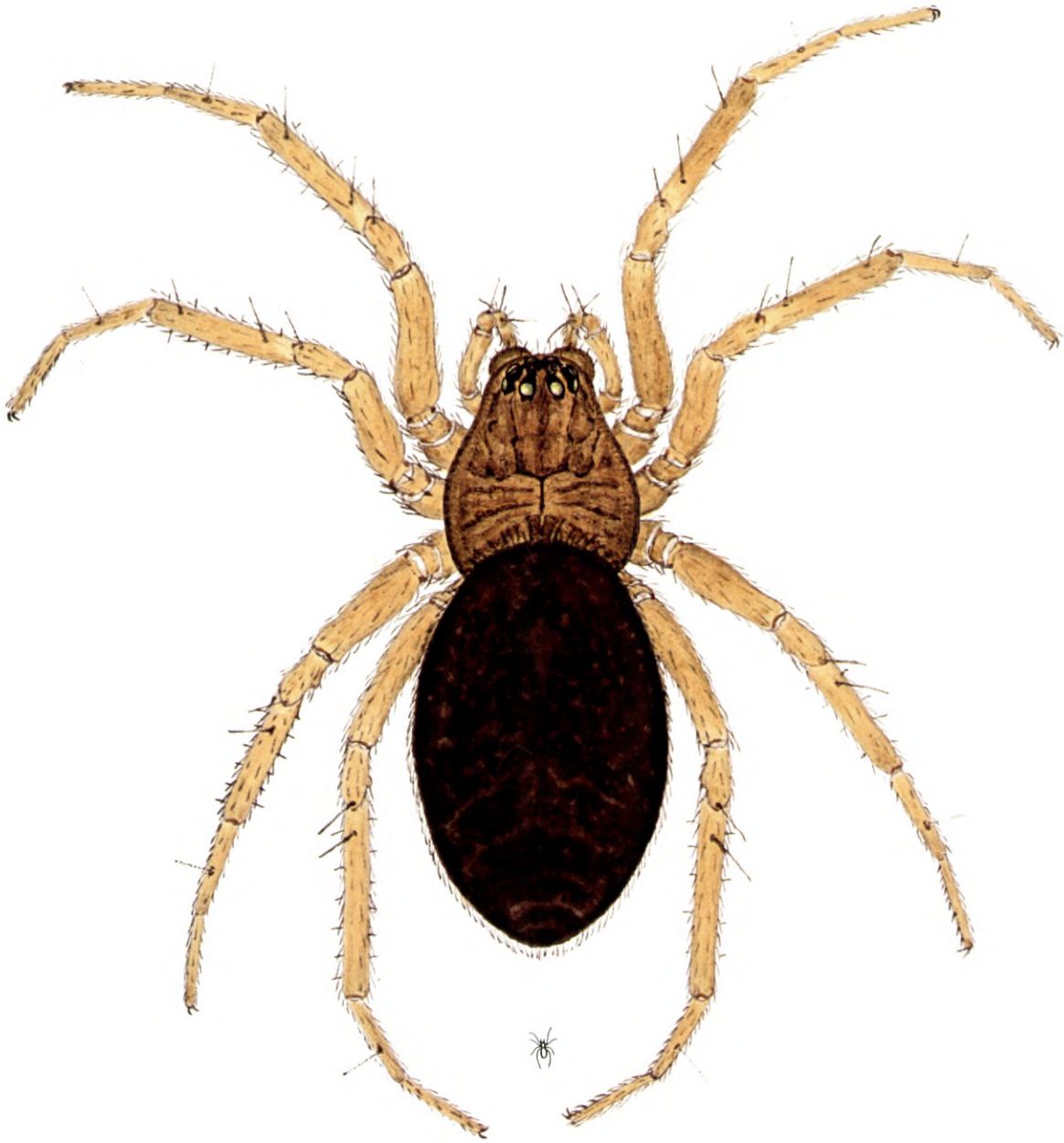


Maso sundevalli (Westring) ♀

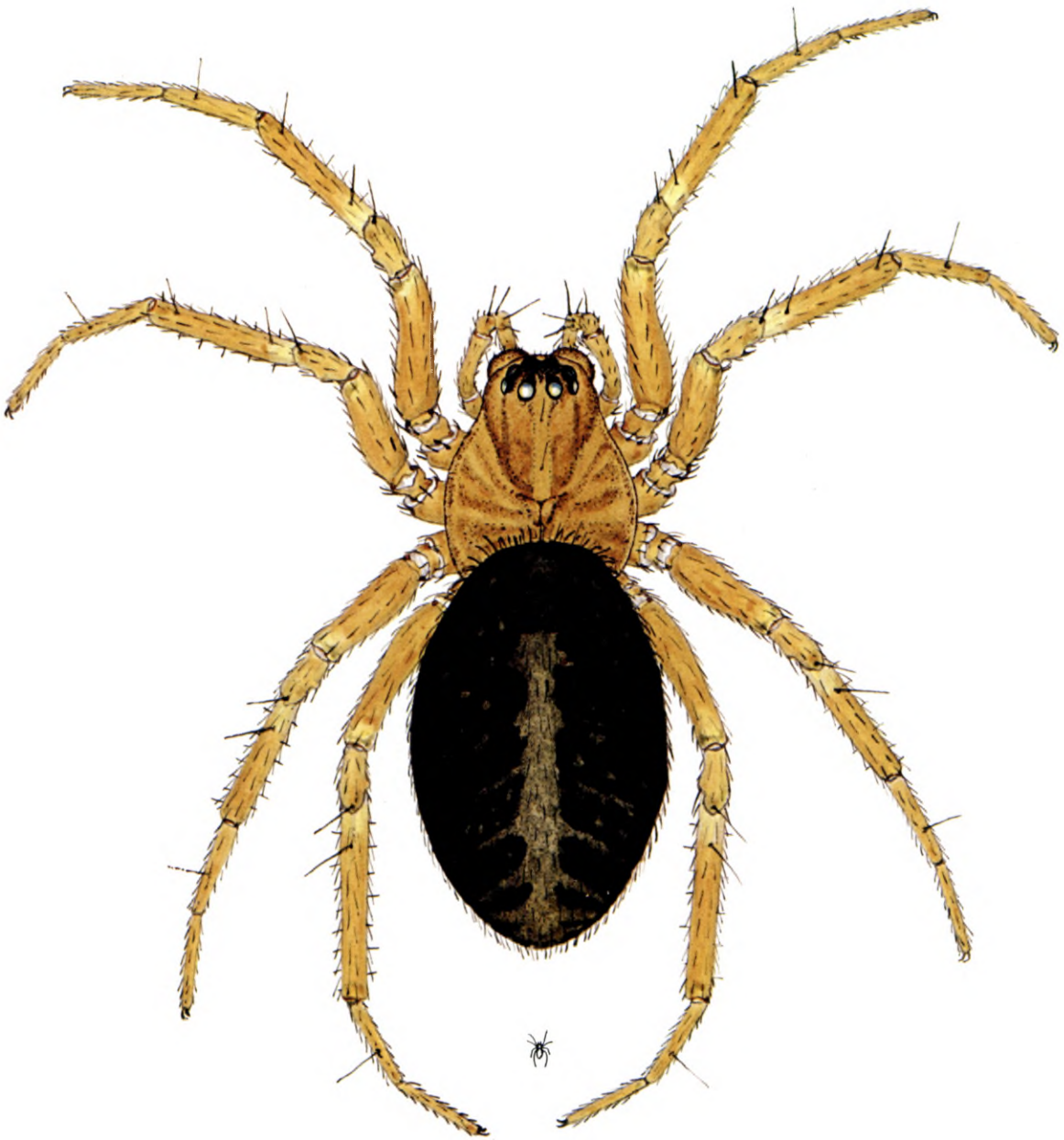


Peponocranium ludicrum (O. P.-Cambridge) ♀

Pocadicnemis pumila (Blackwall) ♀



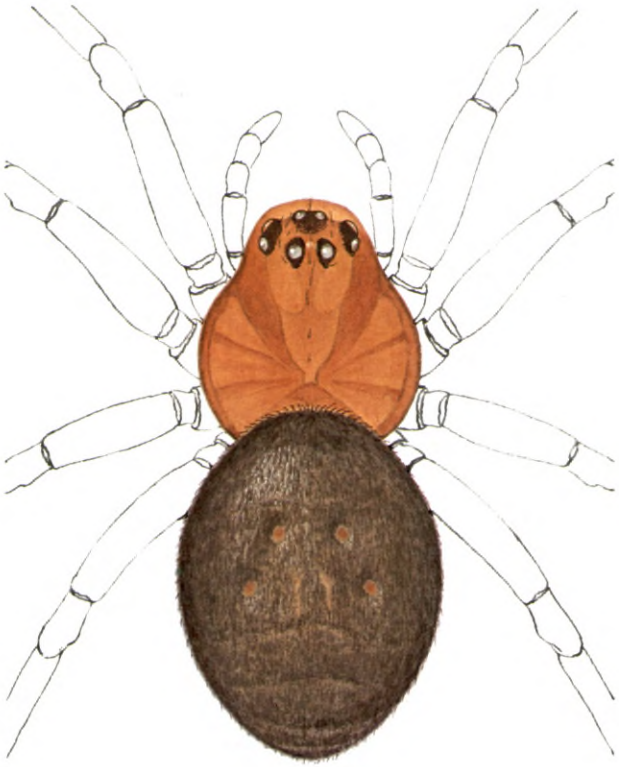
Oedothorax gibbosus (Blackwall) ♀



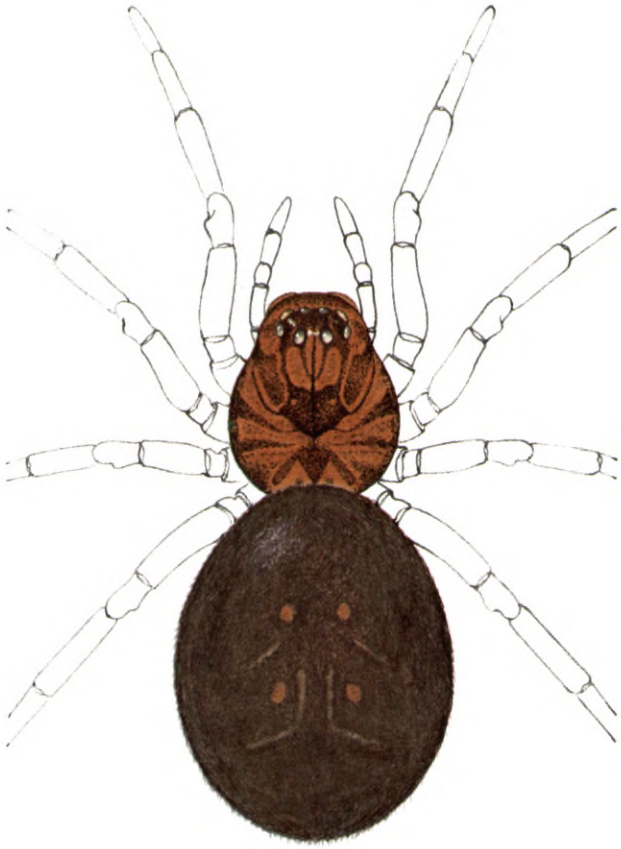
Oedothorax fuscus (Blackwall) ♀

Pelecopsis mengei (Simon) ♀

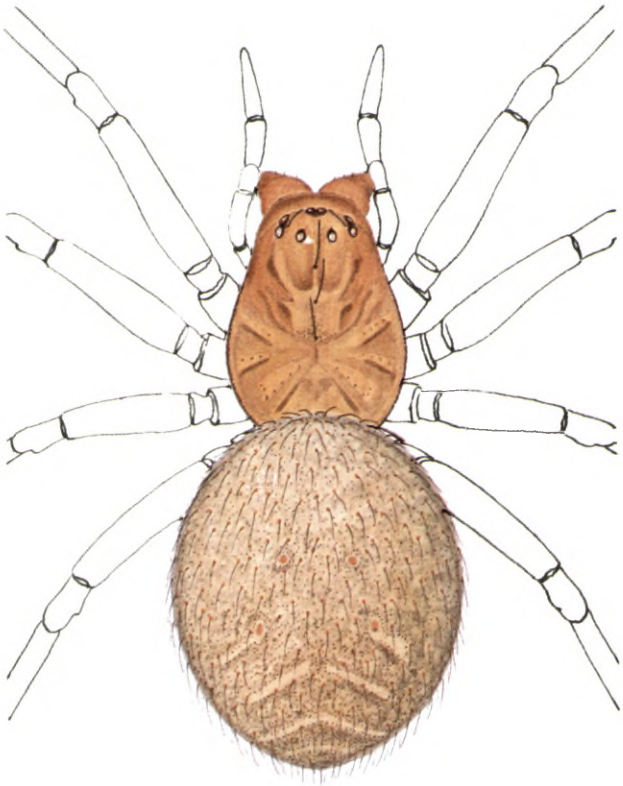
Silometopus elegans (O. P.-Cambridge) ♀



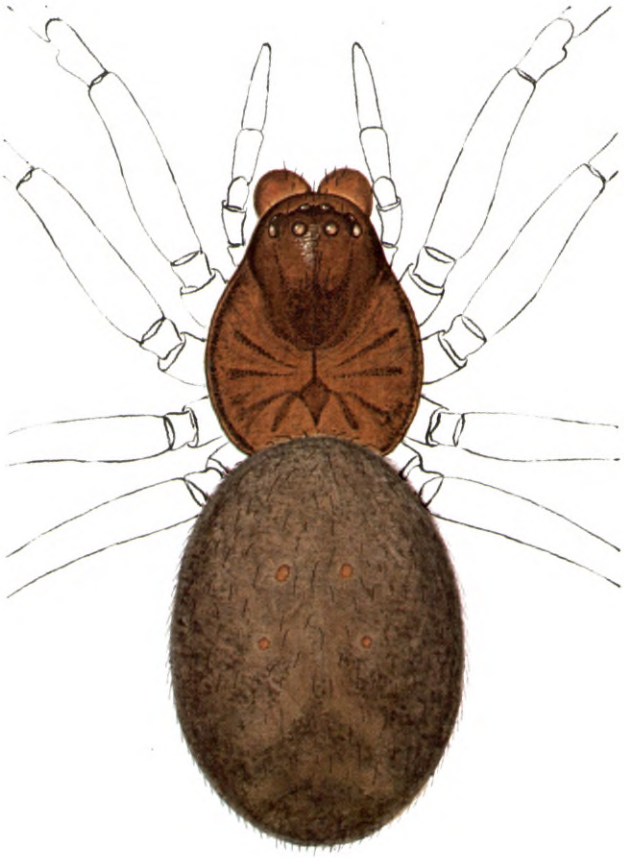
(**a**) *Hypselistes jacksoni* (O. P.-Cambridge) ♀



(**b**) *Mecopisthes peusi* Wunderlich ♀

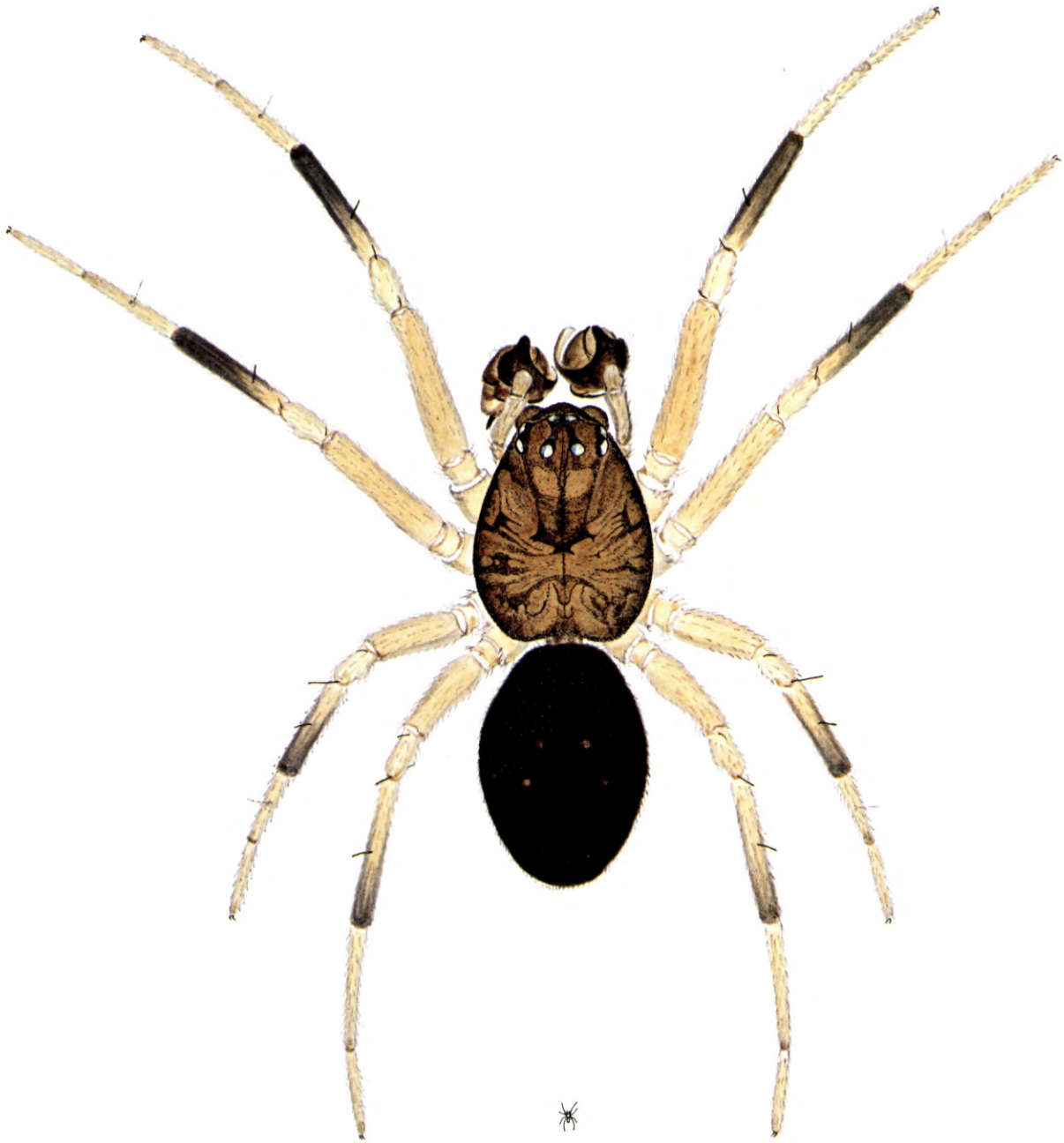


(**c**) *Acartauchenius scurrilis* (O. P.-Cambridge) ♀

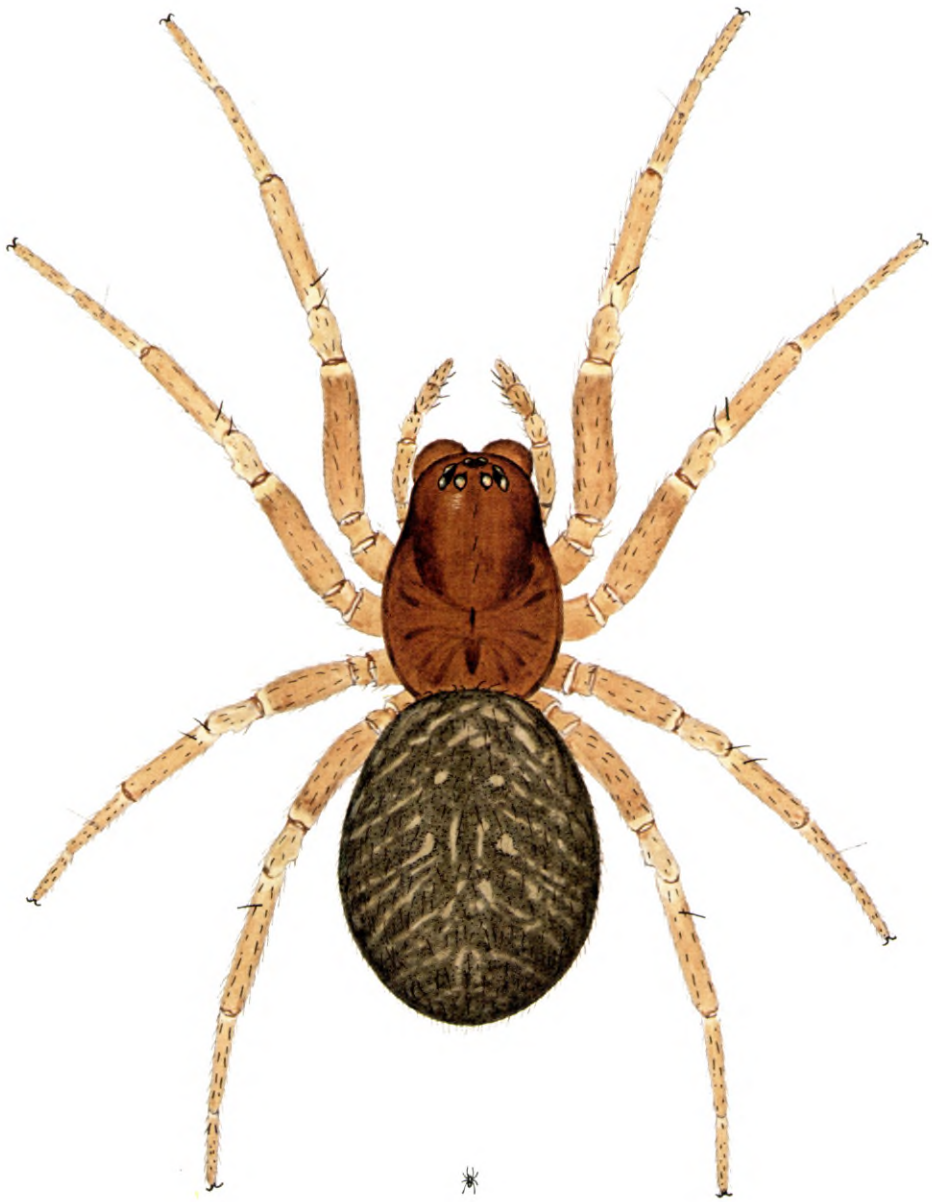


(**d**) *Ceratinopsis stativa* (Simon) ♀

Cnephalocotes obscurus (Blackwall) ♂



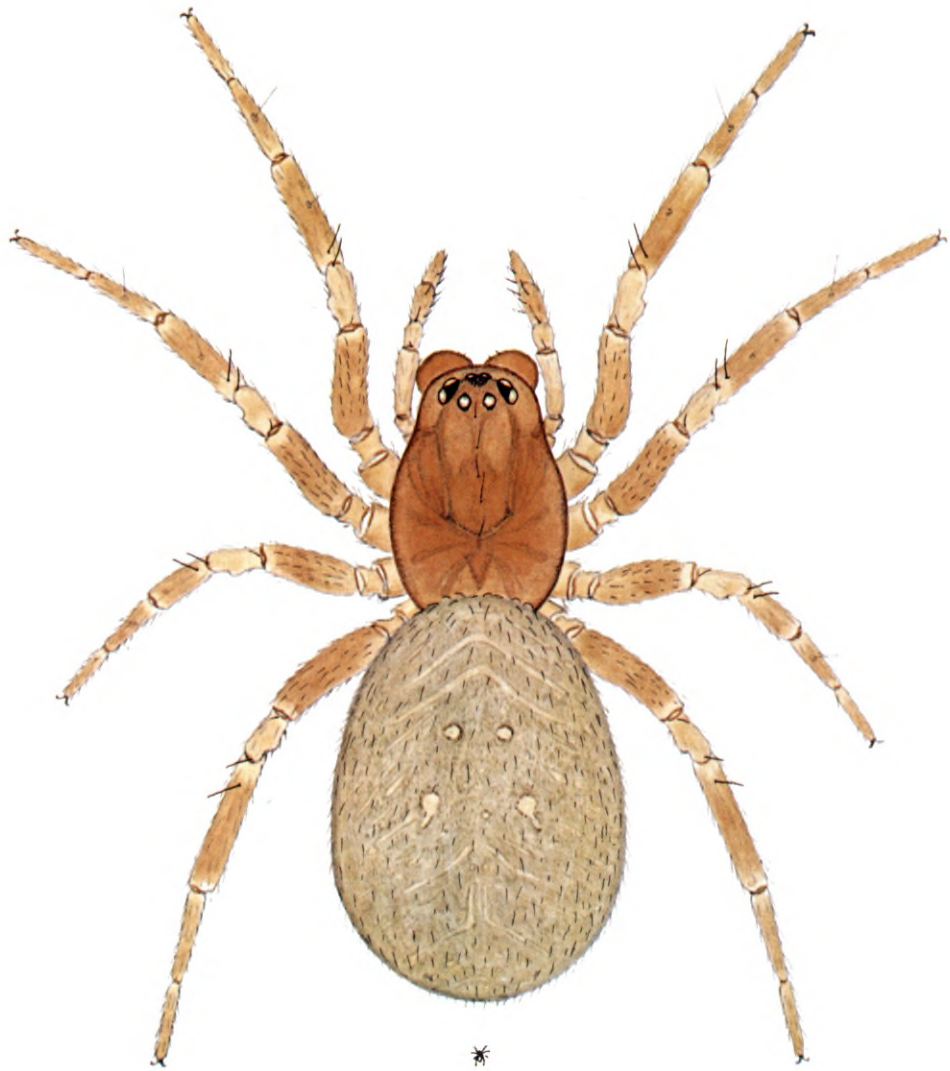
Trichoncus saxicola (O. P.-Cambridge) ♂



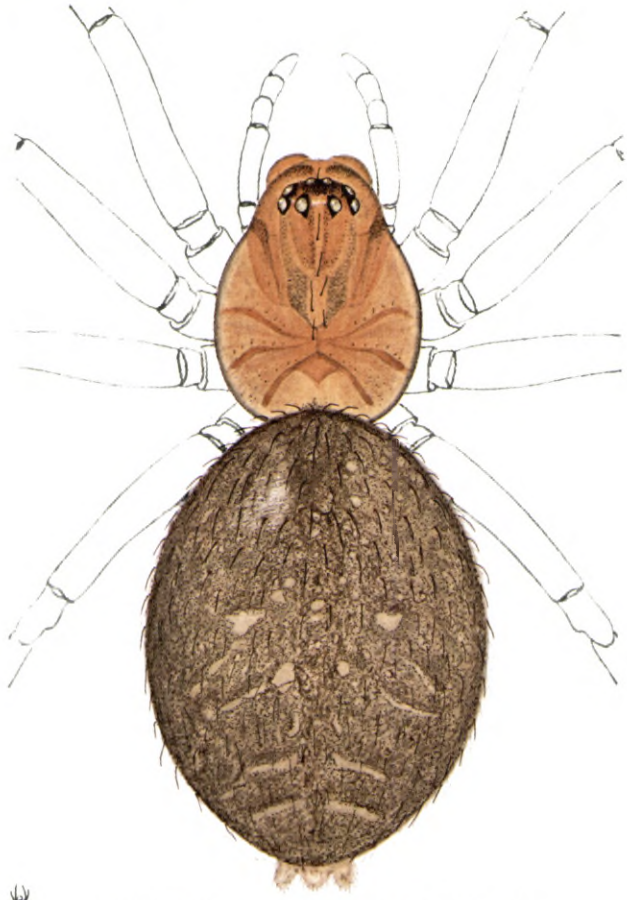
Tiso vagans (Blackwall) ♀

Troxochrus scabriculus (Westring) ♀

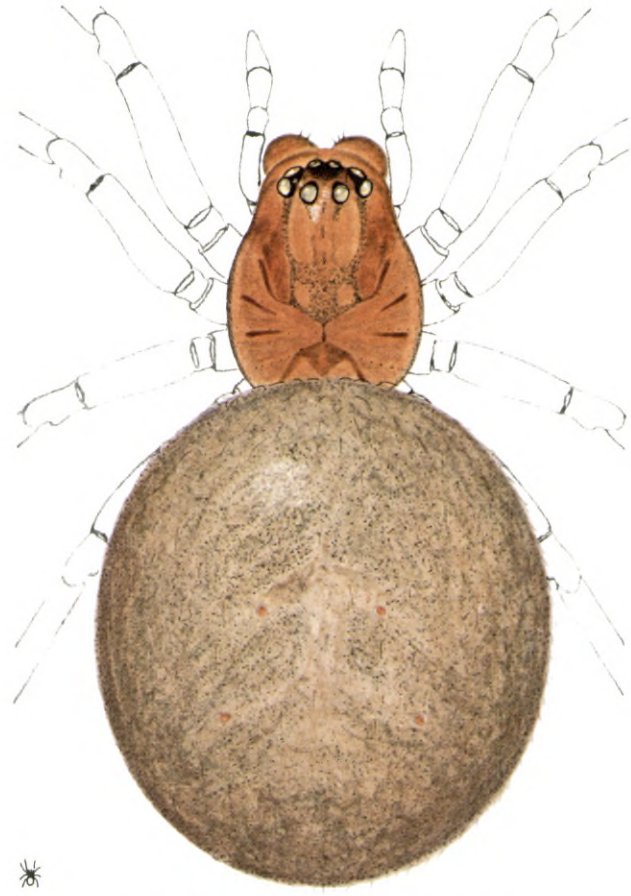
Minyriolus pusillus (Wider) ♀



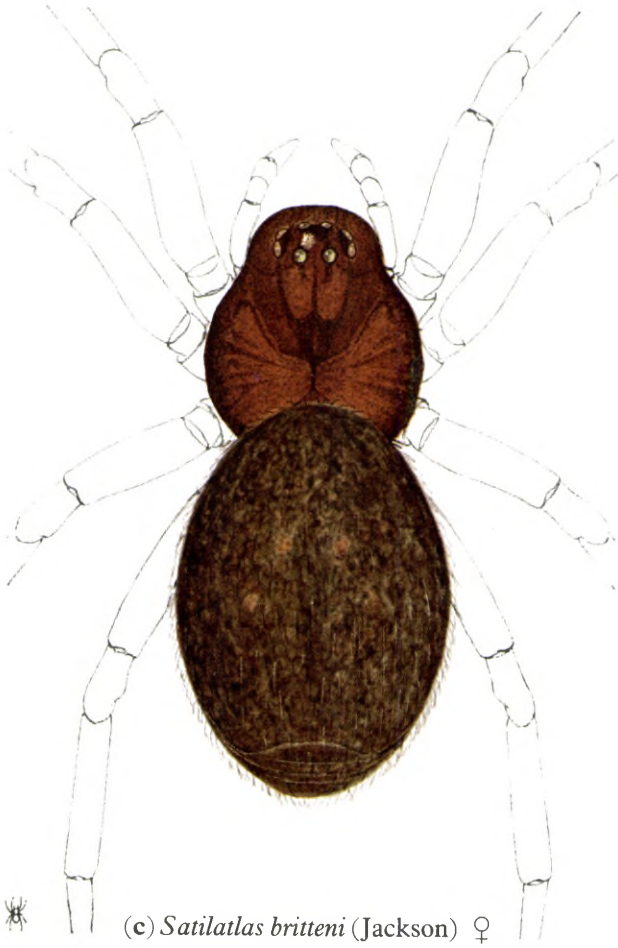
Tapinocyba pallens (O. P.-Cambridge) ♀



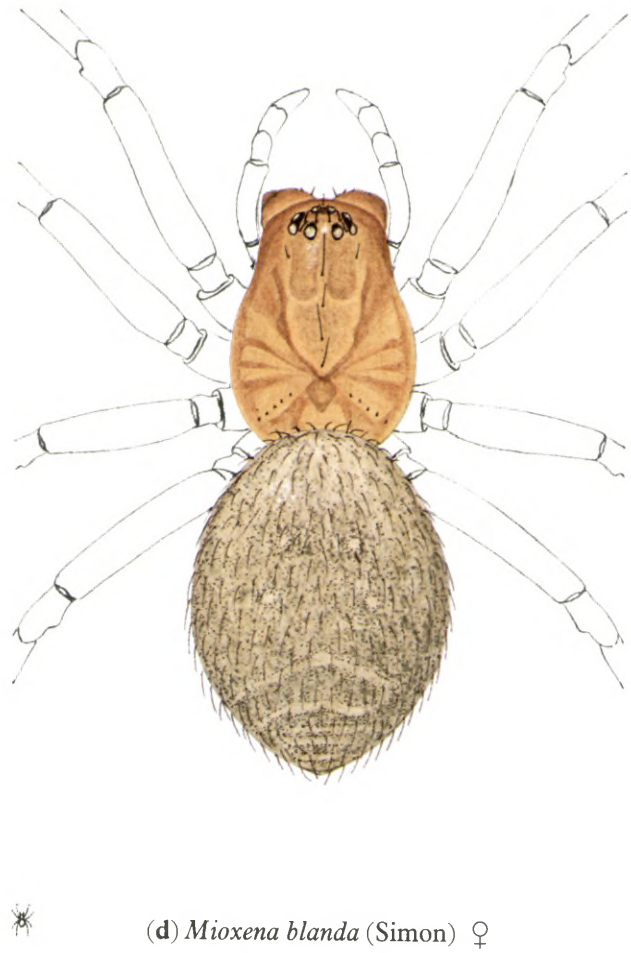
(**a**) *Evansia merens* O. P.-Cambridge ♀



(**b**) *Microctenonyx subitaneus* (O. P.-Cambridge) ♀ (gravid)



(**c**) *Satilatlas britteni* (Jackson) ♀

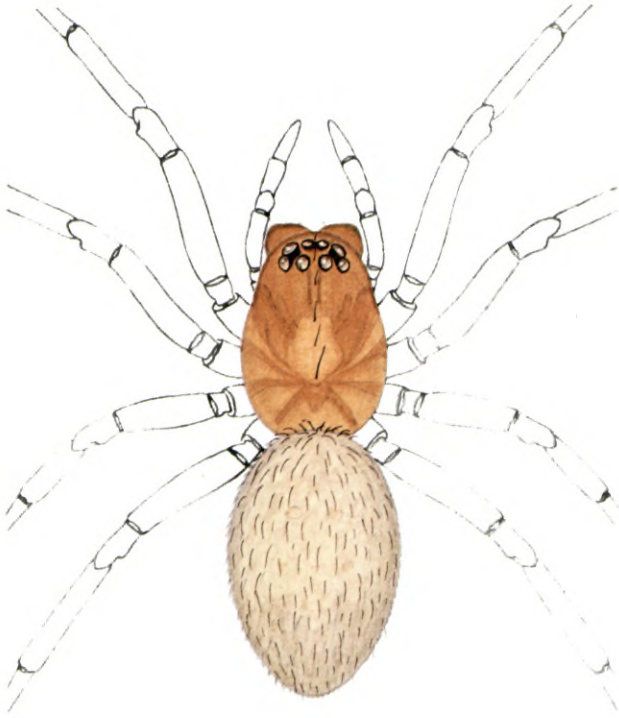


(**d**) *Mioxena blanda* (Simon) ♀

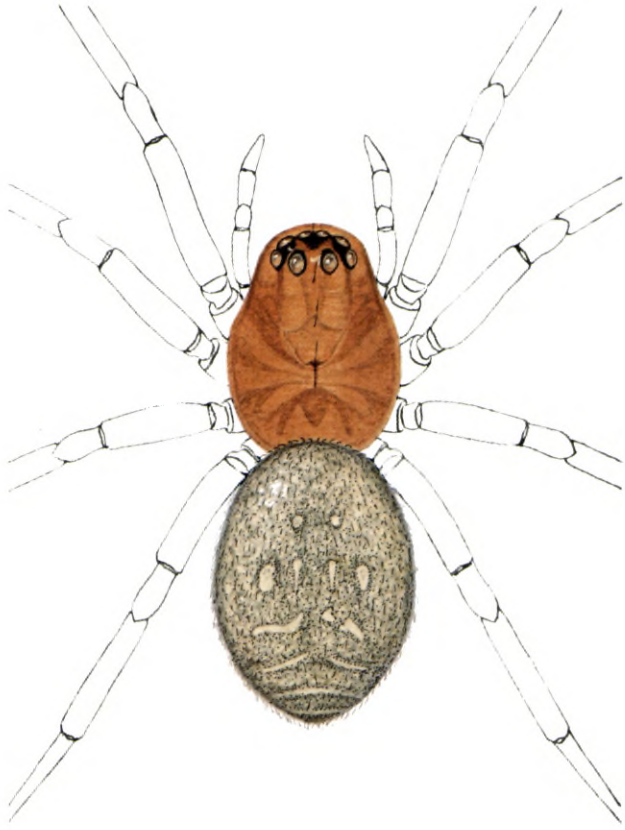
Thyreosthenius parasiticus (Westring) ♀

Monocephalus fuscipes (Blackwall) ♀

Lophomma punctatum (Blackwall) ♀

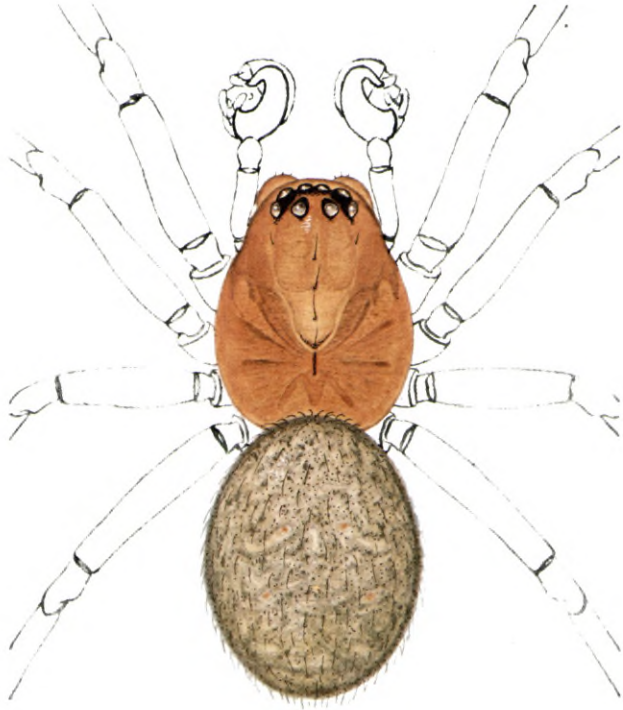


(**a**) *Wiehlea calcarifera* (Simon) ♀



(**b**) *Saloca diceros* (O. P.-Cambridge) ♀

(**c**) *Asthenargus falconeri* (Jackson) ♂ and carapace ♀



(**d**) *Asthenargus paganus* (Simon) ♂

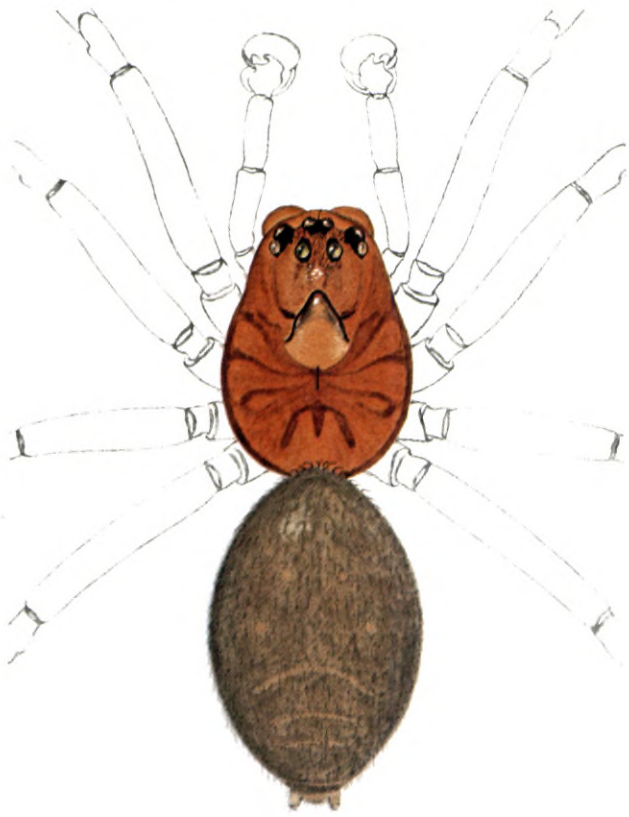
Gongylidiellum latebricola (O. P.-Cambridge) ♀

Micrargus herbigradus (Blackwall) ♀

Erigonella hiemalis (Blackwall) ♀

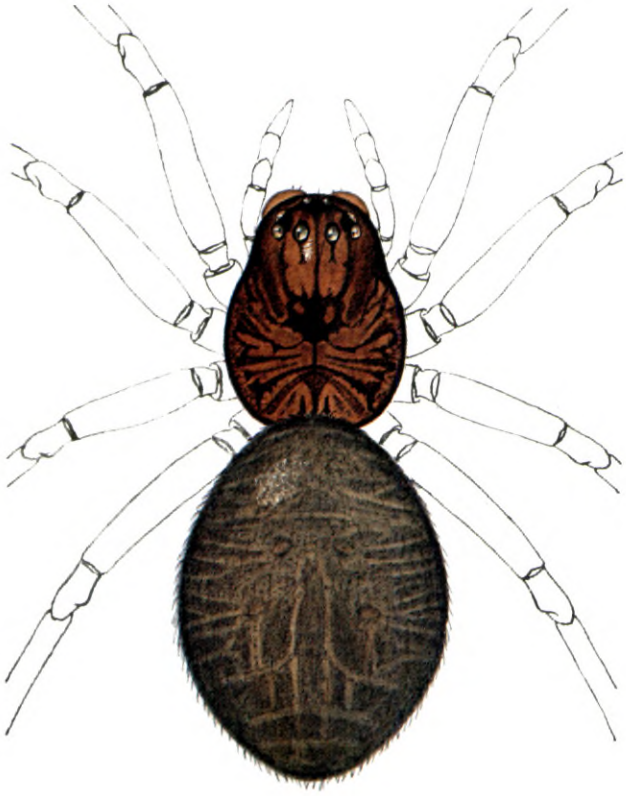
Savignya frontata (Blackwall) ♀

Diplocephalus latifrons (O. P.-Cambridge) ♀

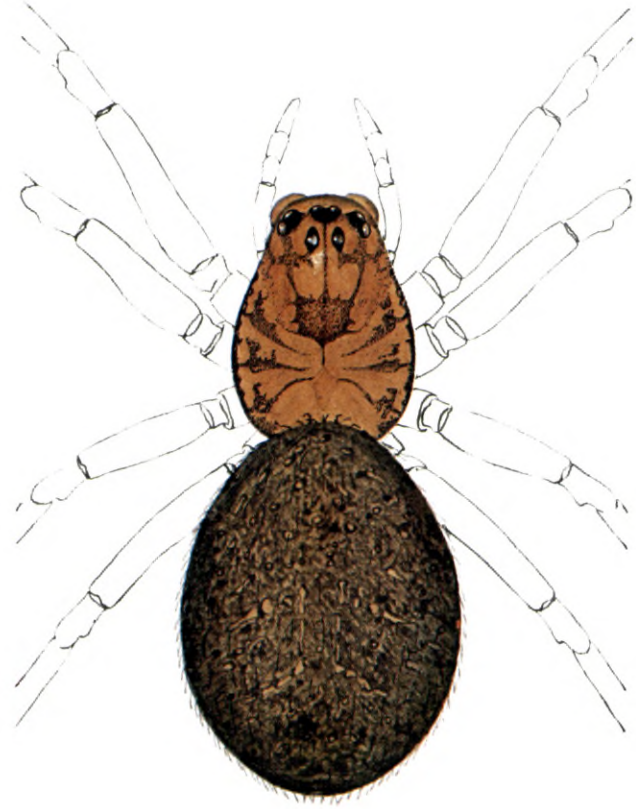


(**a**) *Notioscopus sarcinatus* (O. P.-Cambridge) ♂

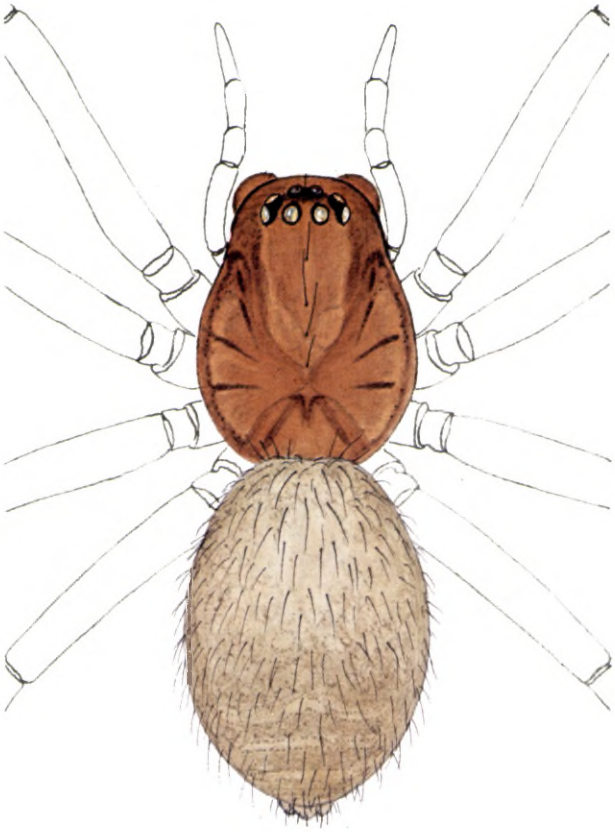
(**b**) *Glyphesis servulus* (Simon) ♀



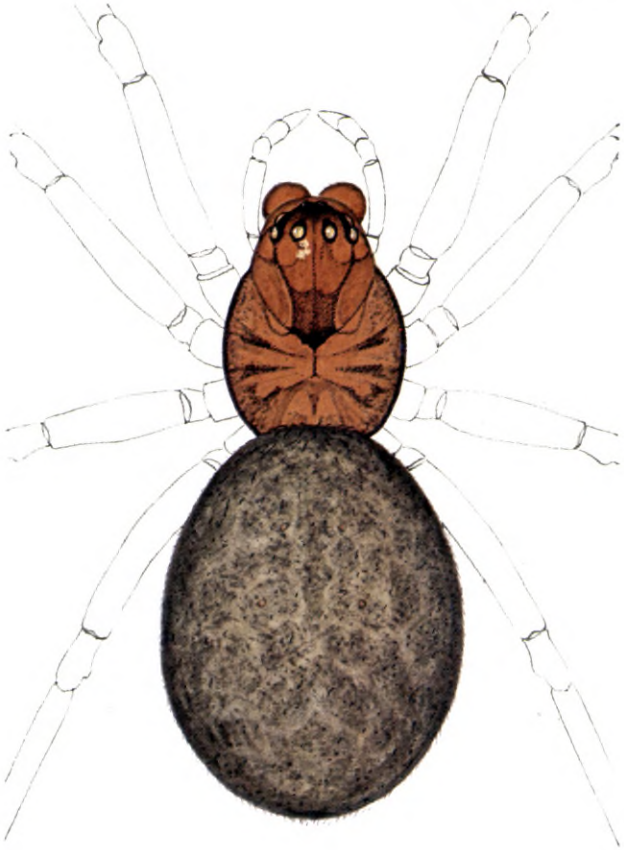
(**c**) *Araeoncus humilis* (Blackwall) ♀



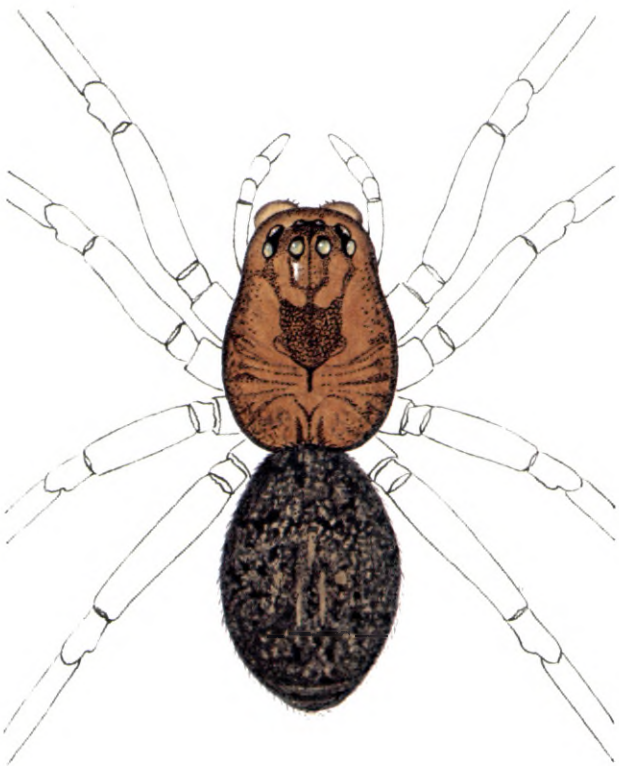
(**d**) *Panamomops sulcifrons* (Wider) ♀



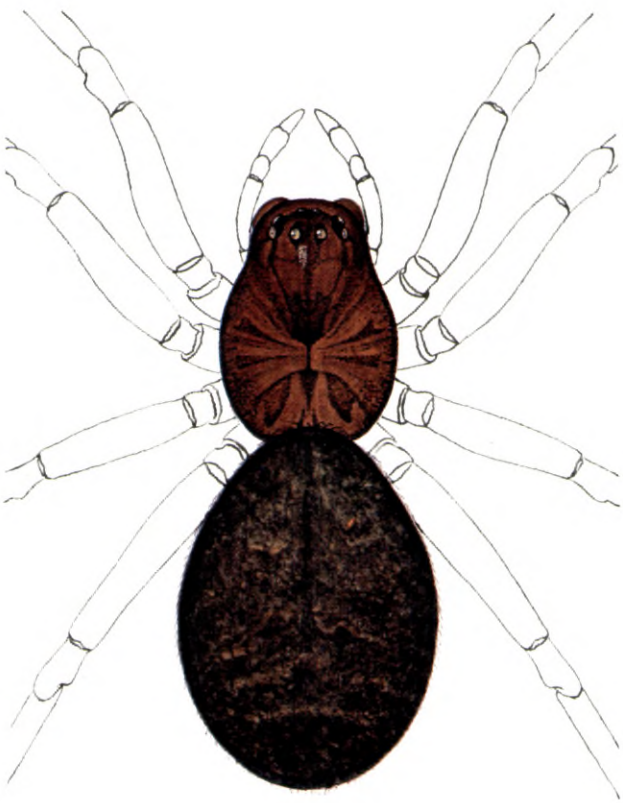
(**a**) *Lessertia dentichelis* (Simon) ♀



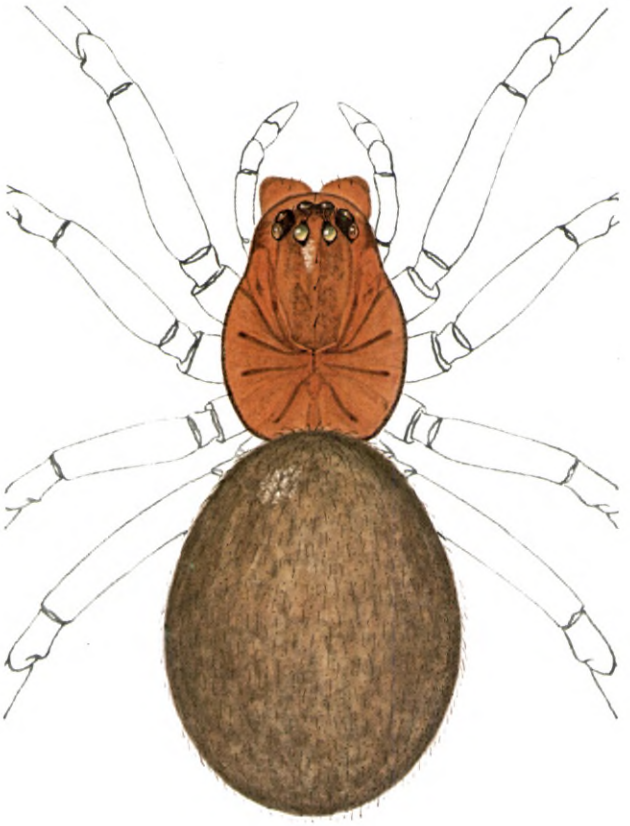
(**b**) *Scotinotylus evansi* (O. P.-Cambridge) ♀



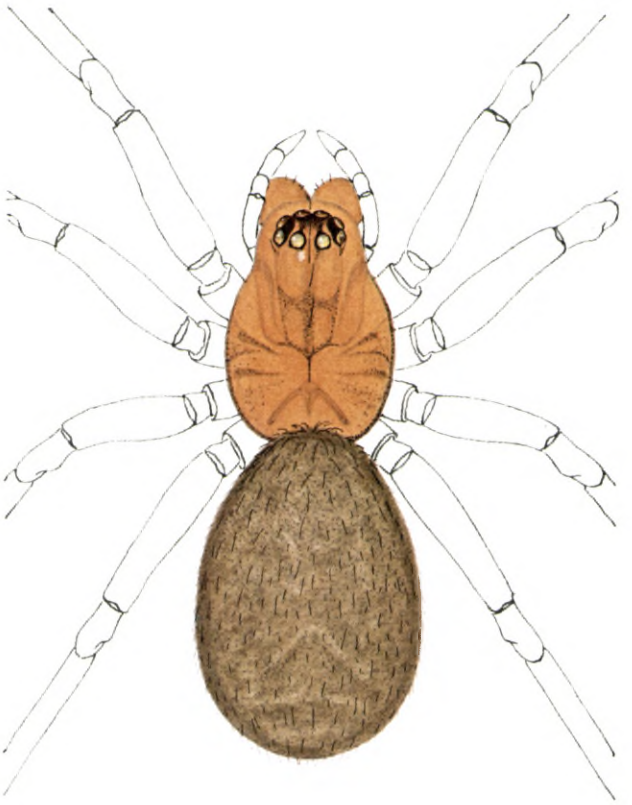
(**c**) *Typhochrestus digitatus* (O. P.-Cambridge) ♀



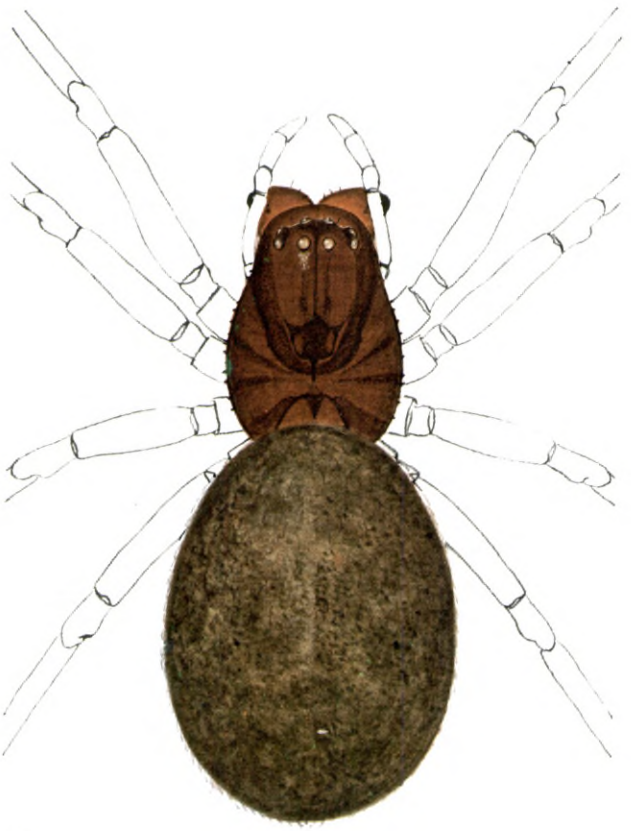
(**d**) *Halorates holmgreni* (Thorell) ♀



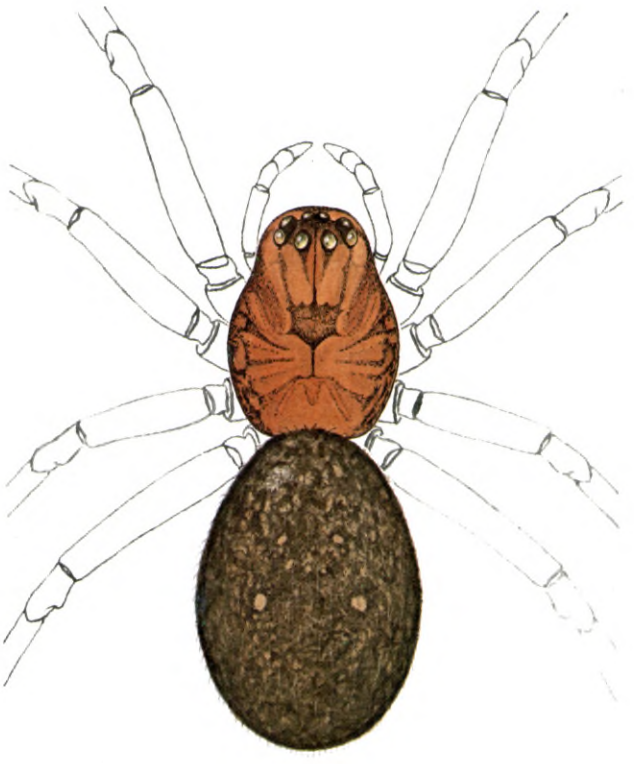
(**a**) *Milleriana inerrans* (O. P.-Cambridge) ♀



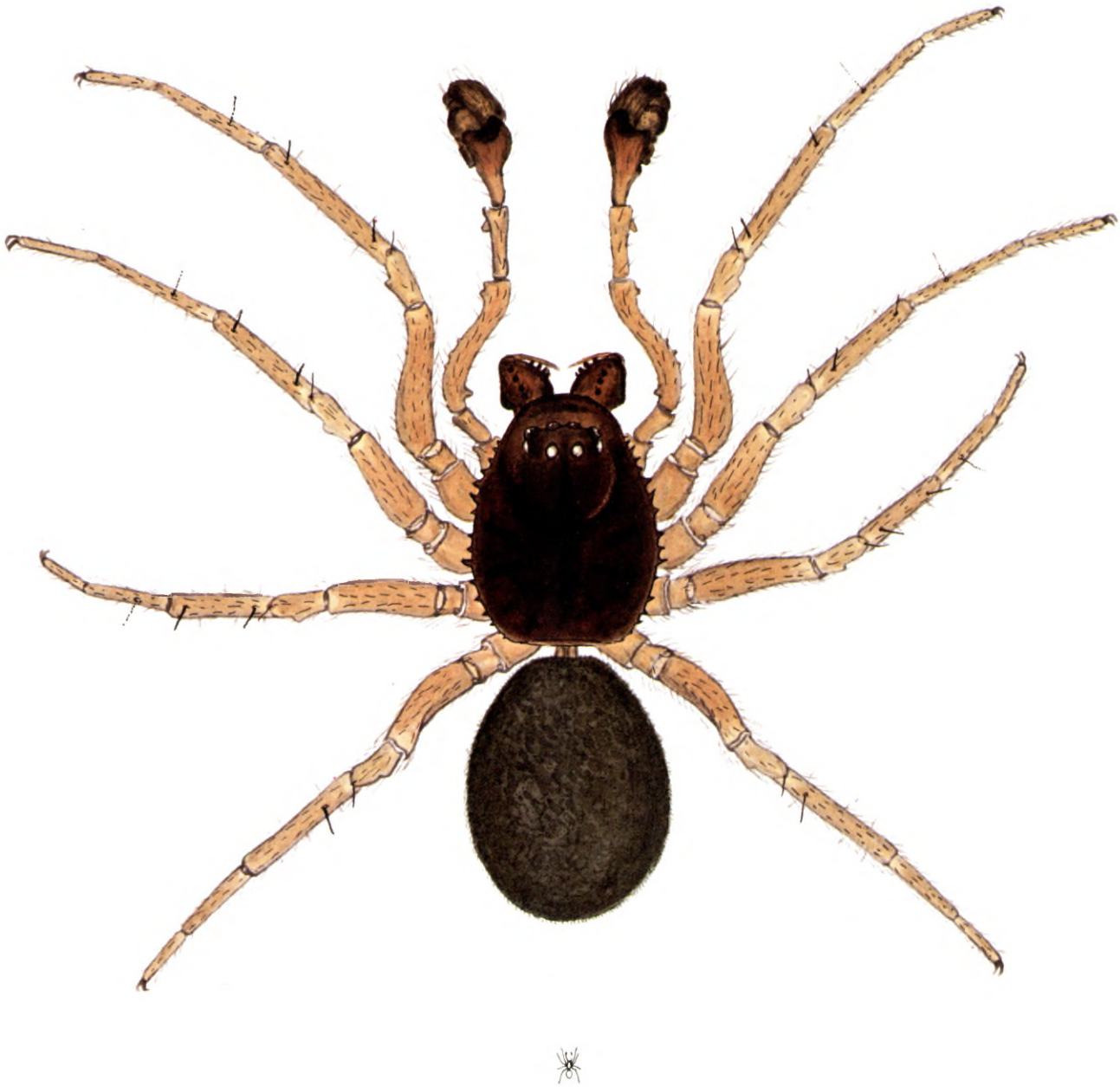
(**b**) *Diplocentria bidentata* (Emerton) ♀



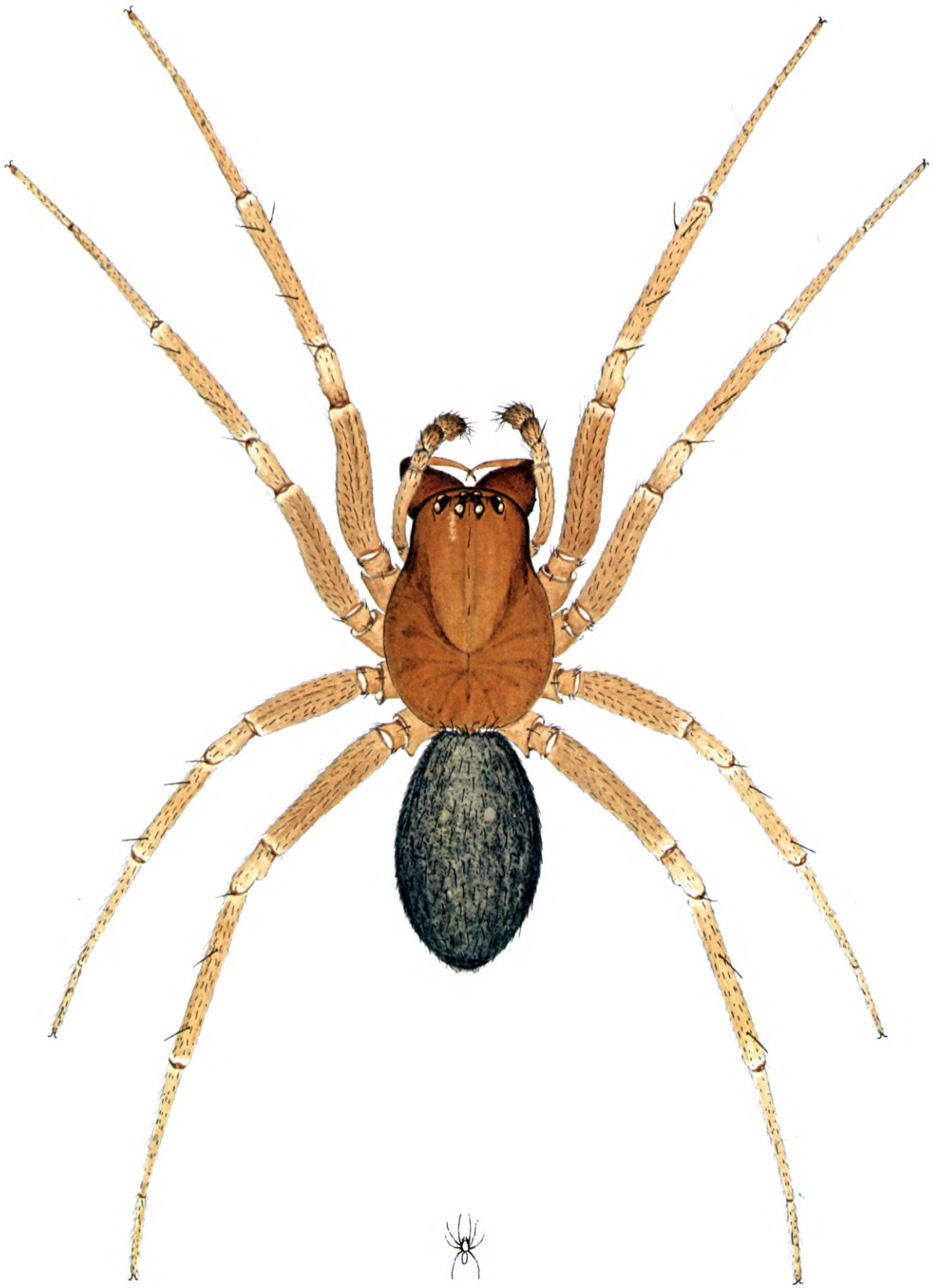
(**c**) *Erigone arctica* (White) ♀



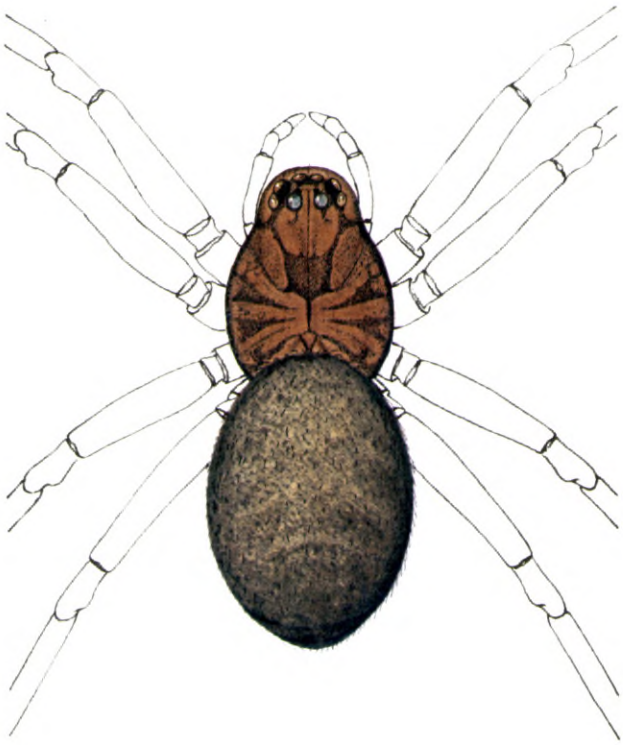
(**d**) *Rhaebothorax morulus* (O. P.-Cambridge) ♀



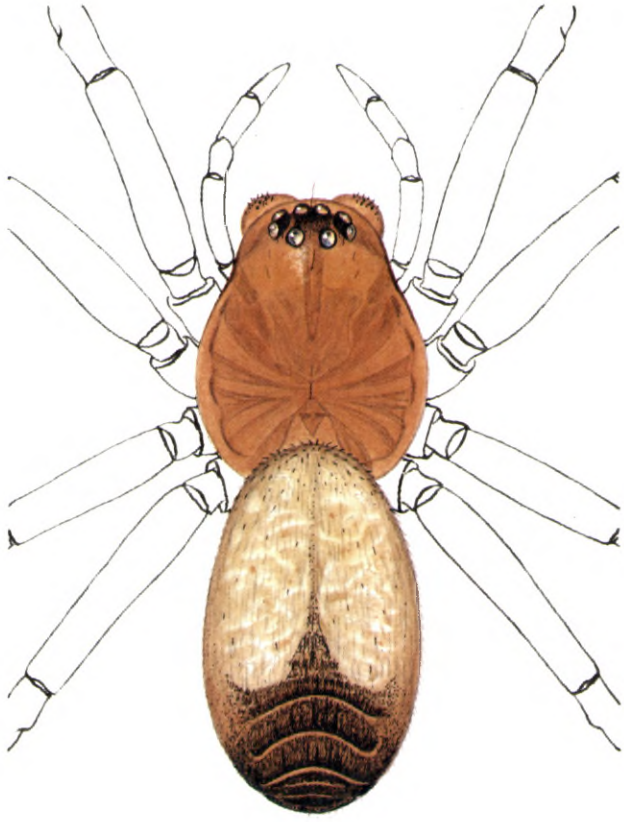
Erigone dentipalpis (Wider) ♂



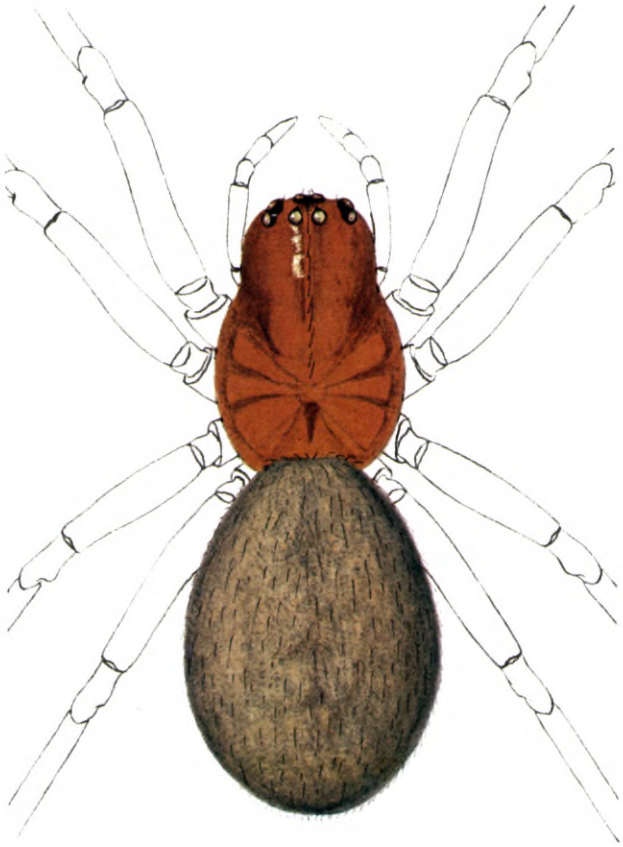
Leptorhoptrum robustum (Westring) ♂



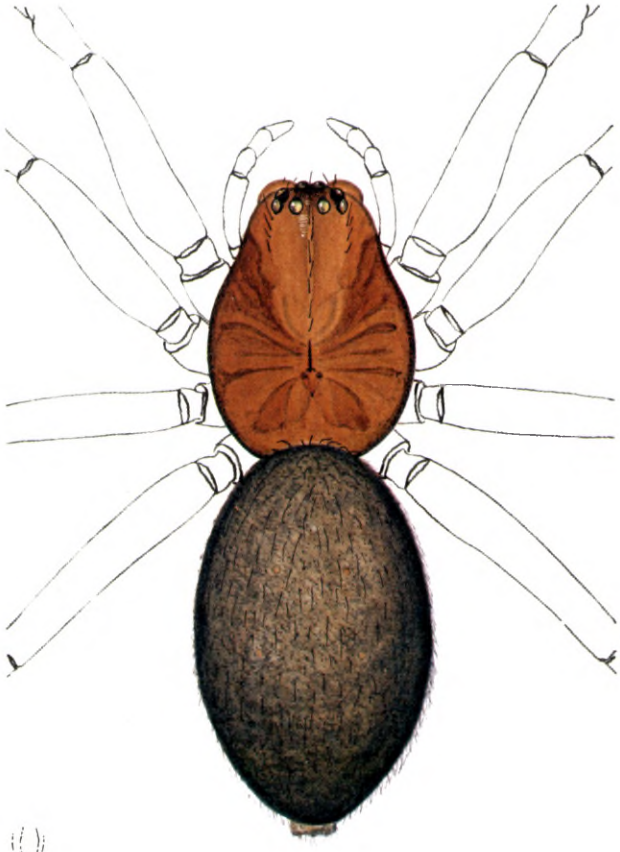
(**a**) *Latithorax faustus* (O. P.-Cambridge) ♀



(**b**) *Donachochara speciosa* (Thorell) ♀

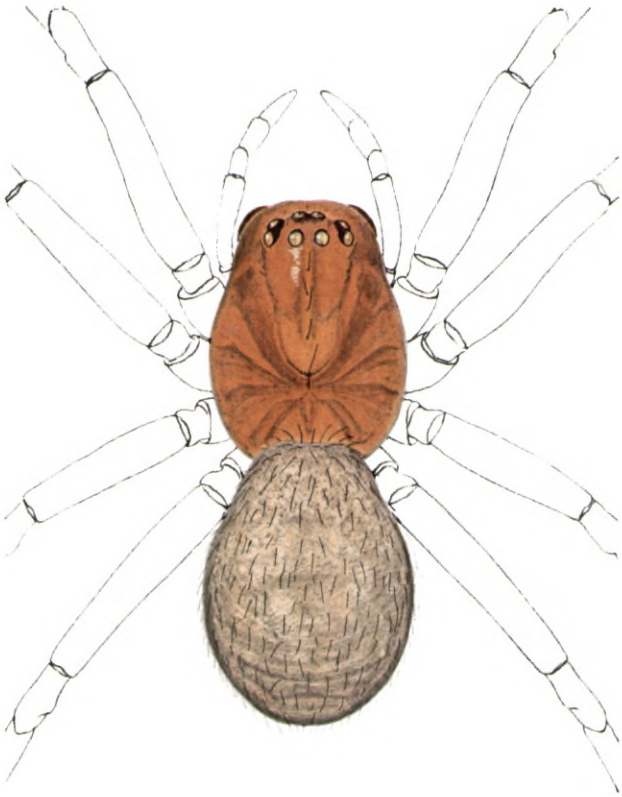


(**c**) *Drepanotylus uncatus* (O. P.-Cambridge) ♀

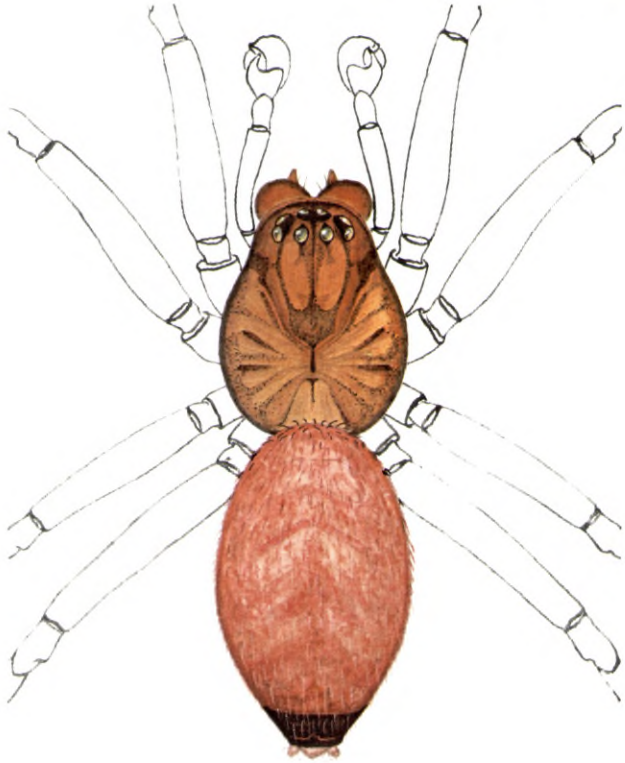


(**d**) *Leptothrix hardyi* (Blackwall) ♀

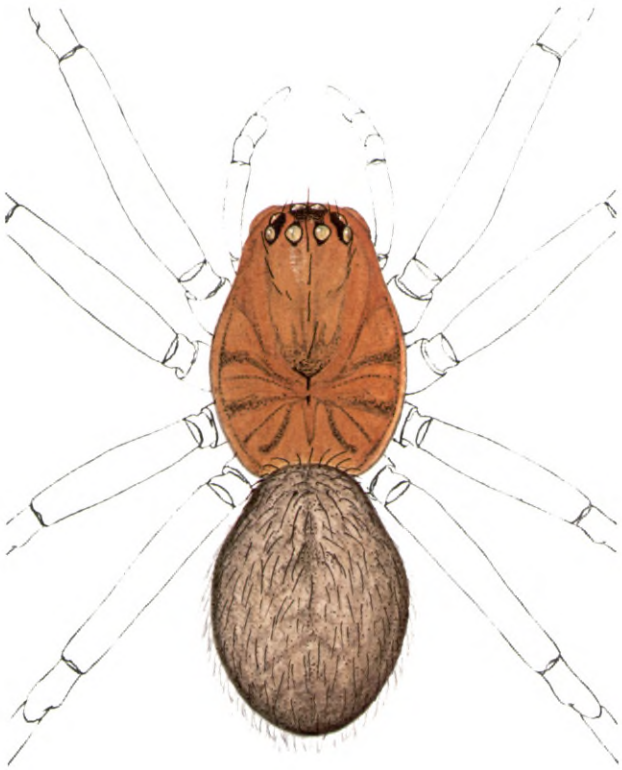
Hilaira excisa (O. P.-Cambridge) ♀



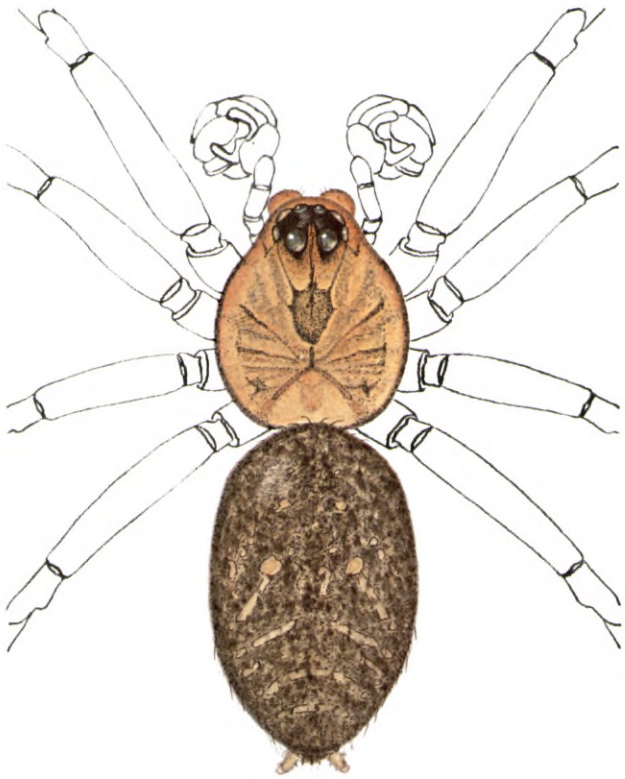
(**a**) *Halorates reprobus* (O. P.-Cambridge) ♀



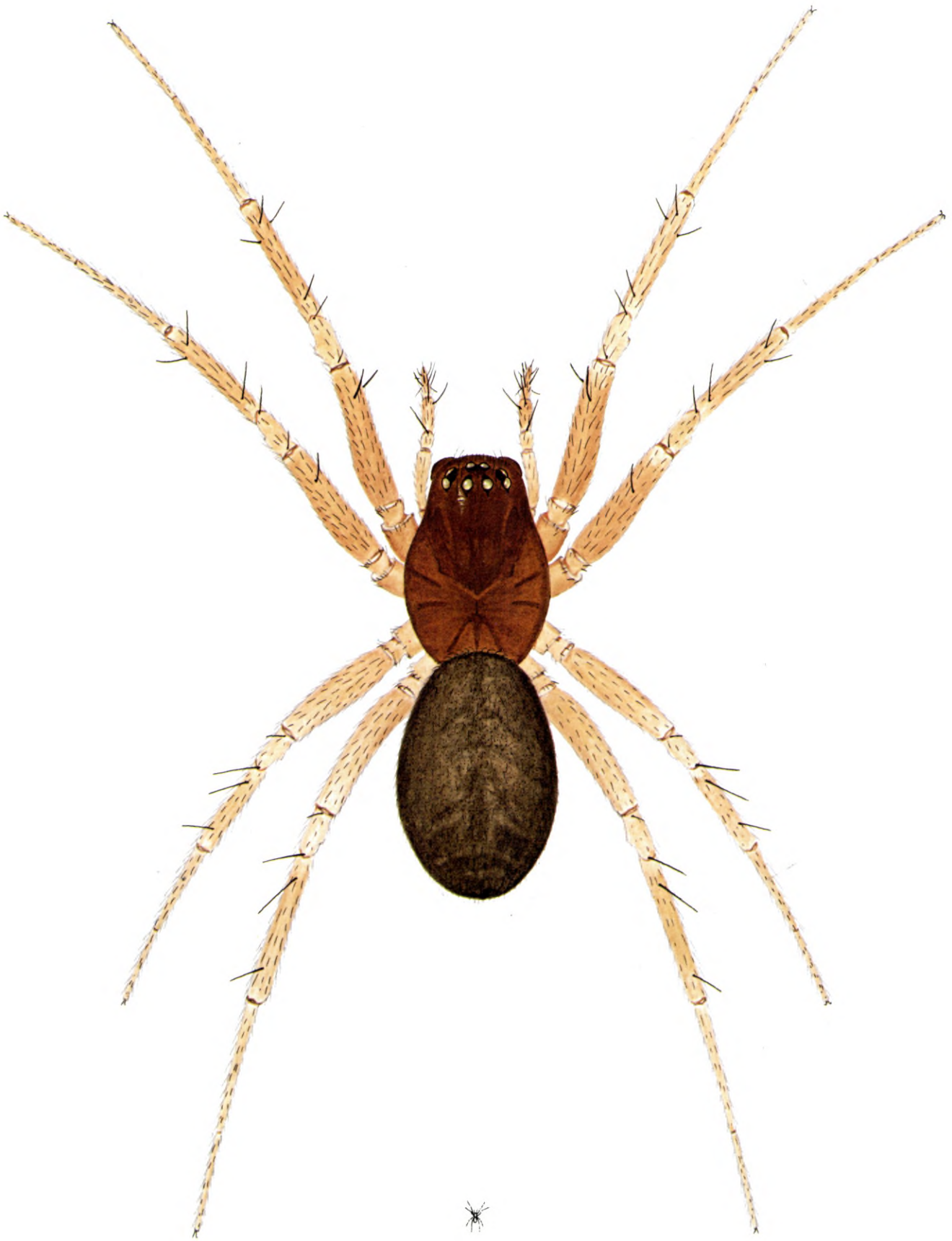
(**b**) *Ostearius melanopygius* (O. P.-Cambridge) ♂



(**c**) *Aphileta misera* (O. P.-Cambridge) ♀

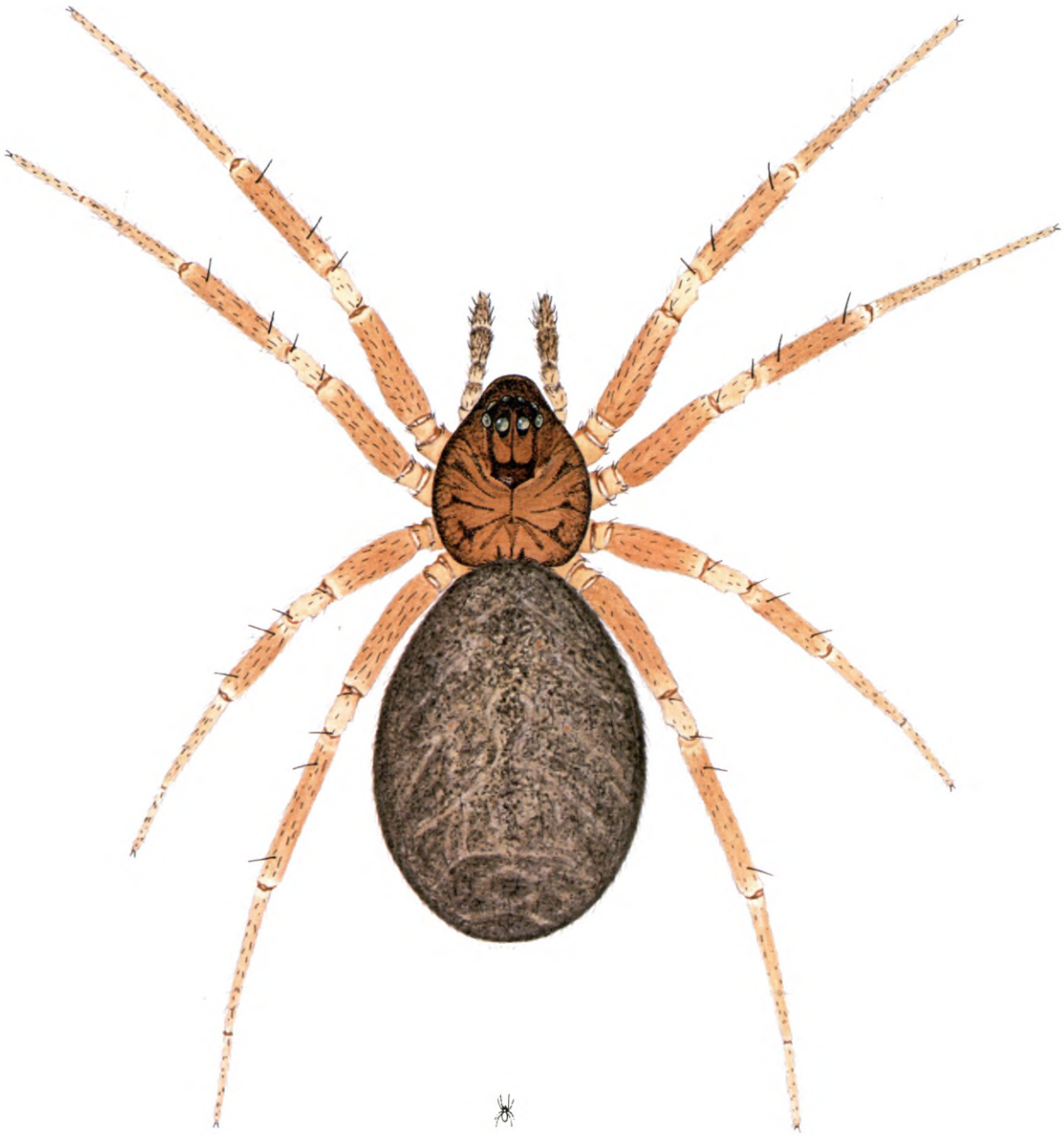


(**d**) *Syedra gracilis* (Menge) ♂

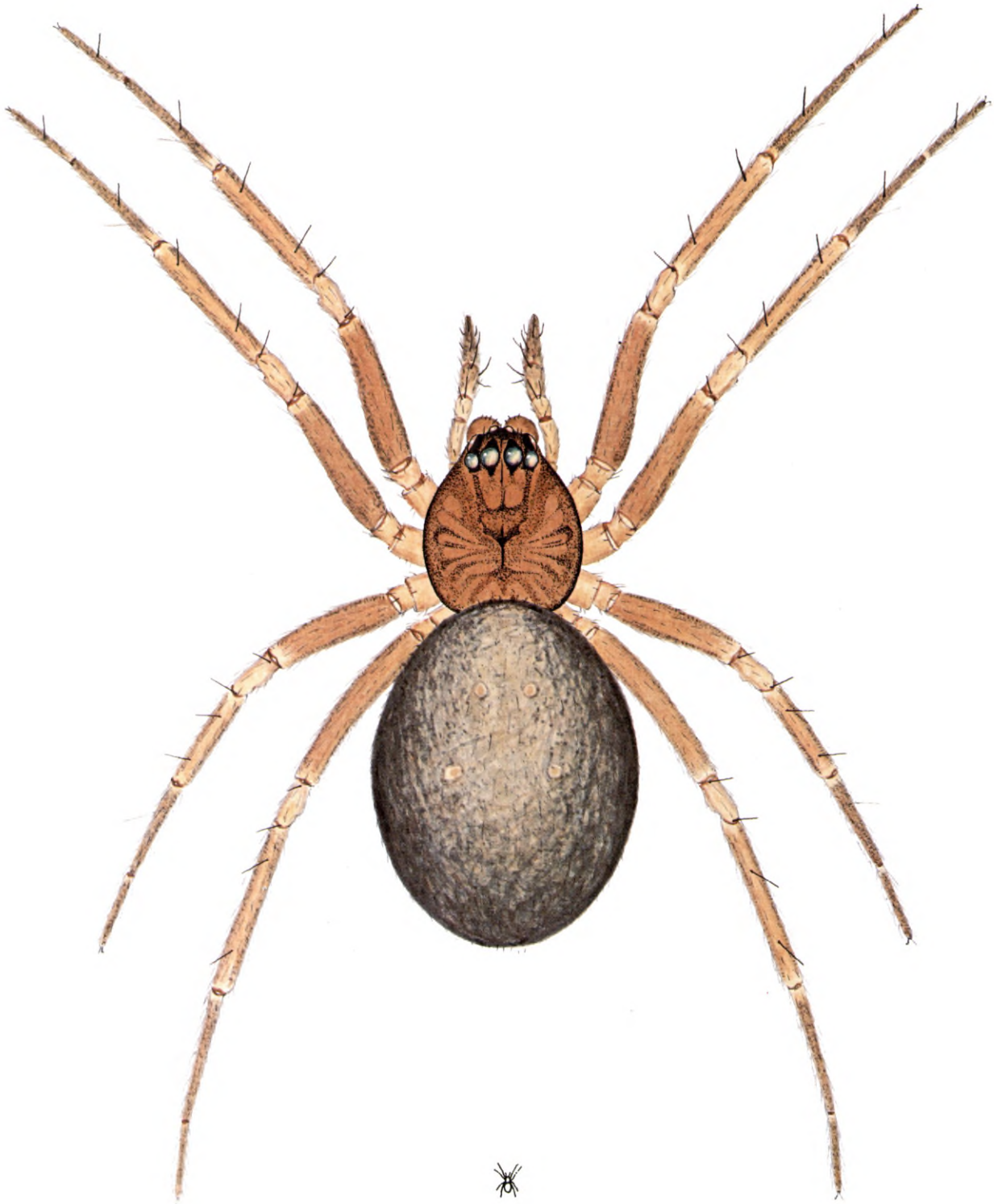


Porrhomma pygmaeum (Blackwall) ♀

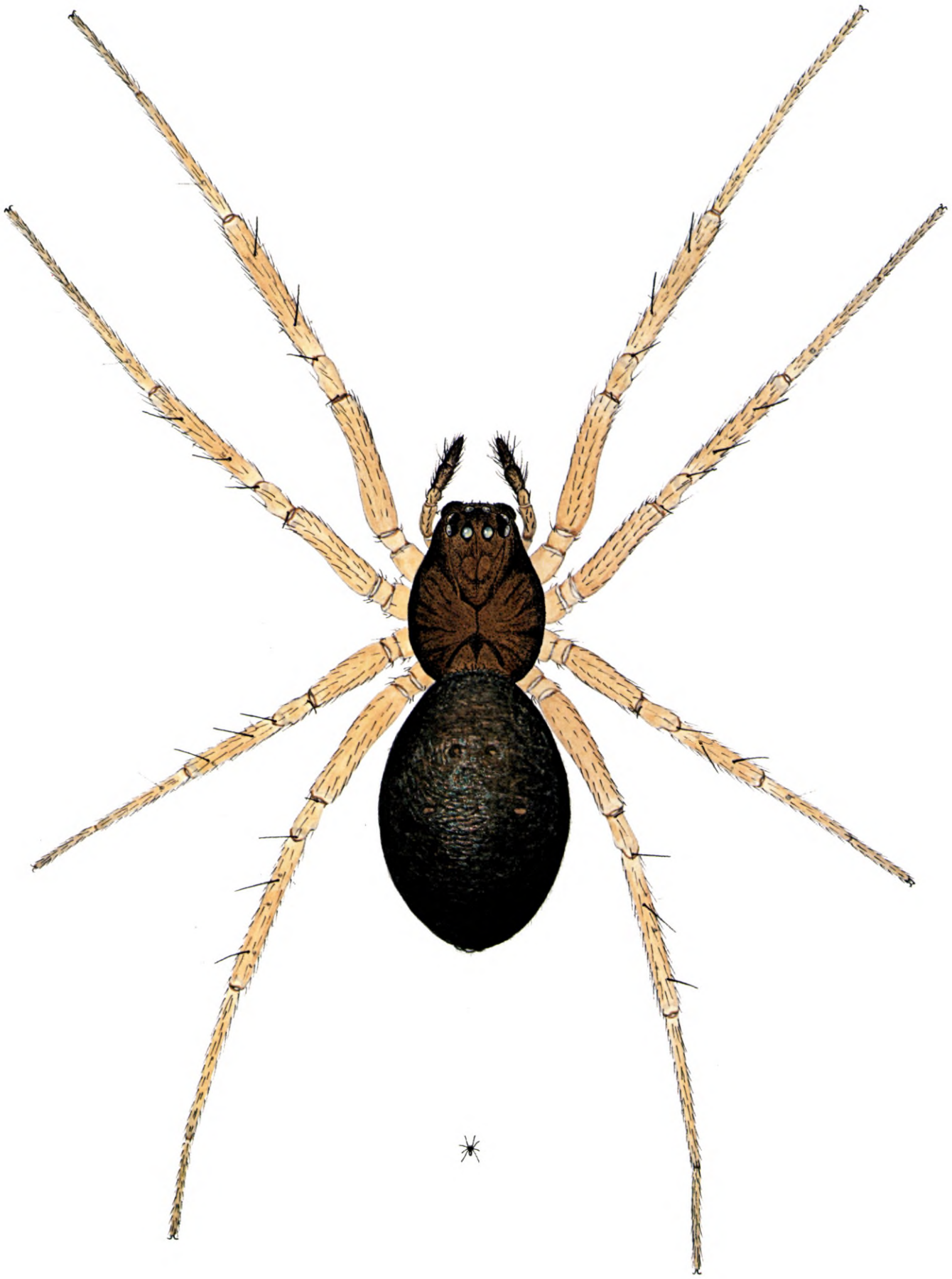
Agyneta subtilis (O. P.-Cambridge) ♀



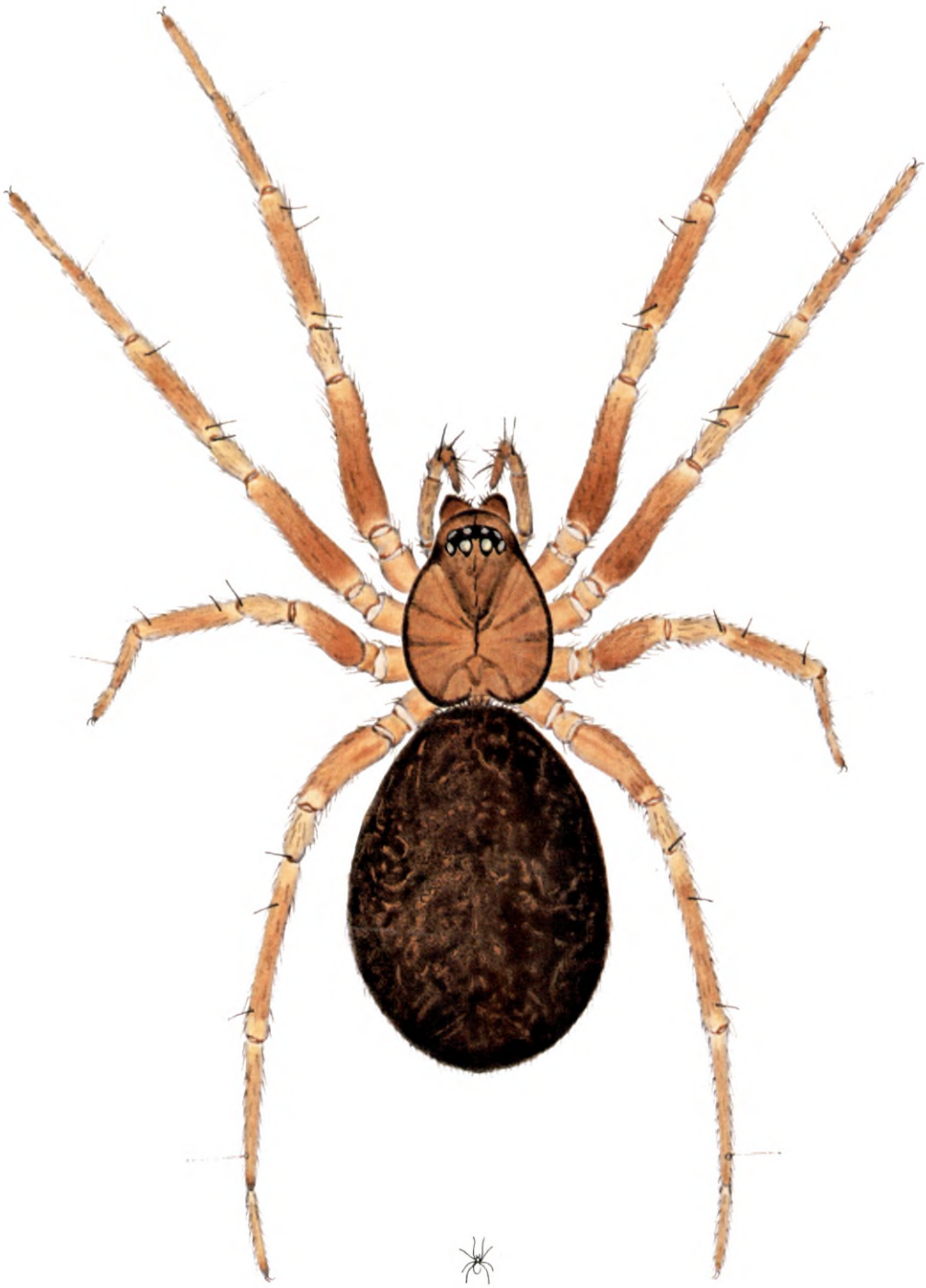
Agyneta conigera (O. P.-Cambridge) ♀



Meioneta innotabilis (O. P.-Cambridge) ♀

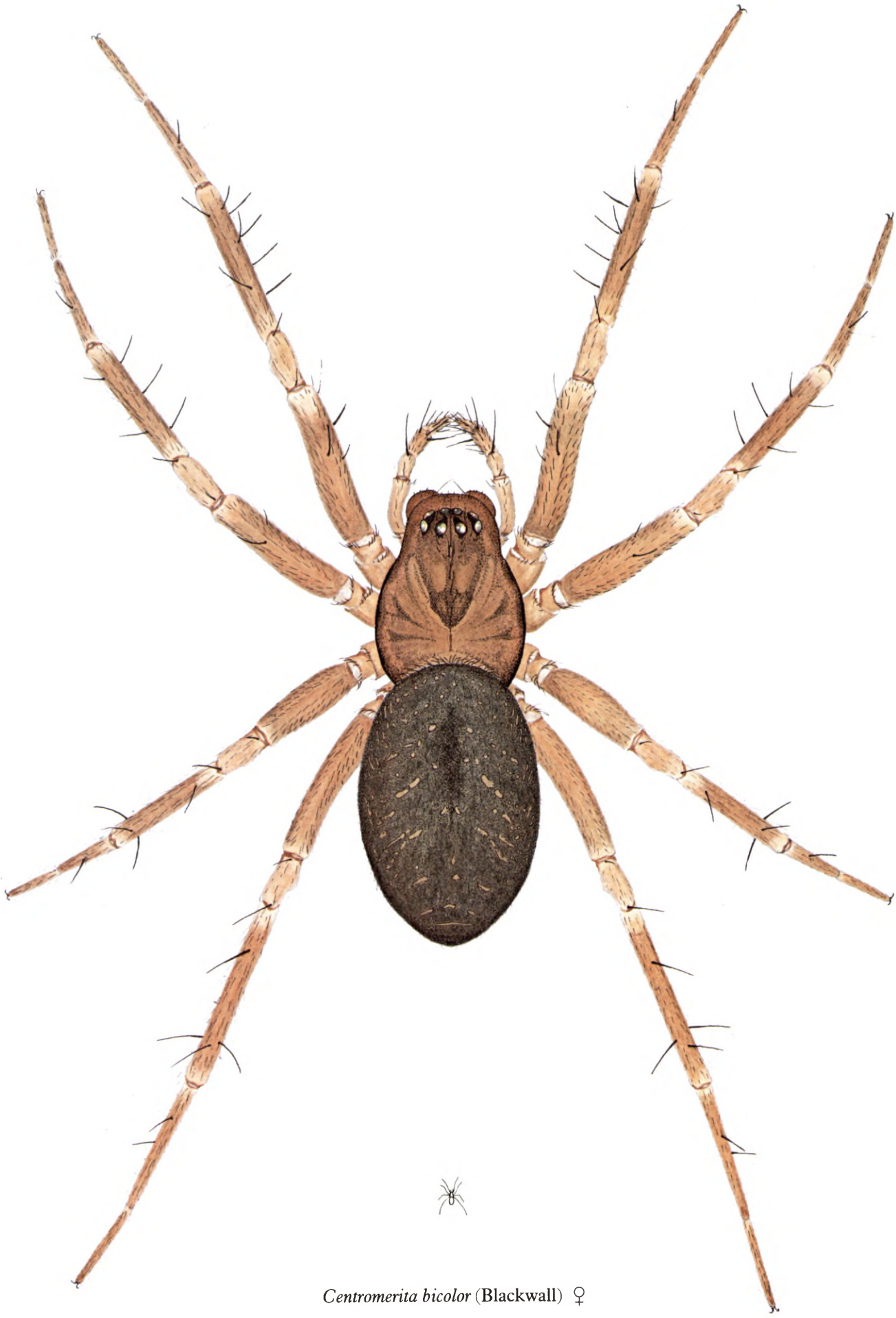


Meioneta rurestris (C. L. Koch) ♀

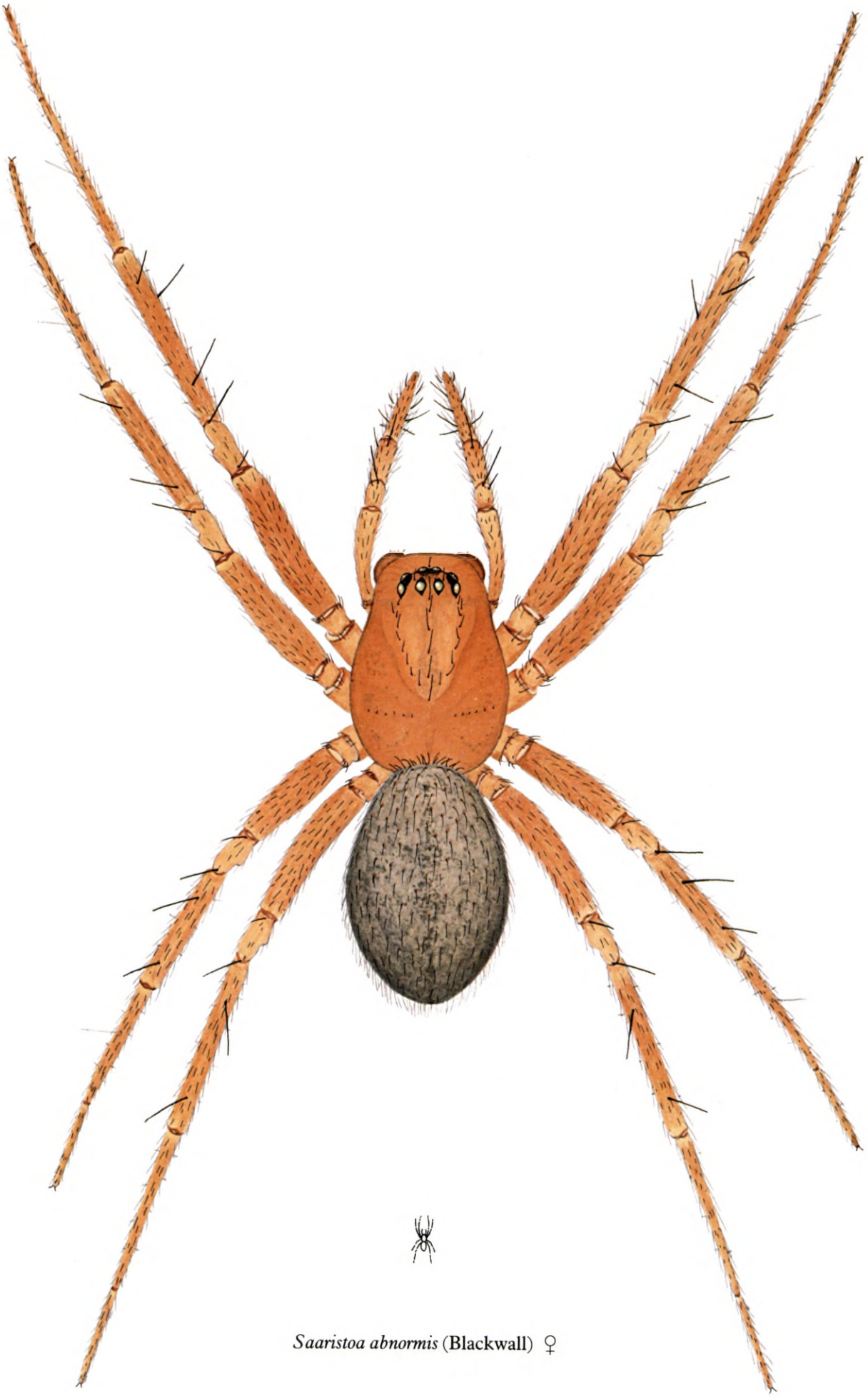


Microneta viaria (Blackwall) ♀

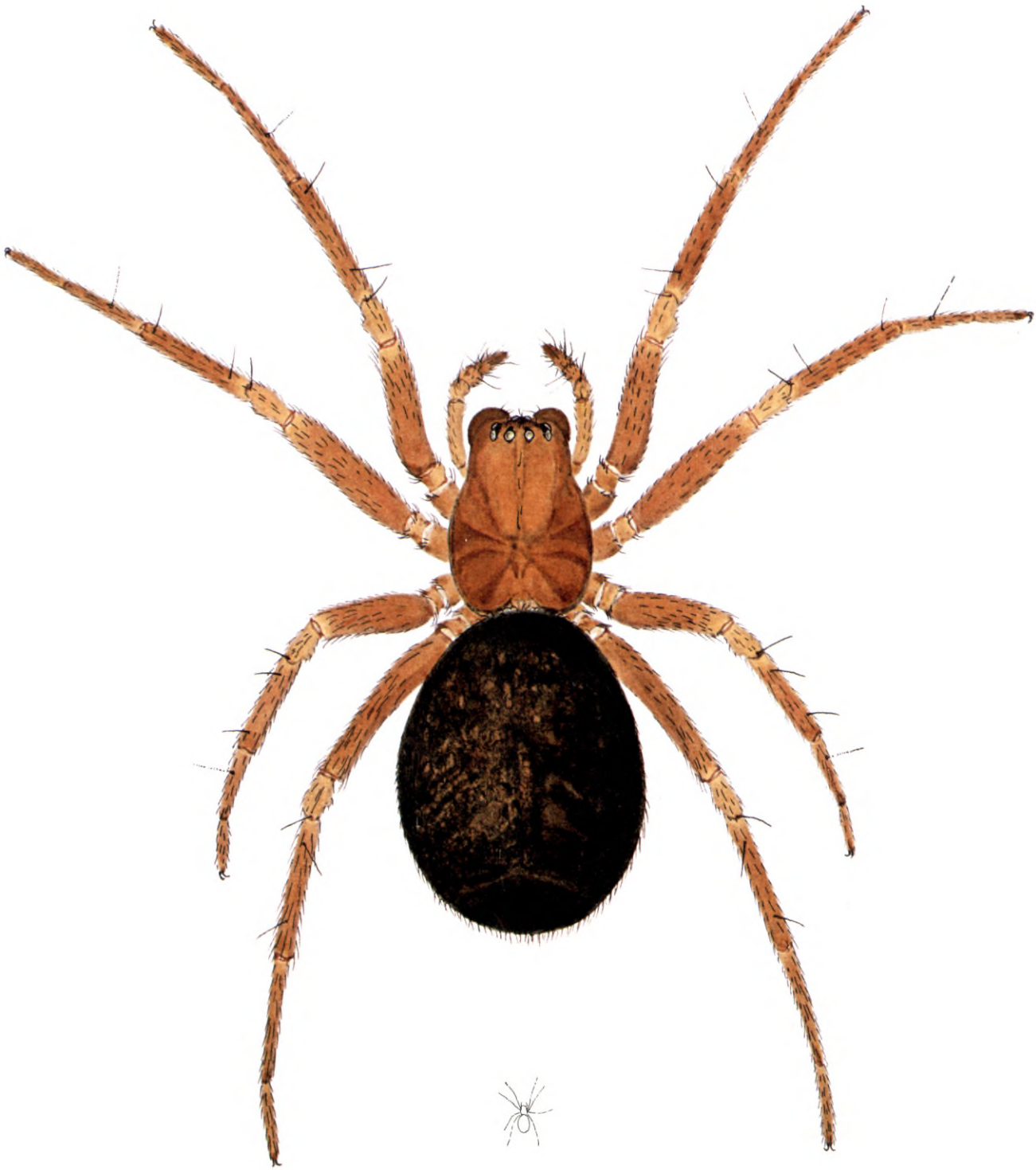
Centromerus sylvaticus (Blackwall) ♀



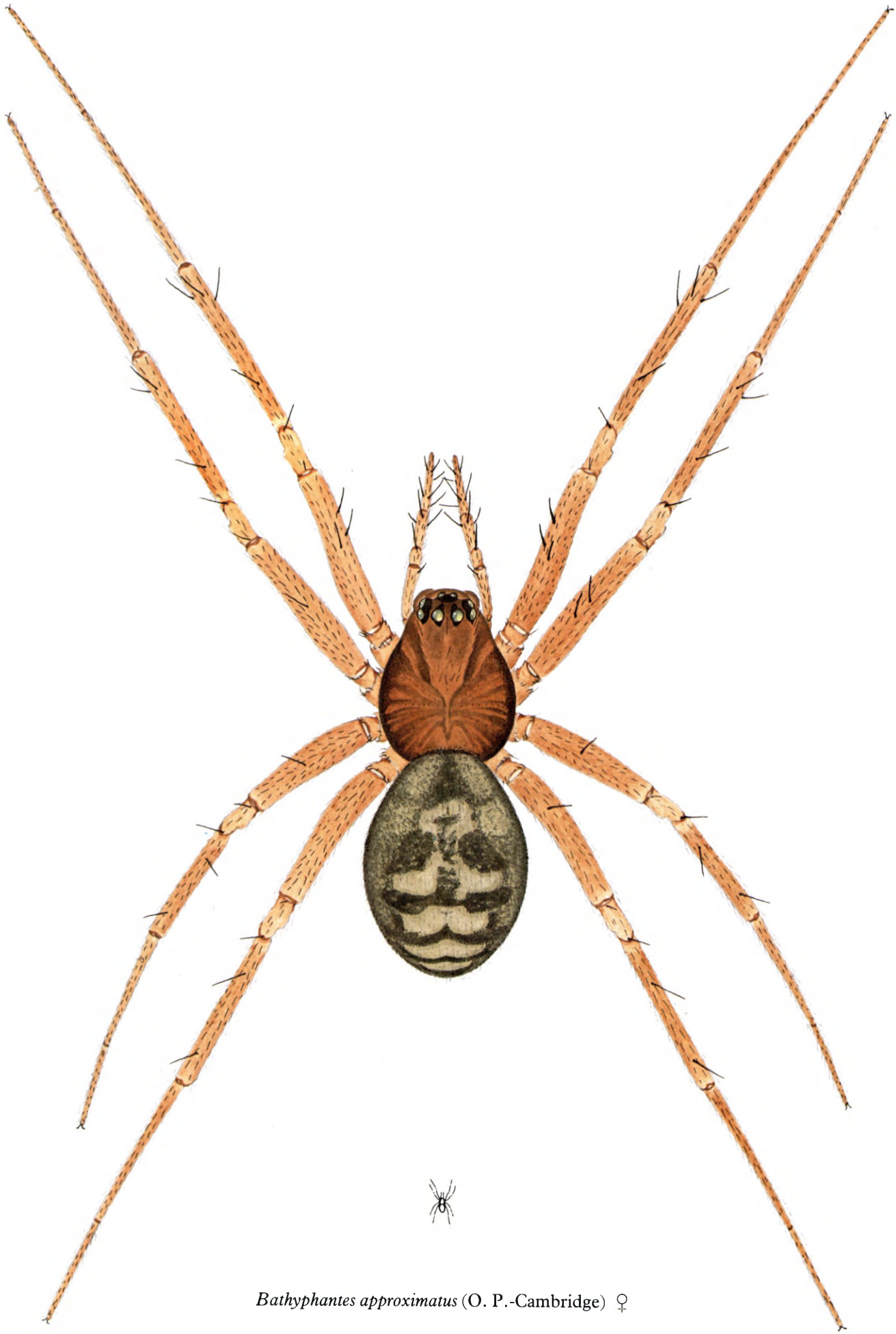
Centromerita bicolor (Blackwall) ♀



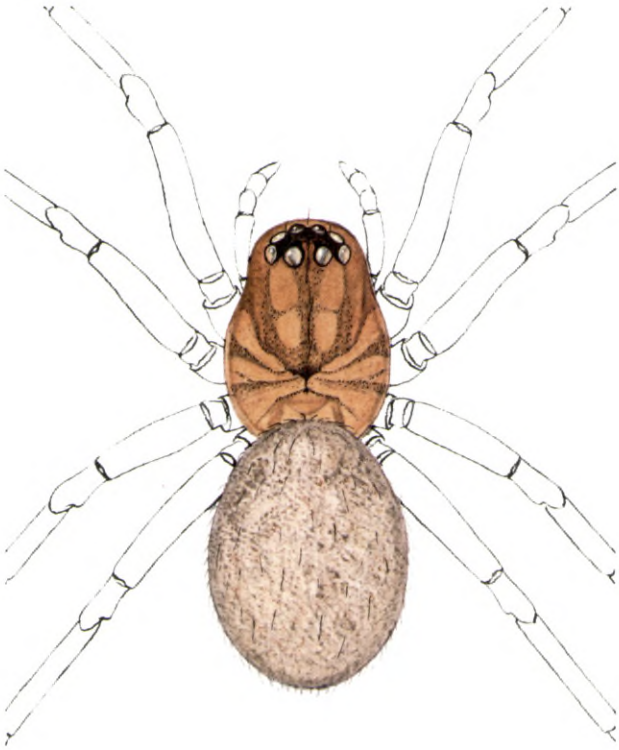
Saaristoa abnormis (Blackwall) ♀



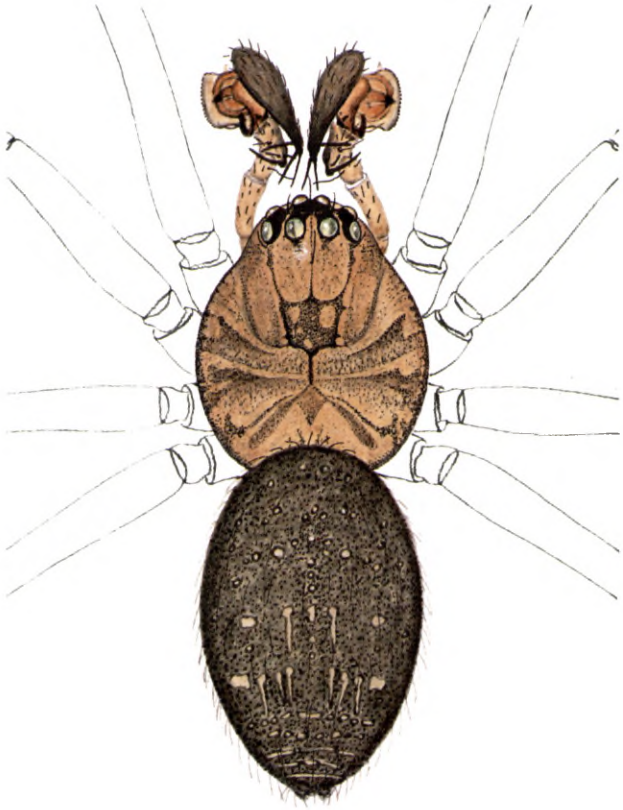
Macrargus rufus (Wider) ♀



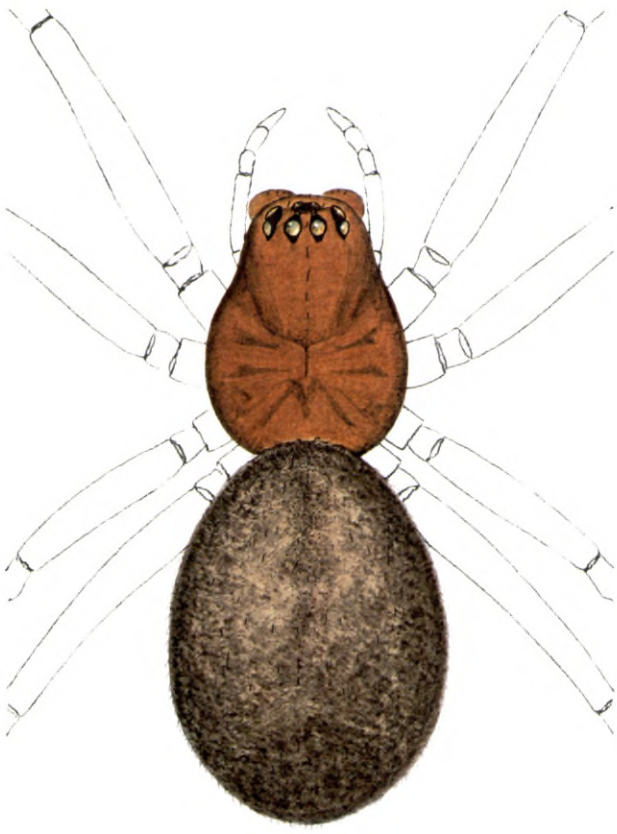
Bathyphantes approximatus (O. P.-Cambridge) ♀



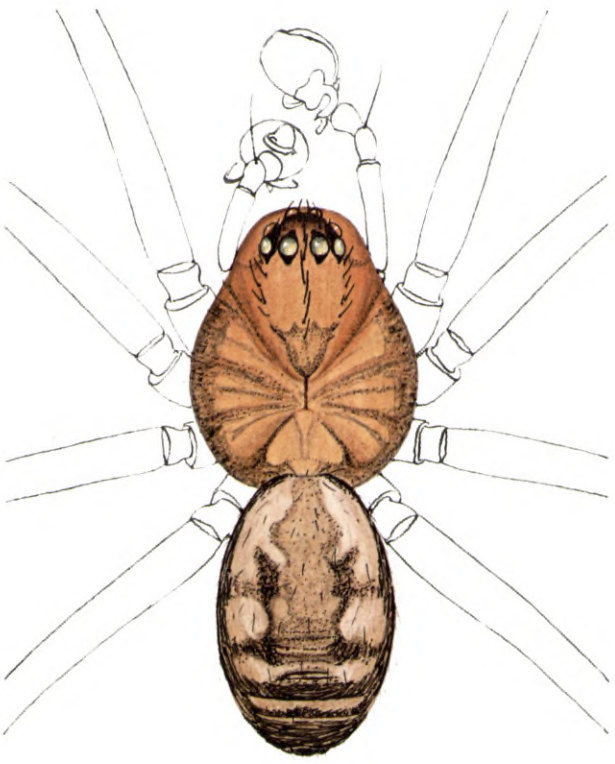
(**a**) *Maro minutus* O. P.-Cambridge ♀



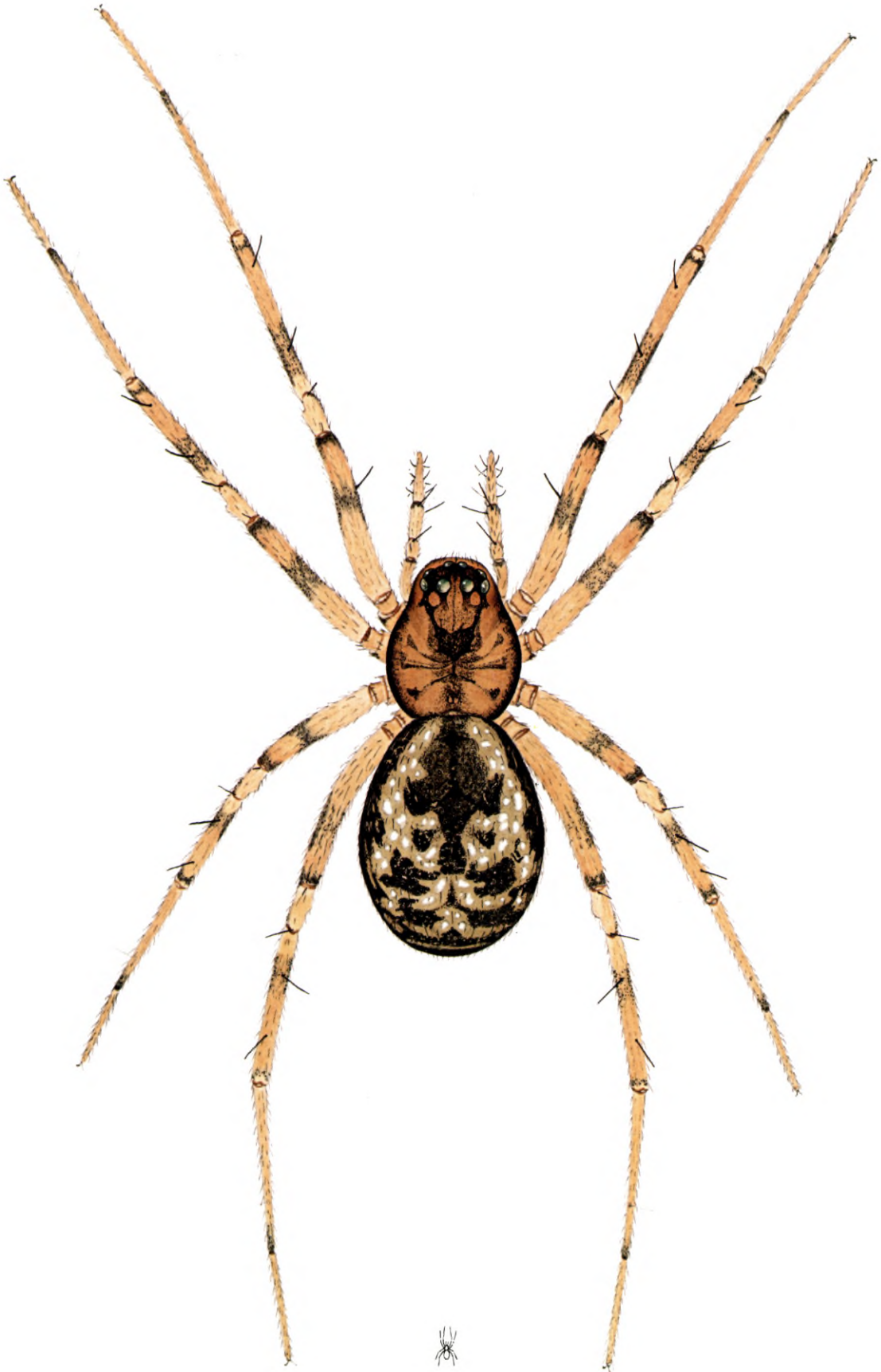
(**b**) *Sintula cornigera* (Blackwall) ♂



(**c**) *Diplostyla concolor* (Wider) ♀



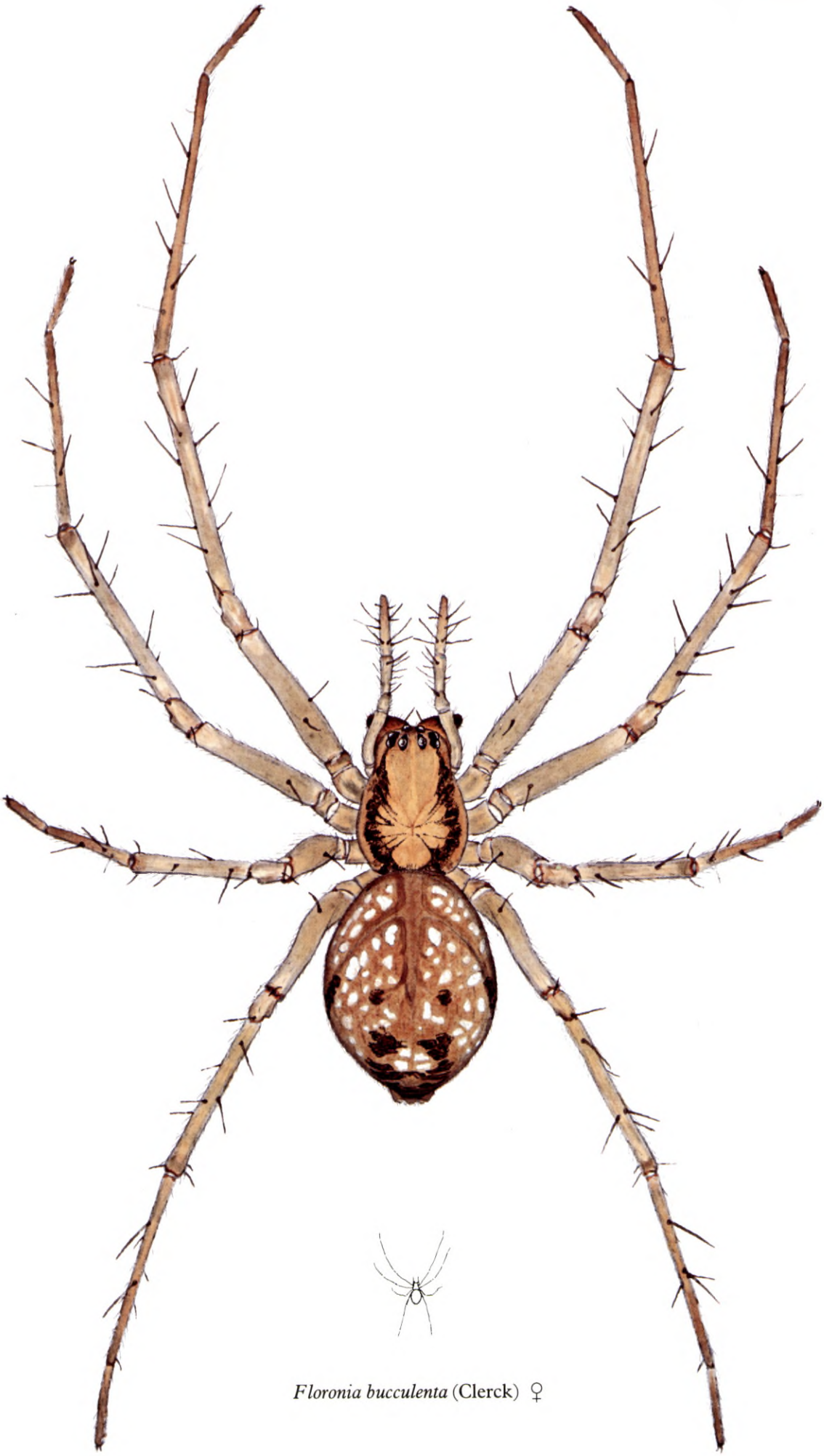
(**d**) *Taranucnus setosus* (O. P.-Cambridge) ♂



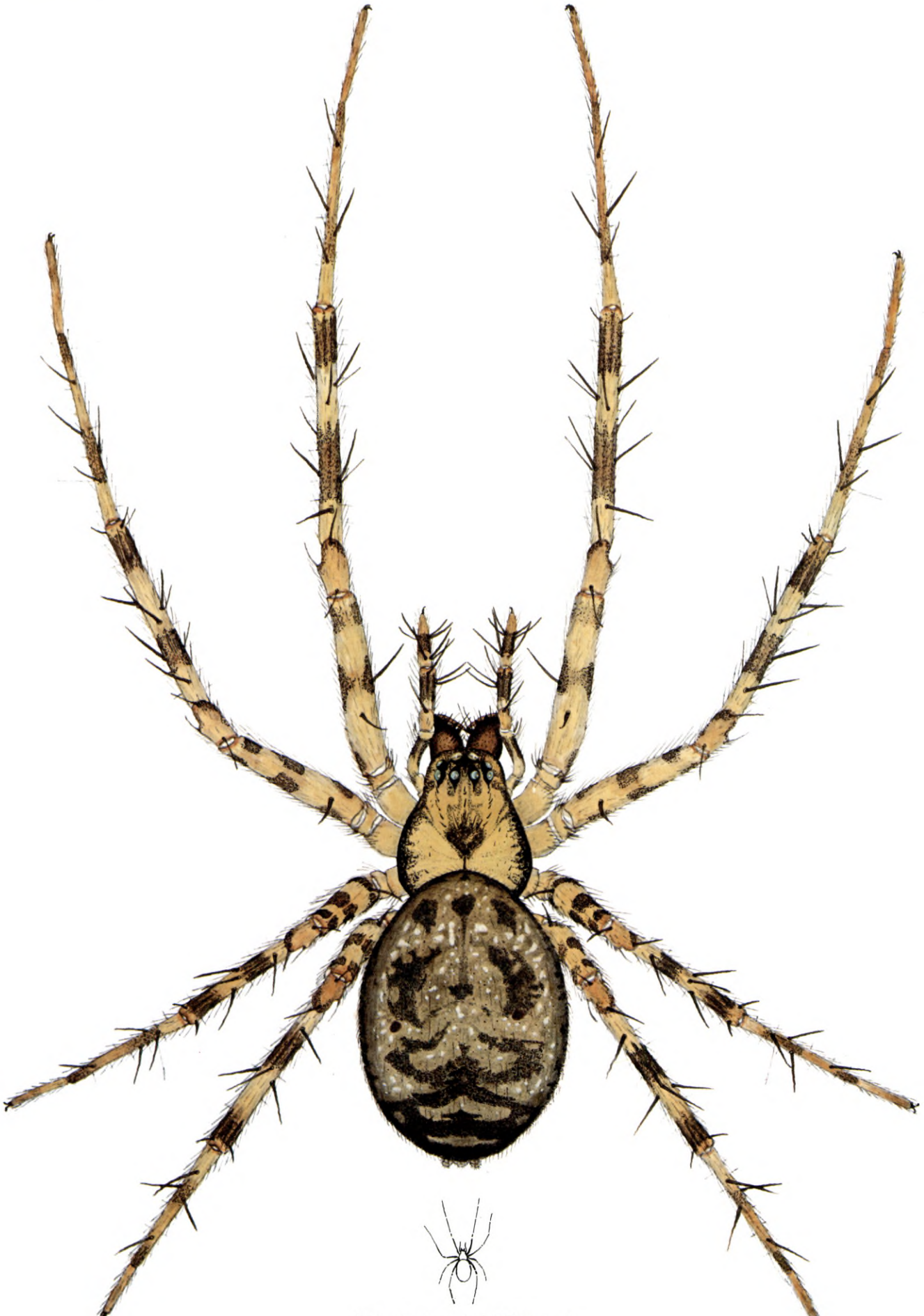
Poeciloneta globosa (Wider) ♀

Drapetisca socialis (Sundevall) ♀

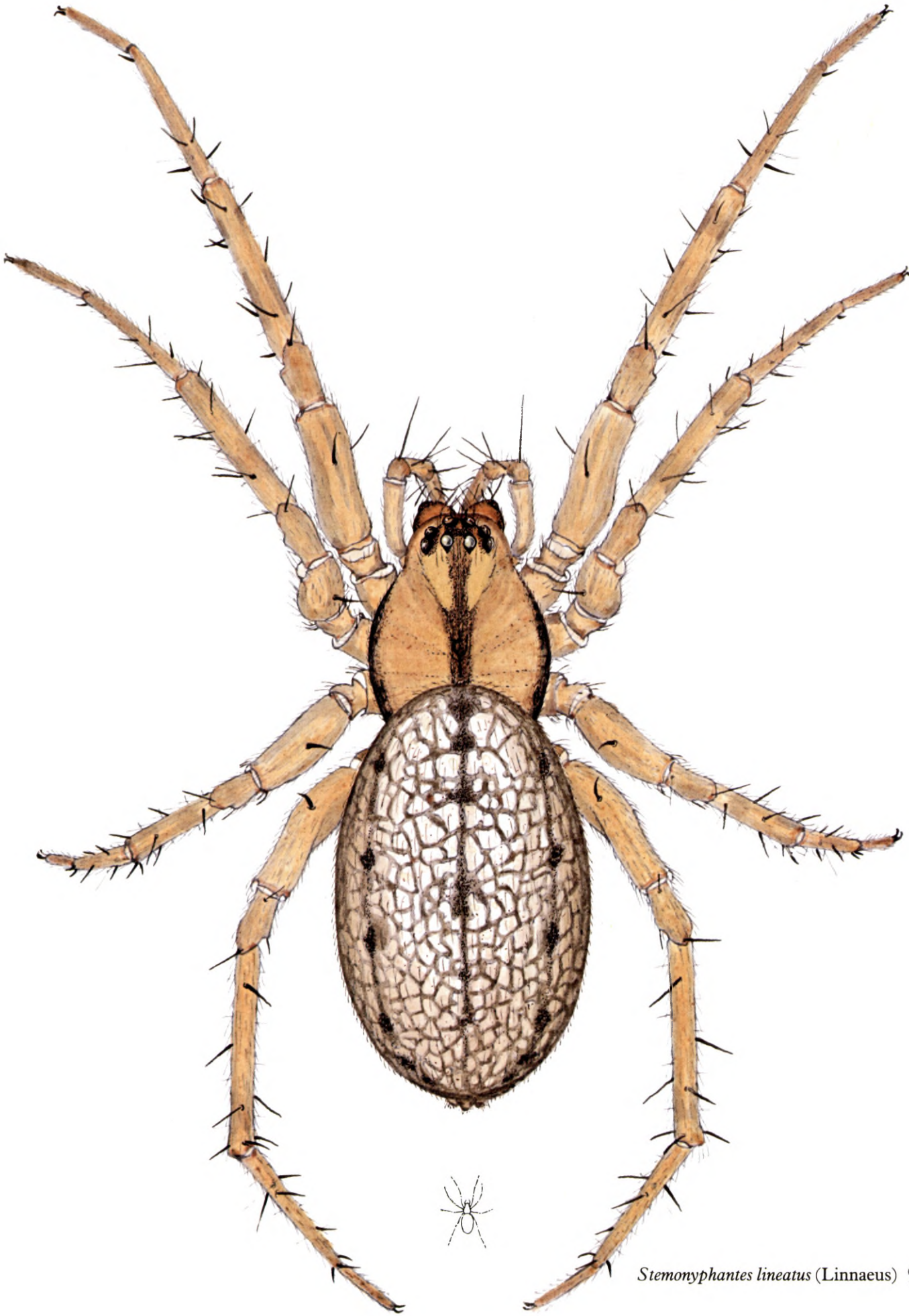
Tapinopa longidens (Wider) ♀



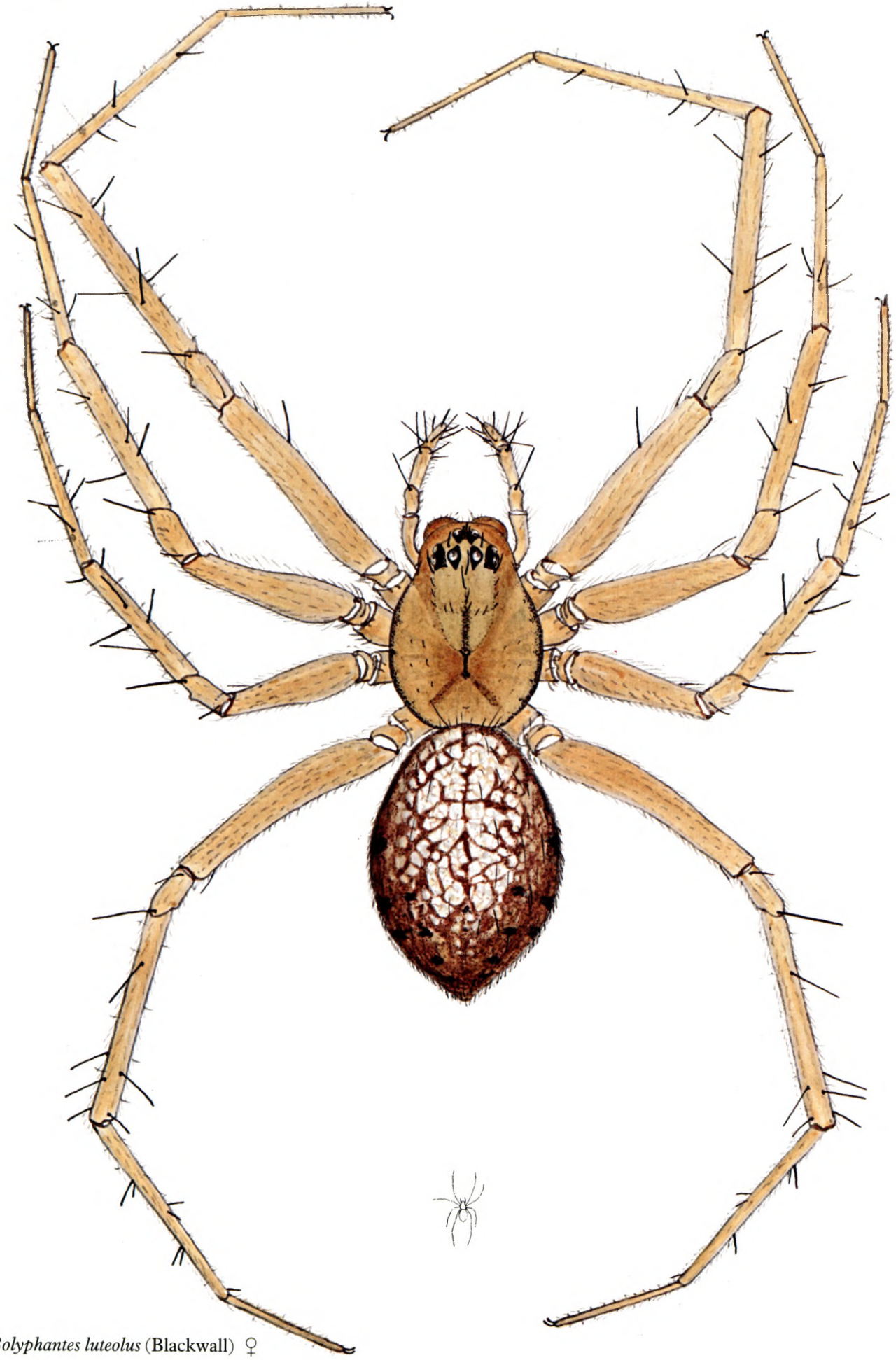
Floronia bucculenta (Clerck) ♀



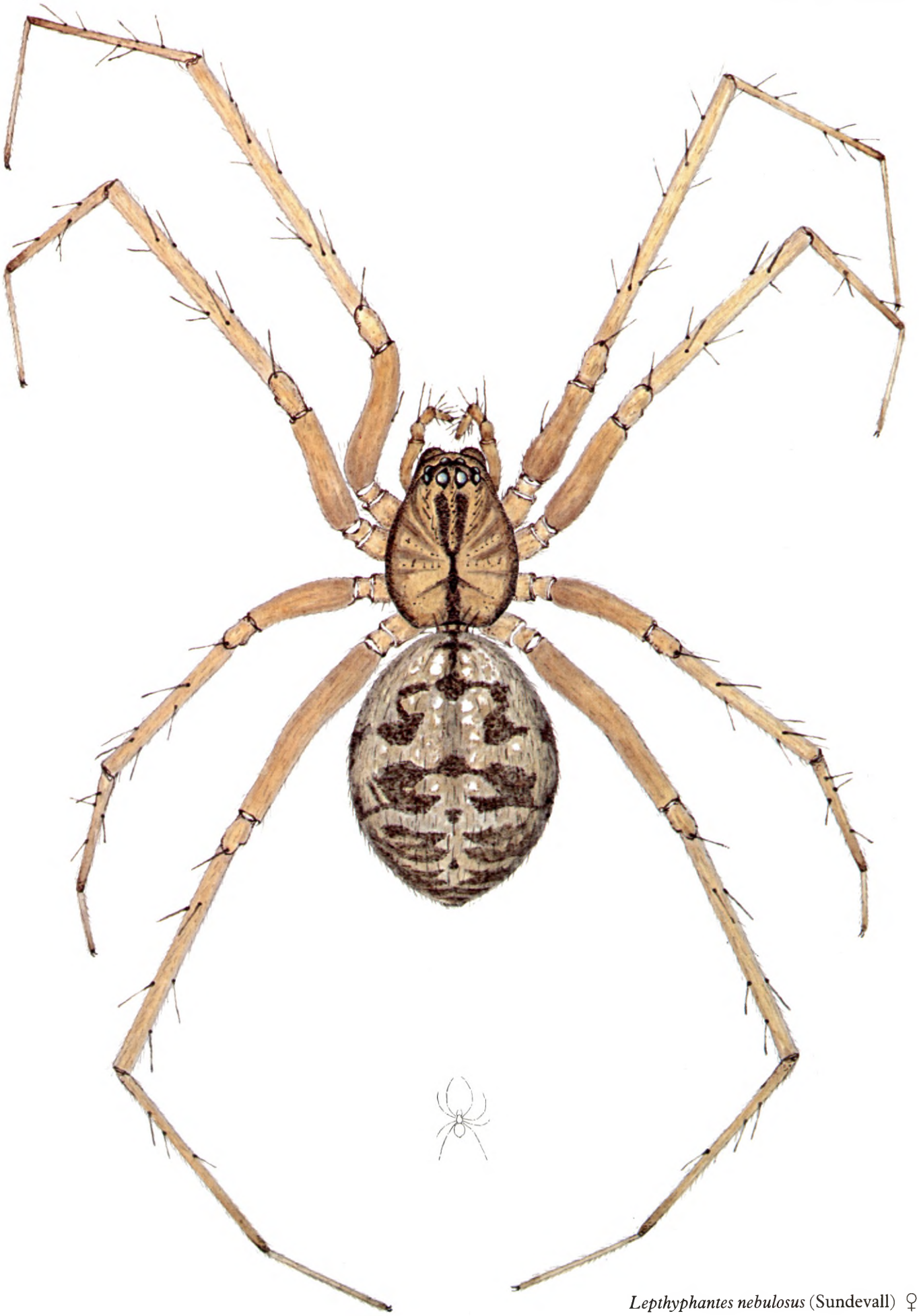
Labulla thoracica (Wider) ♀



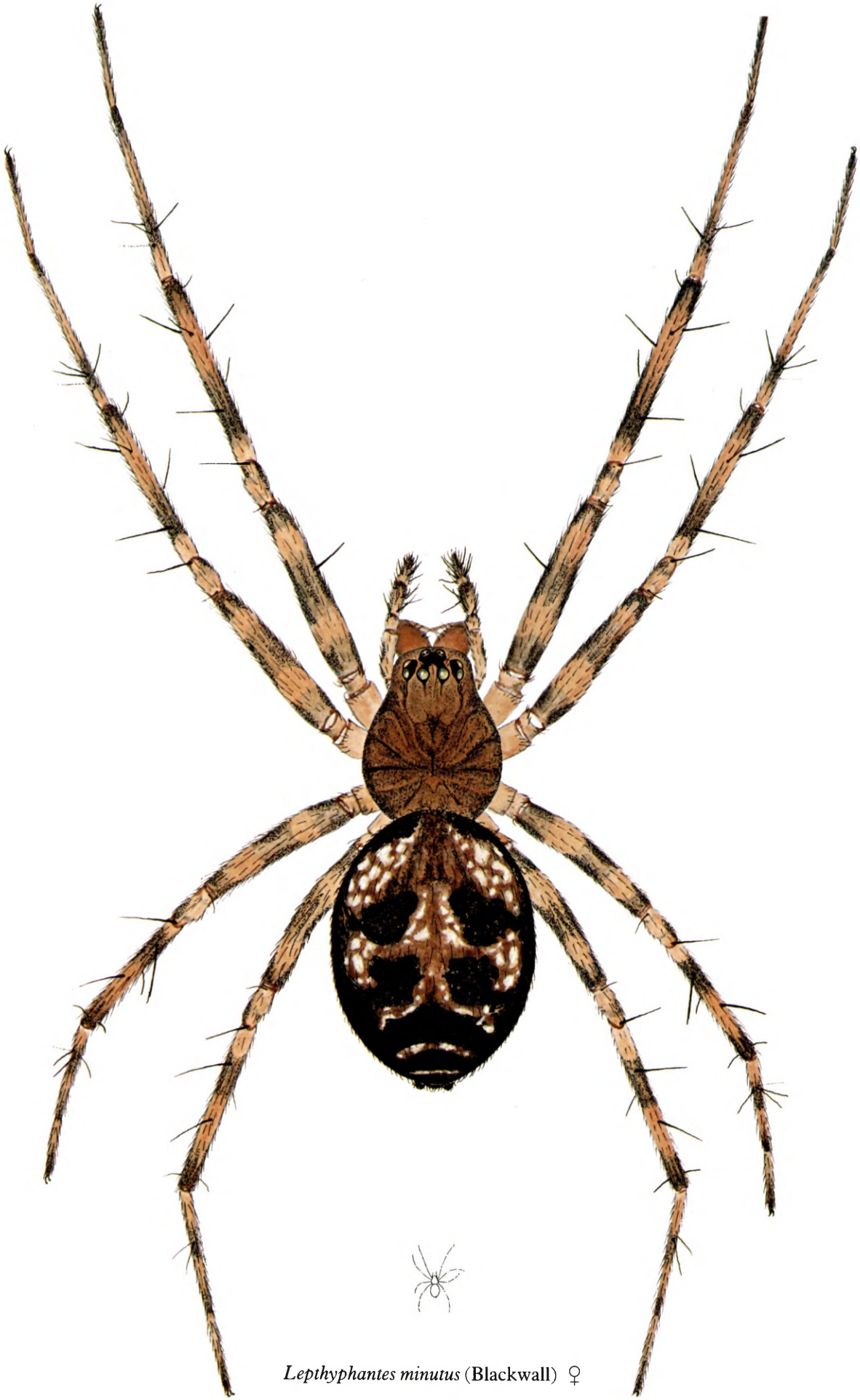
Stemonyphantes lineatus (Linnaeus) ♀



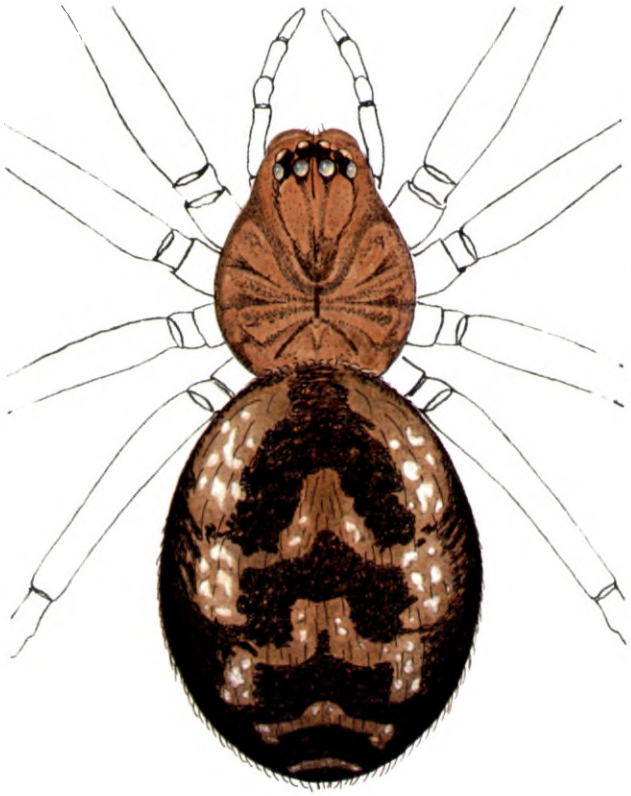
Bolyphantes luteolus (Blackwall) ♀



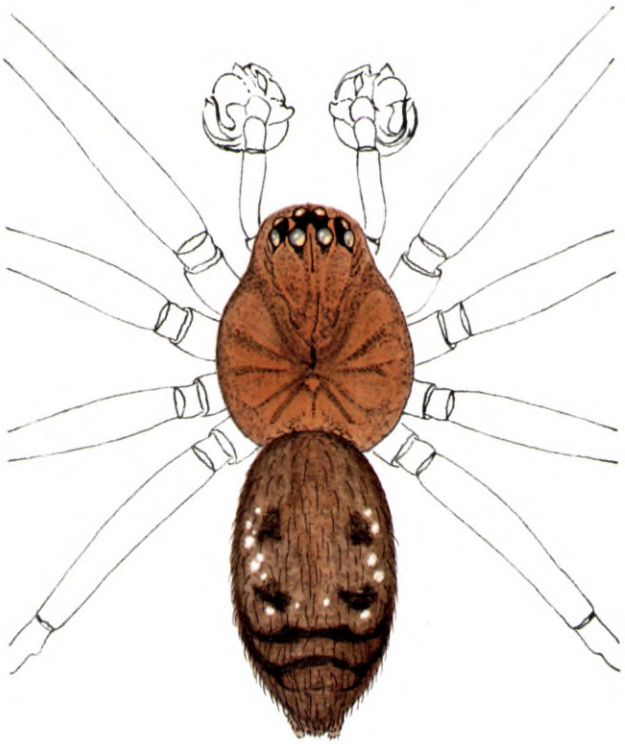
Lepthyphantes nebulosus (Sundevall) ♀



Lepthyphantes minutus (Blackwall) ♀



(**a**) *Lepthyphantes leprosus* (Ohlert) ♀



(**b**) *Lepthyphantes leprosus* (Ohlert) ♂

♀ Abdomens

(**c**) *L. alacris* (Blackwall)

(**d**) *L. obscurus* (Blackwall)

(**e**) *L. cristatus* (Menge)

(**f**) *L. mengei* Kulczynski

(**g**) *L. zimmermanni* (Bertkau)

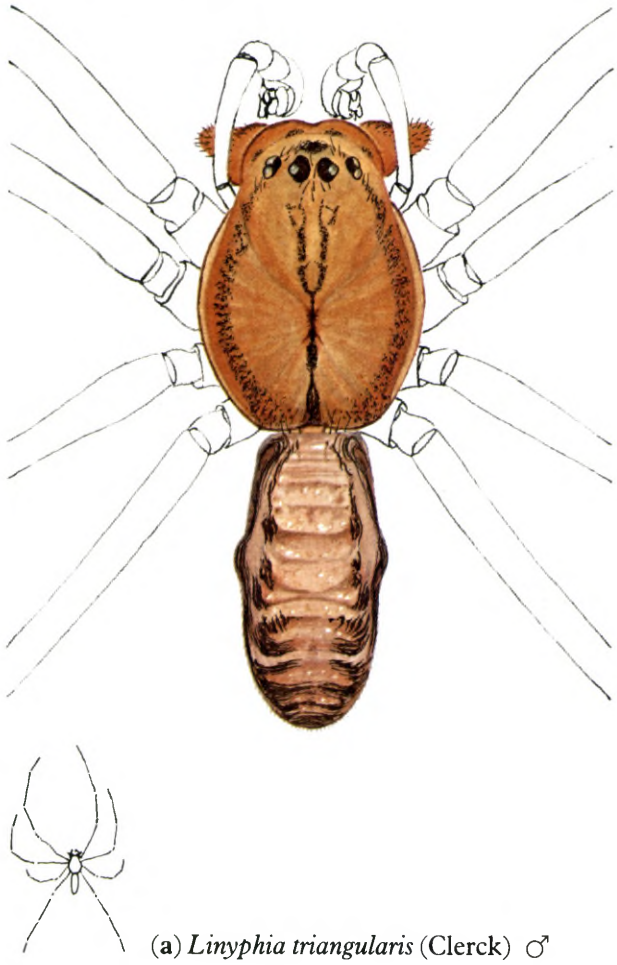
(**h**) *L. tenuis* (Blackwall)

(**i**) *L. flavipes* (Blackwall)

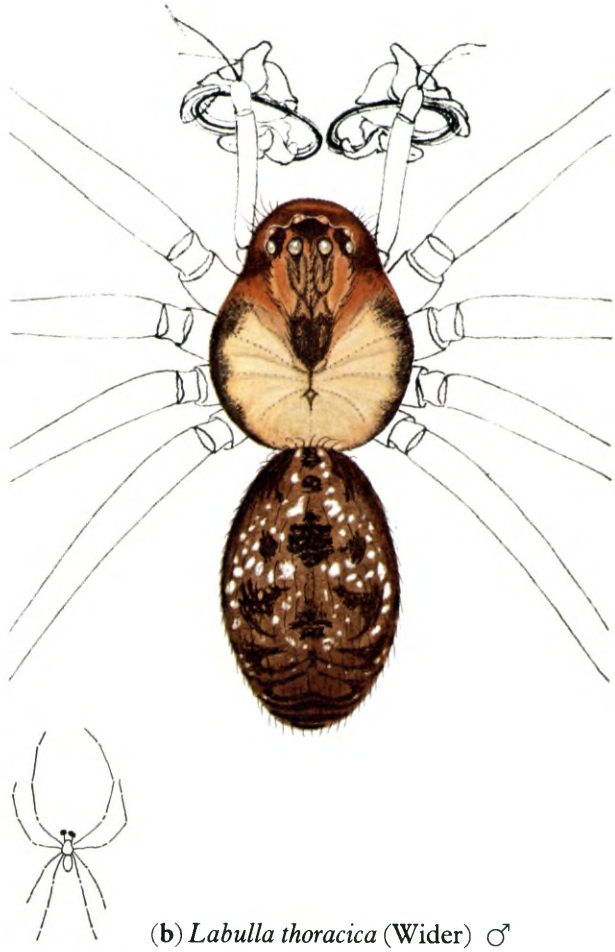
(**j**) *L. ericaeus* (Blackwall)

Helophora insignis (Blackwall) ♀

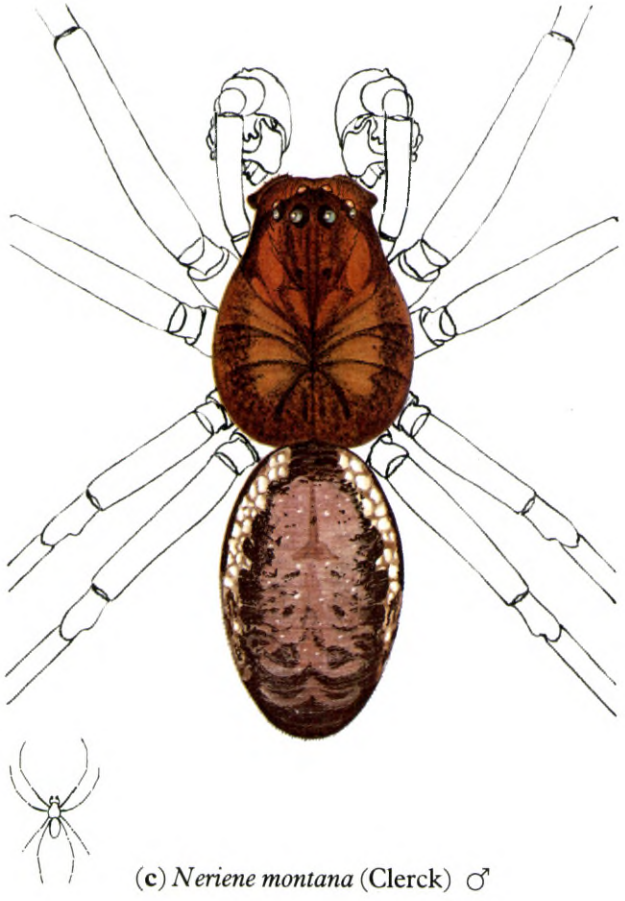
Pityohyphantes phrygianus (C. L. Koch) ♀



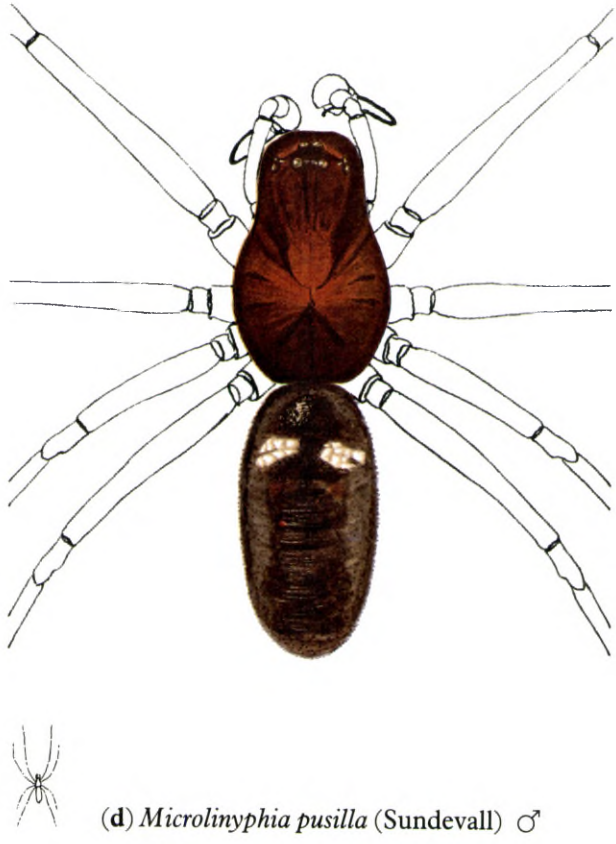
(**a**) *Linyphia triangularis* (Clerck) ♂



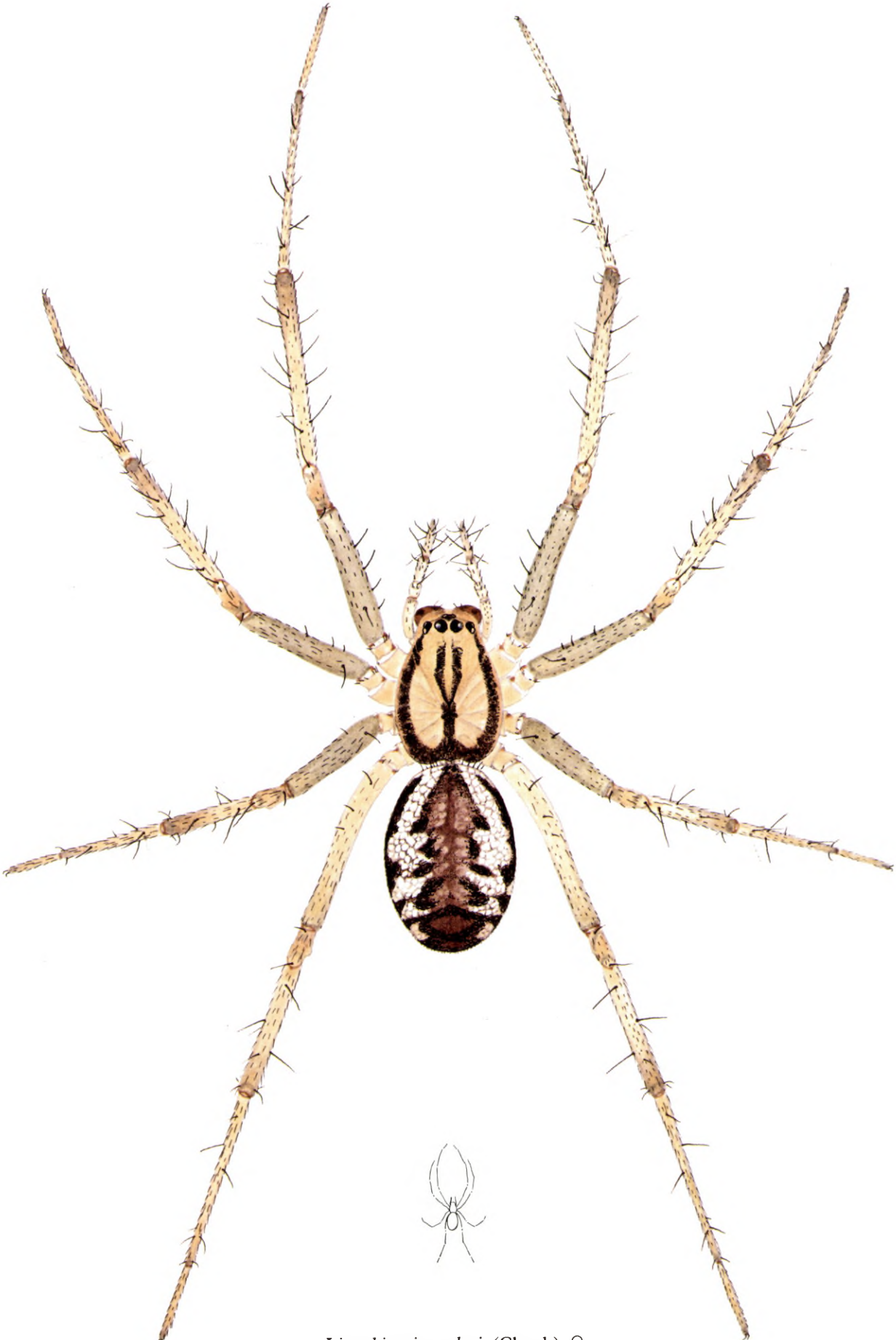
(**b**) *Labulla thoracica* (Wider) ♂



(**c**) *Neriene montana* (Clerck) ♂

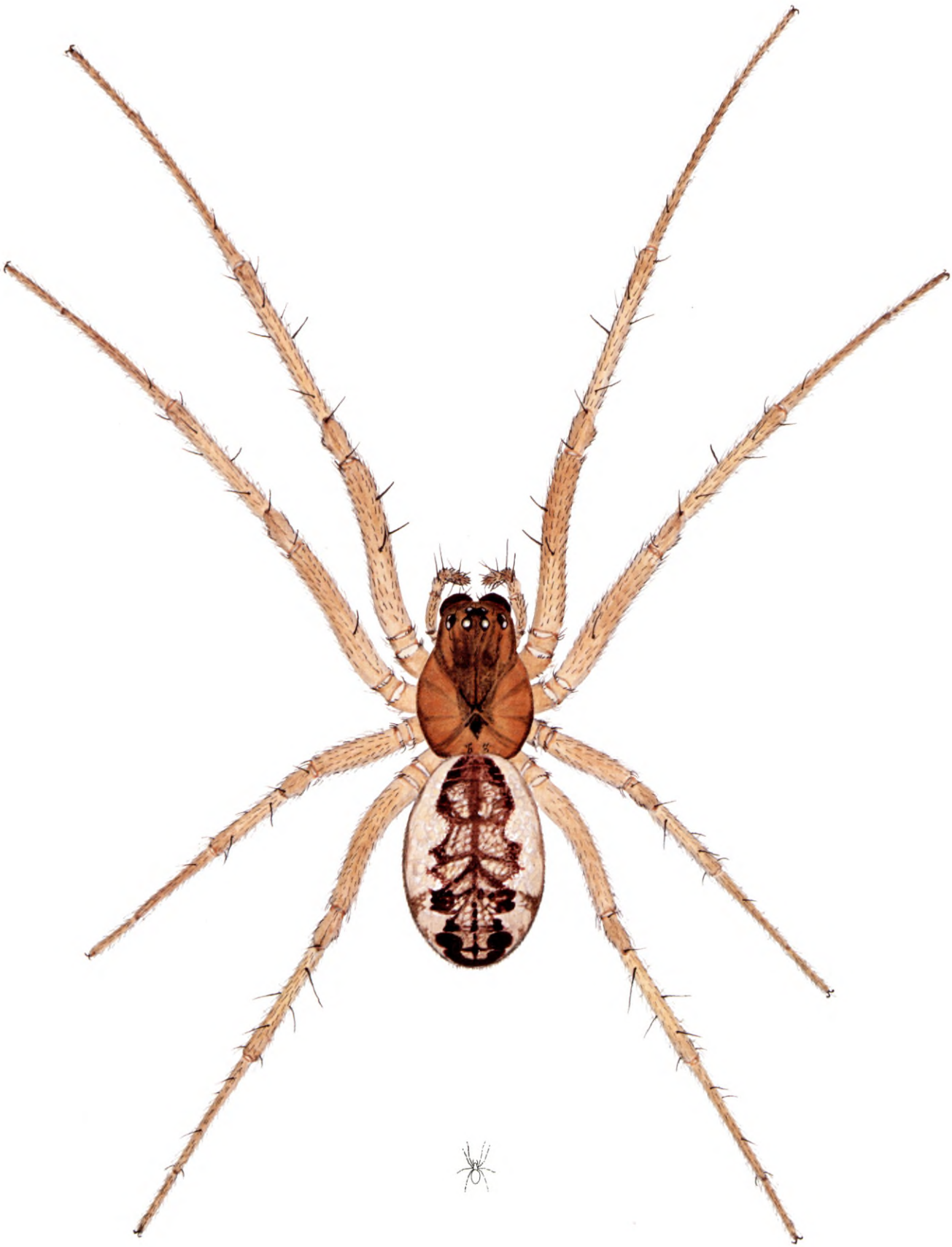


(**d**) *Microlinyphia pusilla* (Sundevall) ♂

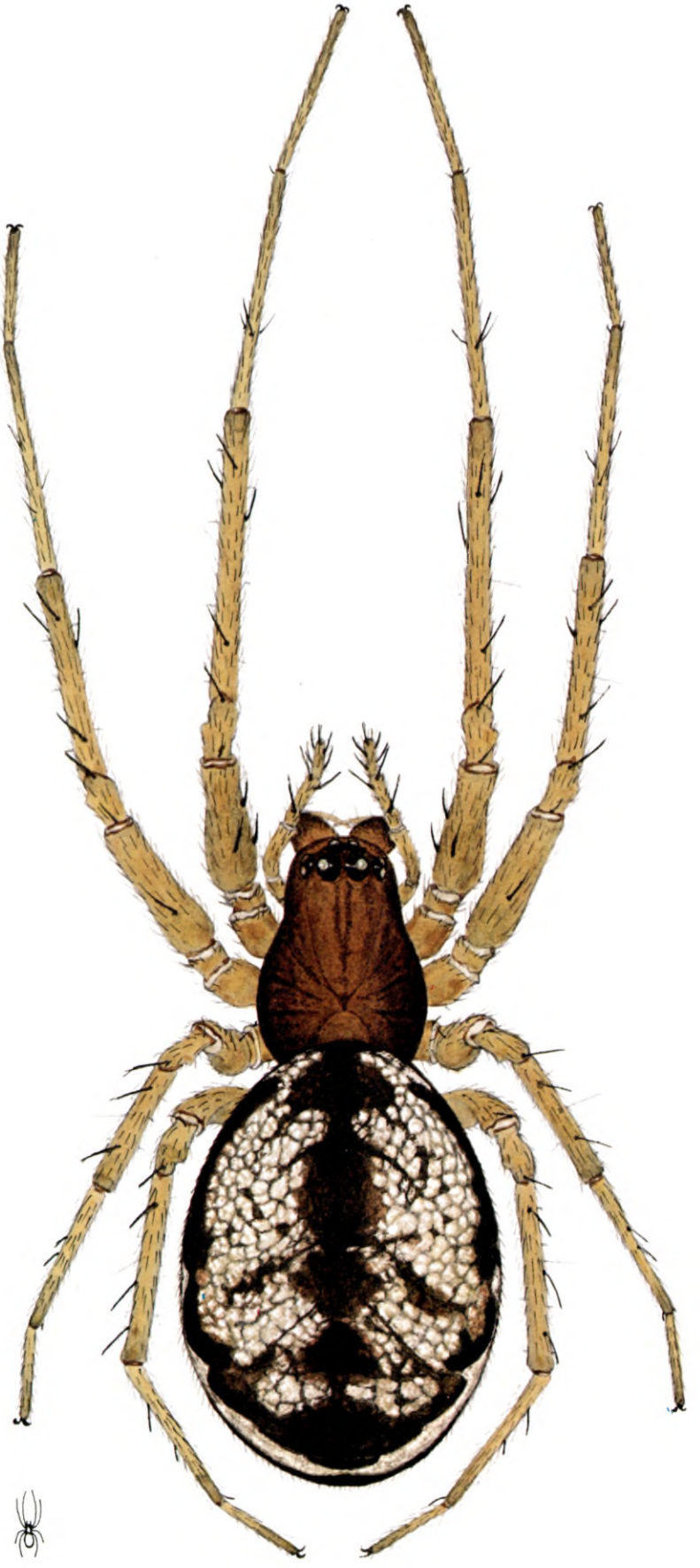


Linyphia triangularis (Clerck) ♀

Linyphia hortensis (Sundevall) ♀



Neriene peltata (Wider) ♀



Microlinyphia pusilla (Sundevall) ♀

Allomengea scopigera (Grube) ♂

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MICHAEL J. ROBERTS was born in Leicestershire in 1945. He developed an early interest in natural history and also in art in which his mother, herself an artist, gave him encouragement and training in a variety of media. It was in the second year of his studies at Sheffield University Medical School that his interest in spiders was first awakened. Although interested in various aspects of zoology and botany, he took on the challenge of arachnology as being a difficult and underworked field. The lack of well-illustrated books inspired him to try his hand at providing his own illustrations.

He began by depicting the bodies about one inch long, but soon realized that only greatly enlarged, full-colour illustrations of spiders as they appear in spirit under the microscope would really satisfy the needs of the student endeavouring to identify specimens. His first full-size colour illustration, reproduced in this work as Plate 131, was produced in 1968 (the year of his graduation), using a monocular microscope and primitive lighting equipment and taking nearly a week's spare-time work to complete. He later progressed to a stereozoom microscope which enabled him to reduce the time spent on each drawing to between seven and eight hours.

Publication of Michael Roberts' work, begun as a hobby, was mooted in the late 1970s. He first concentrated on completing the colour plates and then moved on to the line-drawings, writing the text as the illustrative work progressed. Volume 1 (Atypidae to Theridiosomatidae) was published with the colour plate volume in 1985 and the work was completed in 1987 with the publication of Volume 2: Linyphiidae.

Although an amateur, in the best tradition of British arachnologists, Dr Roberts has a worldwide reputation which has been greatly enhanced since the publication of this *magnum opus*. He is currently Secretary of the British Arachnological Society. After a career in both general and private medical practice, Dr Roberts has opted for 'the good life' on a smallholding on the east coast of Scotland which he runs with his zoologist wife, Deborah, and where he is also furthering his artistic as well as his zoological career. He has recently provided the superb colour plate to illustrate *Martin Lister's English Spiders*.

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