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The Female Genitalia of the Spider Genus *Lepthyphantes* (Linyphiidae)

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Introduction

Female spiders of the Genus *Lepthyphantes* are often difficult for the beginner to identify. Although the epigynes of some species look rather similar, difficulties are caused more by the fact that the epigyne structure is not always clear and distinct. The purpose of this paper is to help with the identification of the various species by means of photographs and line drawings. A further paper, Part II, will deal with the internal structure of the epigynes, details of which will be illustrated by photographs and drawings.

Part I – The Epigynes

Photography

All the photographs were made from spiders immersed in 70% alcohol, the epigynes being viewed from a position directly above, unless a statement is made to the contrary.

The epigynes were recorded on Ilford Pan F film (ASA 50) using a Zeiss 35mm attachment camera, with the Zeiss basic unit 1, and focussing eyepiece. This was fitted to a Watson monocular microscope, equiped with a Zeiss 40mm luminar and a Zeiss 12.5X compensating ocular. The illumination was provided by a Watson spot lamp on an adjustable stand.

The Line Drawings

The drawings were made with a camera lucida at a standard magnification of 135 diameters, with the exception of *Lepthyphantes ericaeus* which is reproduced at 200 diameters. When possible, a number of specimens of each species were examined to eliminate any errors which may result from a translucent or distorted specimen. The density and range of pigmentation may differ considerably from that indicated by the diagrams.

The Photographs

This genus contains twenty British species, nineteen of which are illustrated by photographs. The nomenclature follows the check list in Vol. 2 of British Spiders by Locket and Millidge, apart from *Lepthyphantes audax* Sorensen which is a synonym of *L. umbraticola* Keyserling.

While the majority of the epigynes are easily recognised, confusion may arise with some species. For changes in the transparency of the epigyne, and distortion, can have a remarkable effect on its appearance. The epigyne of *Lepthyphantes tenuis* (A), Plate 2, shows some distortion, but another specimen (B) is highly translucent, and as such is not easily distinguished from related species. The visibility of fine structural detail is further influenced by the blending effect which occurs when the relevent structures lie close together, and only careful control of the illumination and positioning of the specimen will enable these structures to be distinguished. Two examples of interest are to be seen in the epigynes of *L. whymperi,* and *L. flavipes.* In both, there is present a fine membrane which covers the anterior portion of the scape. That of *L. whymperi* is clearly seen in the photograph (Plate 1) and is indicated by an arrow. On the other hand, the photograph of *L. flavipes* (Plate 3) does not show the presence of a fine membrane covering part of the scape. It can only be seen at higher magnifications when the epigyne is viewed from in front and to one side. The edge of the membrane is indicated by an arrow in Fig. D, Plate 6.

In practice, the structure of the epigyne is not always as clear as one would hope. The real value of a photograph if used as an aid to identification, lies in recording the appearance of an average specimen as seen under the microscope, and not in recording the perfect specimen as indicated by a line diagram.

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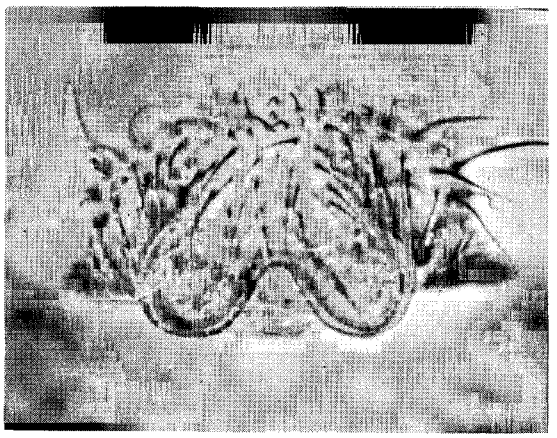
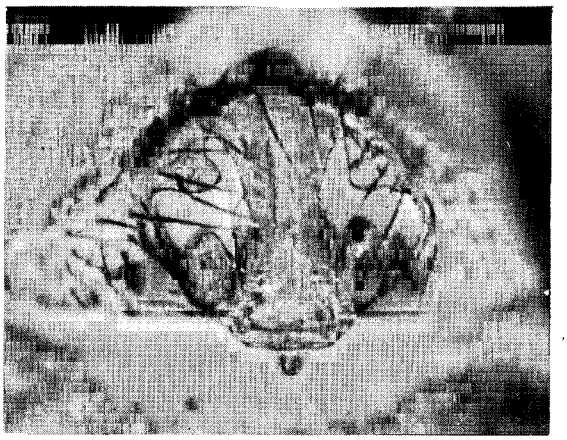
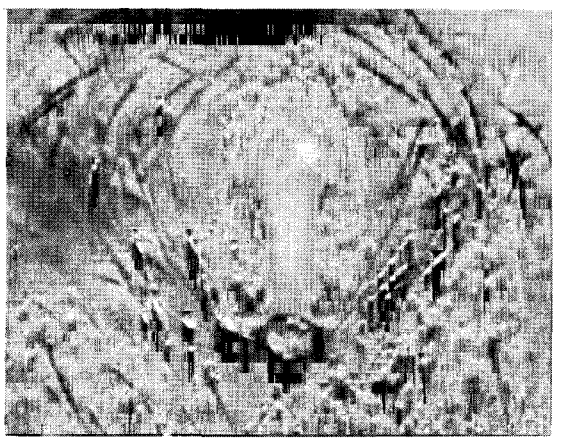


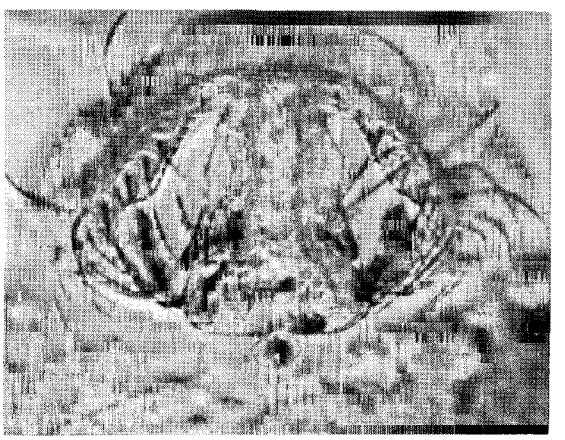
Lepthyphantes nebulosus X 98



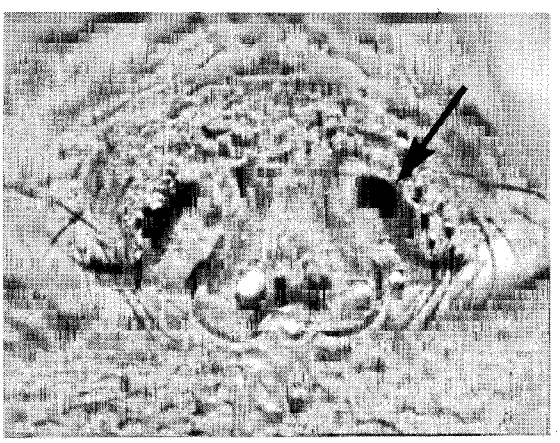
L. leprosus X 98



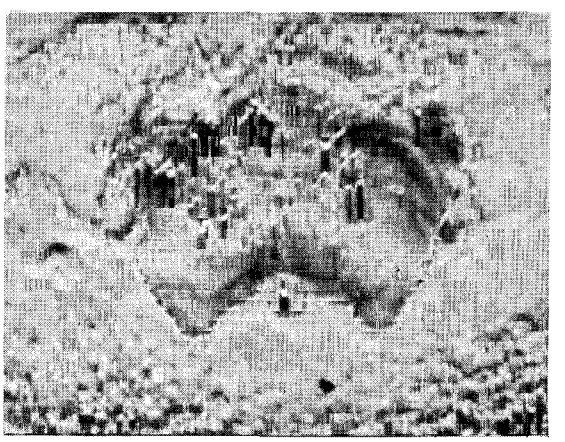
L. minutus X 110



L. alacris X 120



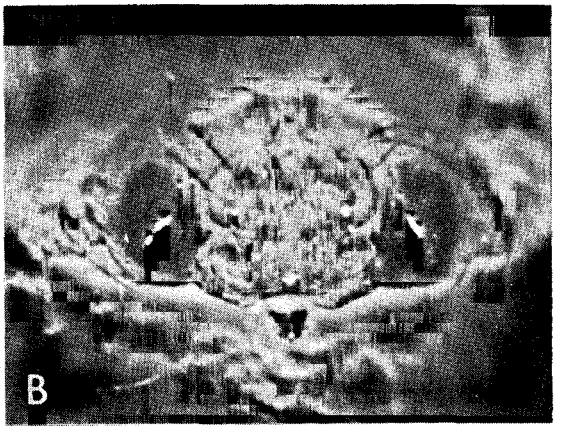
L. whymperi X 125



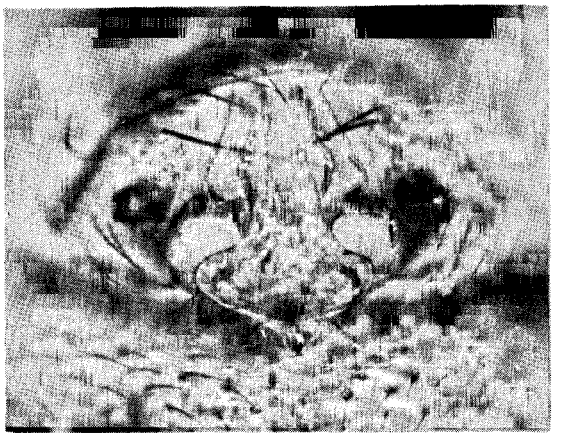
L. obscurus X 125

PLATE 1. – Epigynes: *Lepthyphantes spp.*

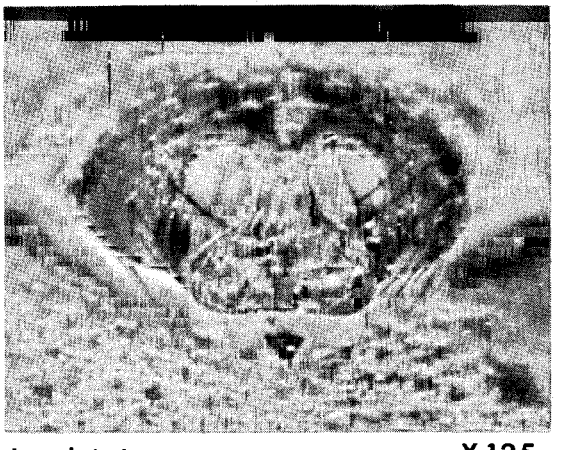
Lepthyphantes tenuis X 140



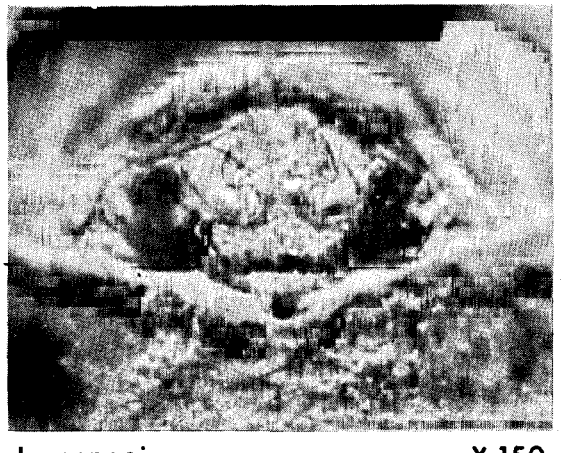
L. tenuis X 140



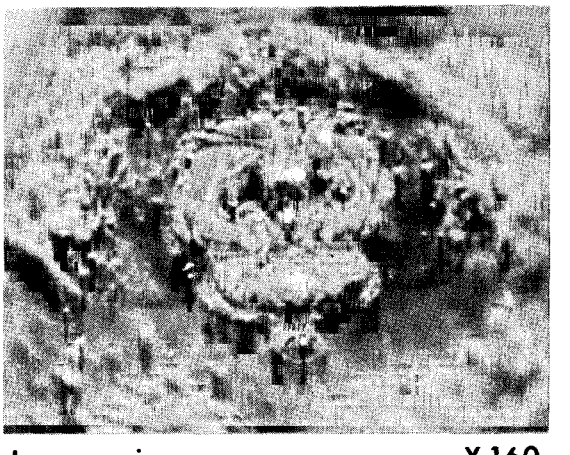
L. zimmermanni X 140



L. cristatus X 125

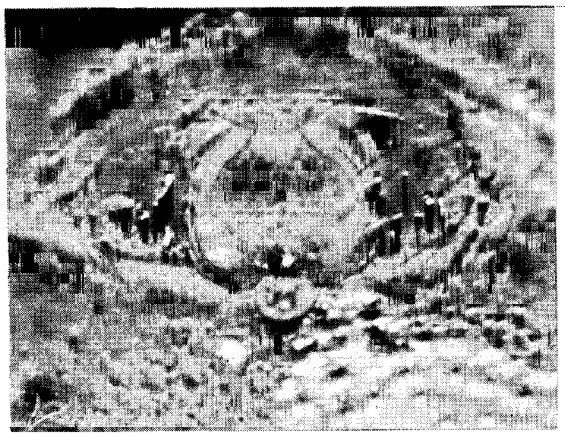


L. mengei X 150

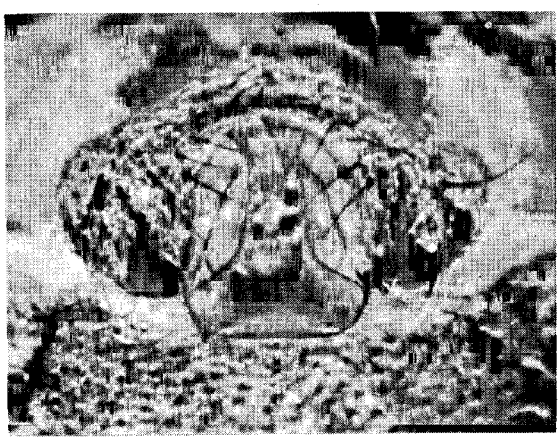


L. mengei X 160

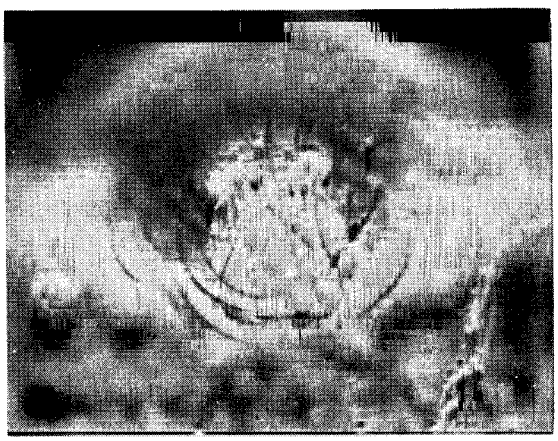
PLATE 2. – Epigynes: *Lepthyphantes spp.*



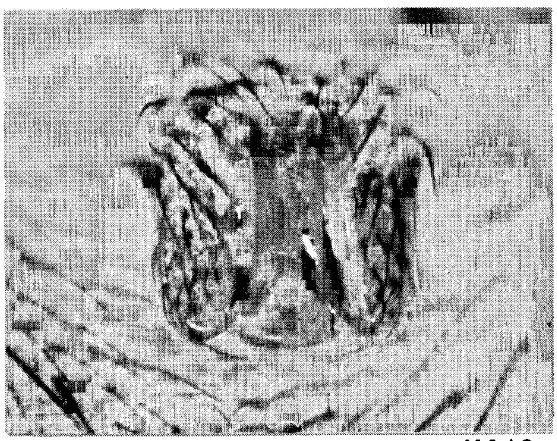
Lepthyphantes flavipes X160



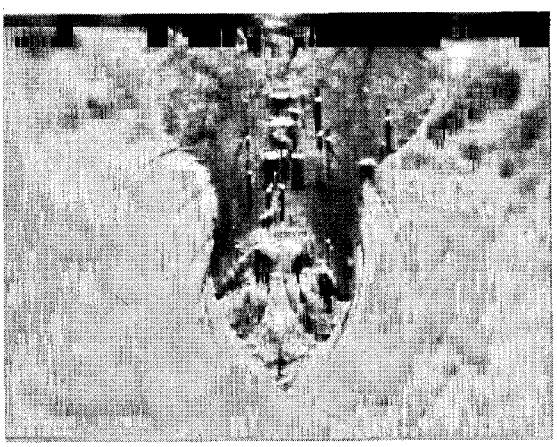
L. tenebricola X120



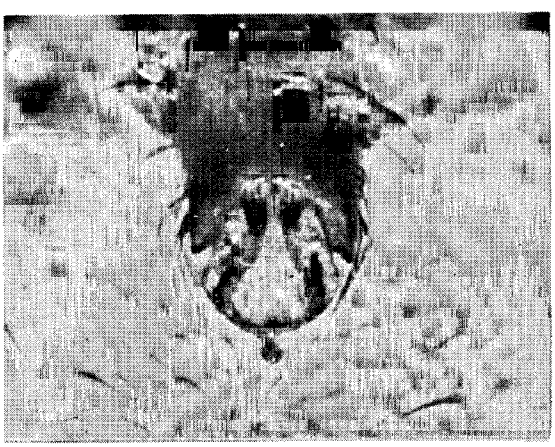
L. ericaeus X200



L. pallidus X140

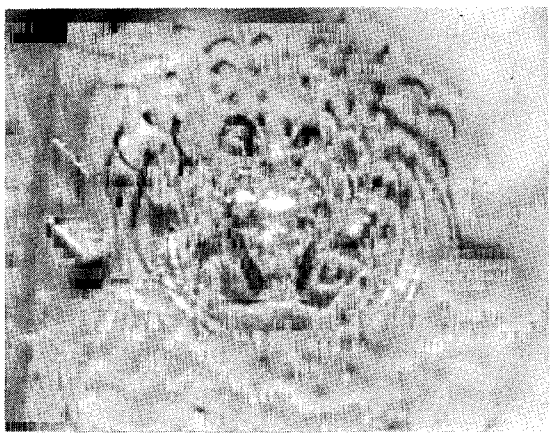


L. pinicola X100

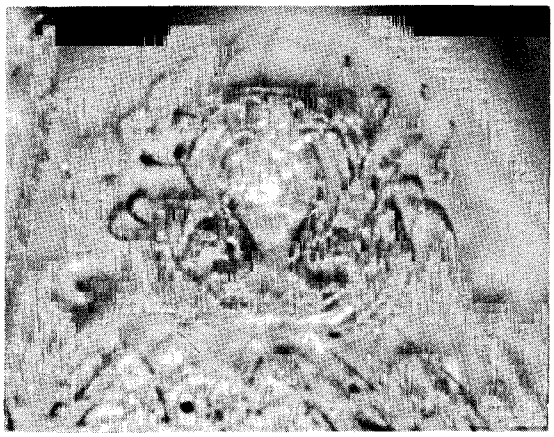


L. pinicola (Posterodorsal view) X120

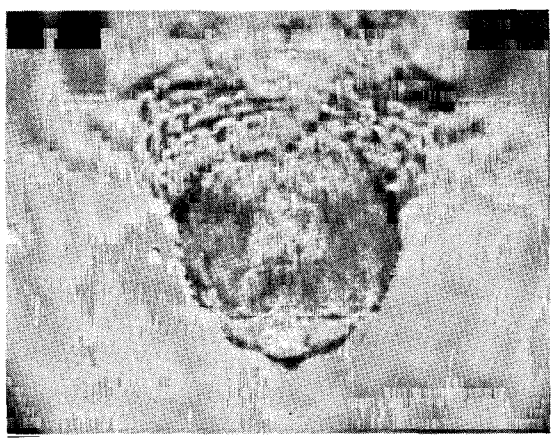
PLATE 3. – Epigynes: *Lepthyphantes spp.*



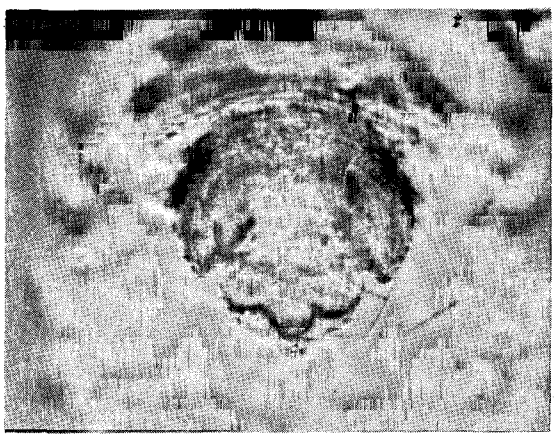
Lepthyphantes insignis X185



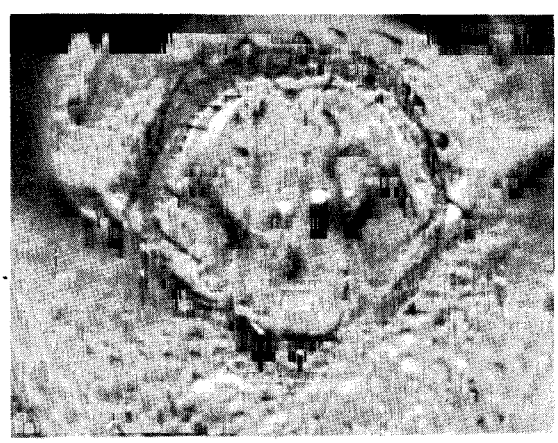
L. insignis (Posterodorsal view) X185



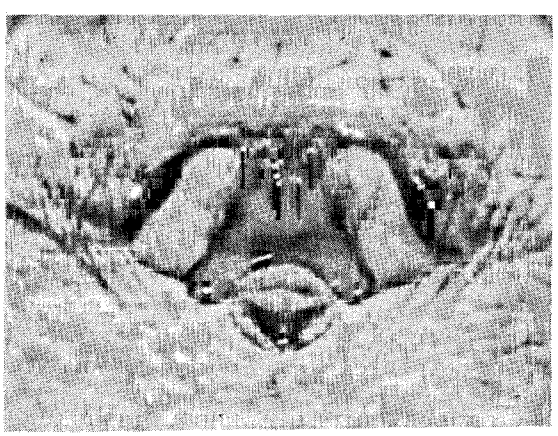
L. umbraticola X95



L. umbraticola (Posterodorsal view) X95



L. angulatus X160



L. expunctus X180

PLATE 4. – Epigynes: *Lepthyphantes spp.*

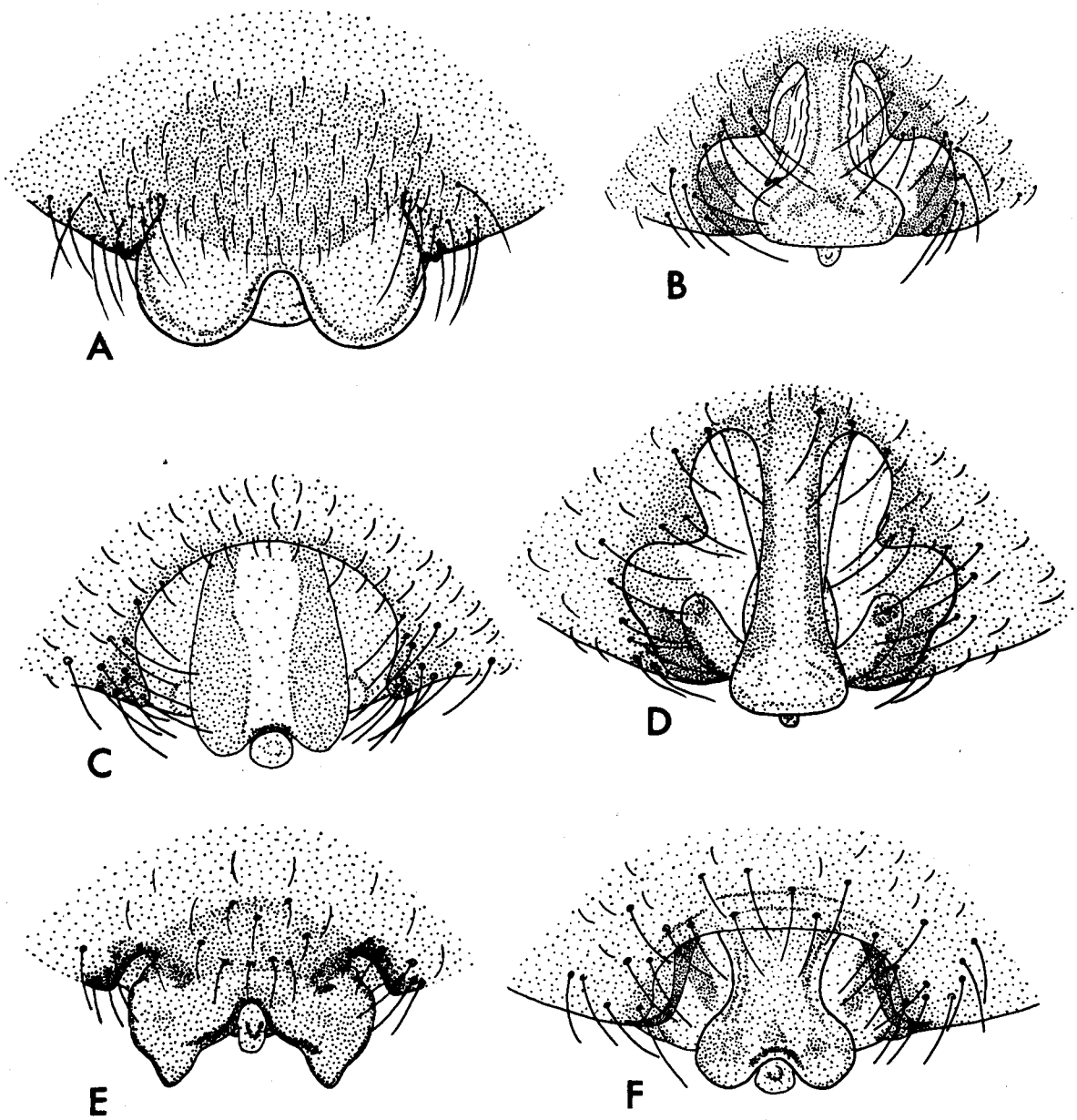


PLATE 5. – Epigynes: A, *Lepthyphantes nebulosus;* B, *L.alacris;* C, *L.minutus;* D, *L.leprosus;* E, *L.obscurus;* F, *L.whymperi.*

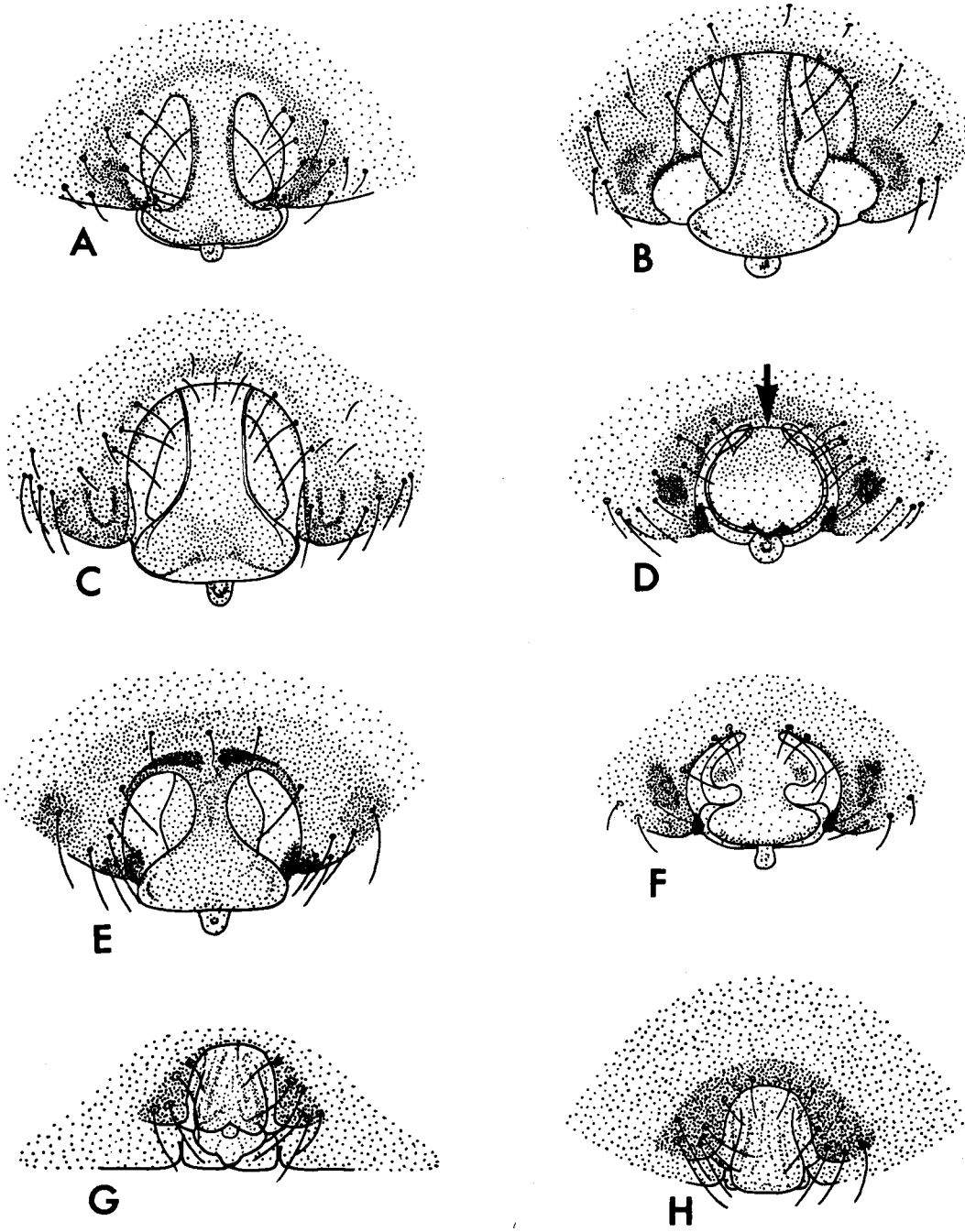


PLATE 6. – Epigynes: A, *Lepthyphantes tenuis;* B, *L.zimmermanni;* C, *L.tenebricola;* D, *L.flavipes;* E, *L.cristatus;* F, *L.mengei;* G, *L.ericaeus* (from above and behind); H, *L.ericaeus* (from above).

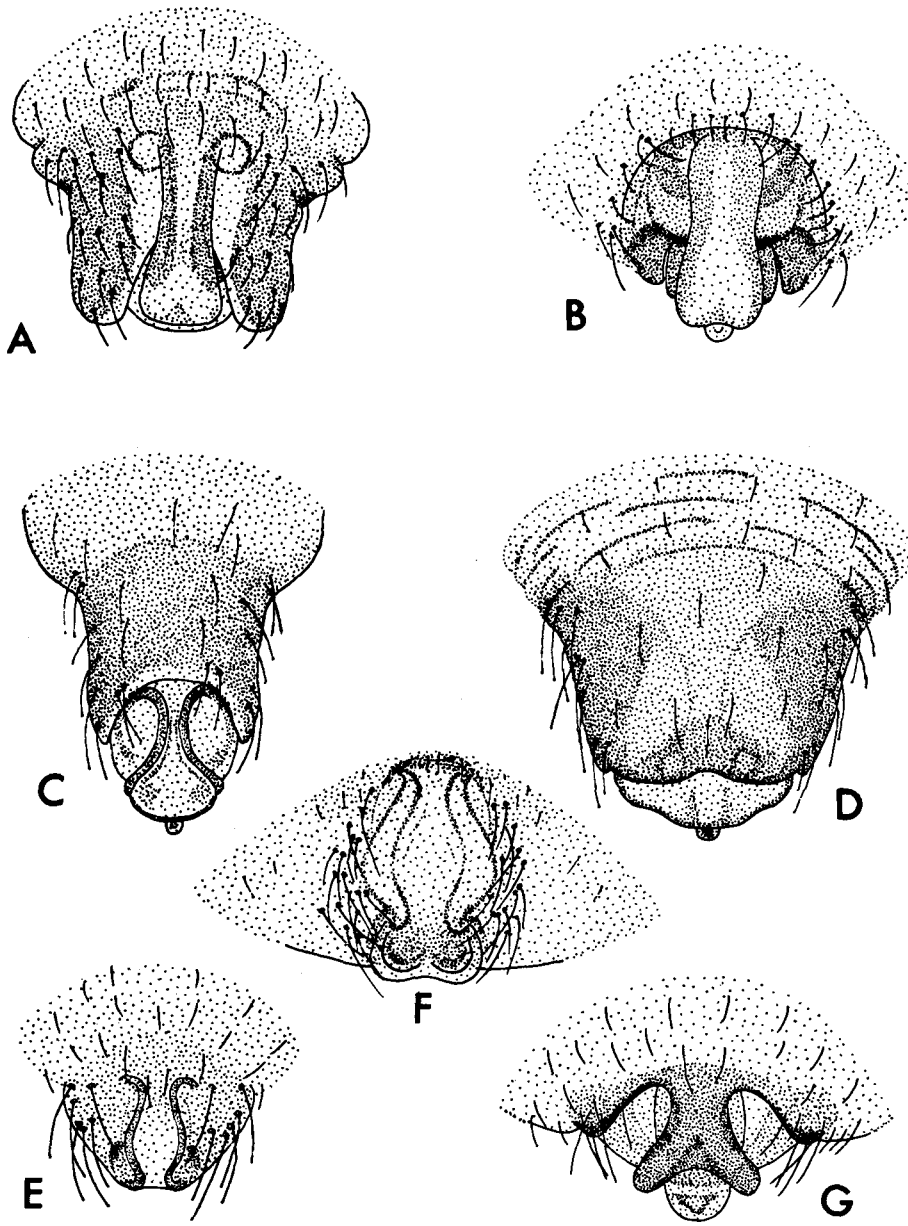


PLATE 7. – Epigynes: A, *Lepthyphantes pallidus;* B, *L.angulatus;* C, *L.pinicola;* D, *L.audax;* E, *L.insignis* (from above and behind); F, *L.insignis* (from above); G, *L.expunctus*

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References

BRAENDEGAARD, J. 1958: Araneida. The Zoology of Iceland, Vol. III, Pt. 54. pp. 88-99.

LOCKET, G. H. and MILLIDGE, A. F. 1953: British Spiders. Vol. 2, Ray Soc., Lond.

WIEHLE, H. 1956: Spinnentiere oder Arachnoidea (Araneae), 28. Familie Linyphiidae – Baldachinspinnen. Tiewelt Dtl. 1956. pp. 164-223.

WIEHLE, H. 1963: Beitrage zur Kenntnis der deutschen Spinnenfauna III. Zool. Jb. Syst. Bd. 90, 1963. pp. 255-259.

Nomenclature: *Liphistius, Argiope*

Opinion 933 of the Commission on Zoological Nomenclature places the generic name *Liphistius* on the Official List of Generic Names in Zoology, no. 1928; *desultor,* in combination with *Liphistius* on the Official List of Specific Names in Zoology, no. 2418, and the family name Liphistiidae on the Official List of Family Group Names in Zoology, no. 455; and the name *Lipistius* on the Official Index of Rejected and Invalid Names in Zoology, name no. 1985.

Application ZN(S) 1789 to the Commission has been made to preserve the name *Argiope.* Comments should be addressed to the Commission at the British Museum (Natural History) (*Bull.Zool.Nomencl.,* 27 (3/4): 200-201).

BOOK REVIEW

The Spiders of New Zealand Part I (1967): by R.R. Forster. Otago Museum Bulletin No. 1. pp. 1 – 124; 180 figs. Dunedin.

Part II (1968): Ctenizidae, Dipleuridae by R. R. Forster; Migidae by C. L. Wilton. Otago Museum Bulletin No. 2. pp. 1 – 180; 571 figs. Dunedin.

Part III (1970): Desidae, Dictynidae, Hahniidae, Amaurobioididae, Nicodamidae by R. R. Forster. Otago Museum Bulletin No. 3. pp. 1 – 184; 534 figs. Dunedin.

The appearance of the third part of this important work provides an occasion for a notice, although the 1500 species of spider thought to occur in New Zealand will take some time to describe. Part I provides an introduction to the group, an account of the internal and external anatomy and of life-history and habits. A key to the families, into which the New Zealand spiders were found to fit, then follows. The rest of the volume is devoted to short accounts of appearance and habits of typical members of each family, illustrated by magnificent drawings of whole spiders at the hand of Mr. Barry Weston. Each drawing was made from living specimens or colour transparencies and they must provide an extremely valuable guide to anyone taking up a study of the group. The historical note at the beginning of this part is particularly interesting, as are the notes about the families, classified here on traditional lines. One surprising fact is that the Micryphantidae (Erigoninae) do not occur naturally in New Zealand and that all the species present are introduced.

In Part II, dealing with the mygalomorph families, it is pointed out that only in the last decade has it been realised that mygalomorphs are extremely abundant in New Zealand in both species and numbers. The authors make the interesting point that "the taxonomic analysis of mygalomorph spiders presents many difficulties which are not usually found in araneomorph spiders. It is evident that the tunnel dwelling habit, coupled with poor dispersal ability, leads to local differentiation to a much