AUSTRALASIAN ANTARCTIC EXPEDITION
1911-14.
UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, O.B.E., B.E., D.Sc., F.R.S.

SCIENTIFIC REPORTS.
SERIES C.—ZOOLOGY AND BOTANY.
Edited by Professor T. Harvey Johnston,
University of Adelaide.

VOL. X PART 6.

ACARINA

BY
H. WOMERSLEY, F.R.E.S., A.L.S.,
SOUTH AUSTRALIAN MUSEUM.

WITH ELEVEN PLATES AND TWO TEXT FIGURES.

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CONTENTS.

ACARINA.

By H. Womersley, F.R.E.S., A.L.S., Entomologist, South Australian Museum.

(Plates II–XII and two text figures.)

INTRODUCTORY REMARKS.

For the opportunity of working out the Acarina collected by the Australasian Antarctic Expedition, 1911–14, under the leadership of Sir Douglas Mawson, I am indebted to Prof. T. Harvey Johnston, Professor of Zoology, Adelaide, who has entrusted the material to me. The majority of the specimens were obtained from the debris at the bottom of the tubes or bottles of larger material obtained from seaweeds and dredgings, mainly from Macquarie Island and Commonwealth Bay, King George V Land, which had been sent to Prof. Johnston for a final overhaul. The number of specimens and species of Acarina obtained would not have been nearly so large, had it not been for the arduous manner in which he searched the residues and literally picked out the specimens one by one. For this and the invaluable help which he has rendered throughout the preparation of the paper I tender my warmest thanks.

To my assistant, Miss R. Veale, at the Adelaide Museum, I am indebted for the finely executed and detailed drawings.

As the material of this group collected by the British, Australian and New Zealand Antarctic Research Expedition, 1929–31, will shortly pass through my hands it is not proposed in the present paper to discuss the distribution of these creatures in the Antarctic and Subantarctic regions, but to leave the subject until the second and probably much larger collection can be reported upon.

The present material, tabulated below, comprises 29 species and one variety, of which 11 are new, as also is the variety.

Sub-order PROSTIGMATA *Kramer* 1877.

Super-family EUPODOIDEA *Banks* 1904.

Family Tydeidae *Kramer* 1877.

1. *Tydeus antipodus* sp. nov.
2. *Lorryia polaris* sp. nov.
3. *Lorryia leptonychotes* sp. nov.

Family ALYCHIDAE *Canestrini* 1891.

4. *Nanorchestes amphibius* Tops. et. Trst. 1890.

Family RAPHIGNATHIDAE *Kramer* 1877.

5. *Raphignathus johnstoni* sp. nov.

SUPER-FAMILY HYDRACHNOIDEA *Banks* 1904.

Family HALACARIDAE *Murray* 1877.

6. *Rhombognathus magnirostris* Trst., var. *lionyx* Trst. 1899.
7. *Copidognathus* sp.
8. *Copidognathopsis oculatus* (Hodge 1863).
9. *Agauopsis antarctica* (Lohmann 1907).
10. *Agaue occultus* (Lohmann 1908).
11. *Agaue occultus* var. *setifera* var. nov.
12. *Agaue agauoides* (Lohmann 1907).
13. *Agaue hamiltoni* sp. nov.
14. *Halacarus drygalskii* Lohmann 1907.
15. *Halacarus minor* Lohmann 1907.
16. *Halacarus gracile-unguiculatus* Lohmann 1907.
17. *Halacarus lohmanni* sp. nov.
18. *Halacarellus harioti harioti* (Trouessart 1899).
19. *Halacarellus novus* (Lohmann 1907).
20. *Werthella johnstoni* sp. nov.
21. *Simognathus sculptus* (Brady 1875).

SUB-ORDER MESOSTIGMATA *Kramer* 1877.

SUPER-FAMILY PARASITOIDEA *Banks* 1904.

Family PARASITIDAE *Oudemans* 1902.

22. *Hydrogamasus antarcticus* Trägärdh 1907.
23. *Pachylaelaps macquariensis*, sp. nov.
24. *Pachyseius adeliensis* sp. nov.

Family LAELAPTIDAE *Berlese* 1892.

25. *Eulaelaps mawsoni* sp. nov.

SUB-ORDER CRYPTOSTIGMATA *Kramer* 1877.

SUPER-FAMILY SARCOPTOIDEA *Banks* 1904.

Family LENTUNGULIDAE *Berlese* 1897.

26. *Hyadesia uncinifer* Megnin 1889.

Family TYROGLYPHIDAE *Donnadieu* 1868.

27. *Tyroglyphus farinae* (Linn. 1758).

Family TYROPHAGIDAE *Oudemans* 1924.

28. *Tyrophagus dimidiatus* v. *longior* (Gervais 1844).

Family GLYCYPHAGIDAE *Berlese* 1897.

29. *Glycyphagus domesticus* (de Geer 1778).

SUPER-FAMILY ORIBATOIDEA *Banks* 1904.

Family NOTASPIDIDAE *Sellnick* 1929.

30. *Halozetes marina* (Lohmann 1903).

SUB-ORDER PROSTIGMATA *Kramer* 1877.

SUPER-FAMILY EUPODOIDEA *Banks* 1904.

Family TYDEIDAE *Kramer* 1877.

Genus TYDEUS *Koch* 1835.

TYDEUS ANTIPODUS *sp. nov.* (Plate II, figs. 1–4.)

Description.—With the general facies of the genus. Length to 420 μ, width to 250 μ. Cephalothorax separated from the abdomen by a distinct suture which, in the middle, is posteriorly concave; with one pair of long fine ciliated sensory setae, longer than the ordinary setae; eyes absent ? Palpi 110 μ long, ratio of segments I : II : III : IV = ? : 35 : 35 : 26, III about one-third longer than IV and subequal to II. Mandibles 70 μ long with relatively small chelicerae. Capitulum distinct but small, with a pair of short ciliated setae. Legs with long stout slightly curved and distinctly ciliated setae; tarsi with a pair of claws and ciliated pulvillus. Dorsal body setae; 25 μ long, stout slightly curved and ciliated. Genital orifice without discs.

Locality.—Two specimens from amongst green seaweeds in tidal zone, Macquarie Island, 28th October, 1913.

Remarks.—Owing to the preparations being in a poor condition it has not been possible to give a more detailed description or a full figure. In the key to the species of this genus given by Dr. Sig Thor (Das Tierreich, Lfg. 60, 1933) the present species would run down to *T. subalpinus* Sig Thor 1932, from which it differs mainly in the relative lengths of the palpal segments.

Genus LORRYIA *Oudemans* 1925.

Sub-genus LORRYIA s. str. *Sig Thor* 1933.

LORRYIA POLARIS *sp. nov.* (Plate II, figs. 5–9.)

Description.—Size small, 260 μ long, 170 μ wide, with very obtuse and laterally produced shoulders. Colour ?. Cephalothorax separated by a uniformly posteriorly curved suture. Eyes present, small, 13 μ wide. Sensory cephalothoracic setae in a single pair, 50 μ long, fine, simple. Cephalothorax with two other pairs of fine setae, one 33 μ long placed subanteriorly and submedially, the other 42 μ long arising from close in front of the eyes. Mouth-parts not examined in detail, apical segment of palp with the normal apical ciliated setae. Legs moderately long, tarsi with a long subapical seta, two claws and pad-like pulvillus, legs 6-segmented. Dorsum of abdomen with five pairs of setae 35–50 μ long and apically finely clavate. Cuticle with fine striae and hexagonal network as figured. Ventral surface as figured, finely striated. Genital opening placed behind coxae IV, large. Anus subterminal.

Locality.—A single specimen from Commonwealth Bay, King George V Land, in 15-20 fathoms.

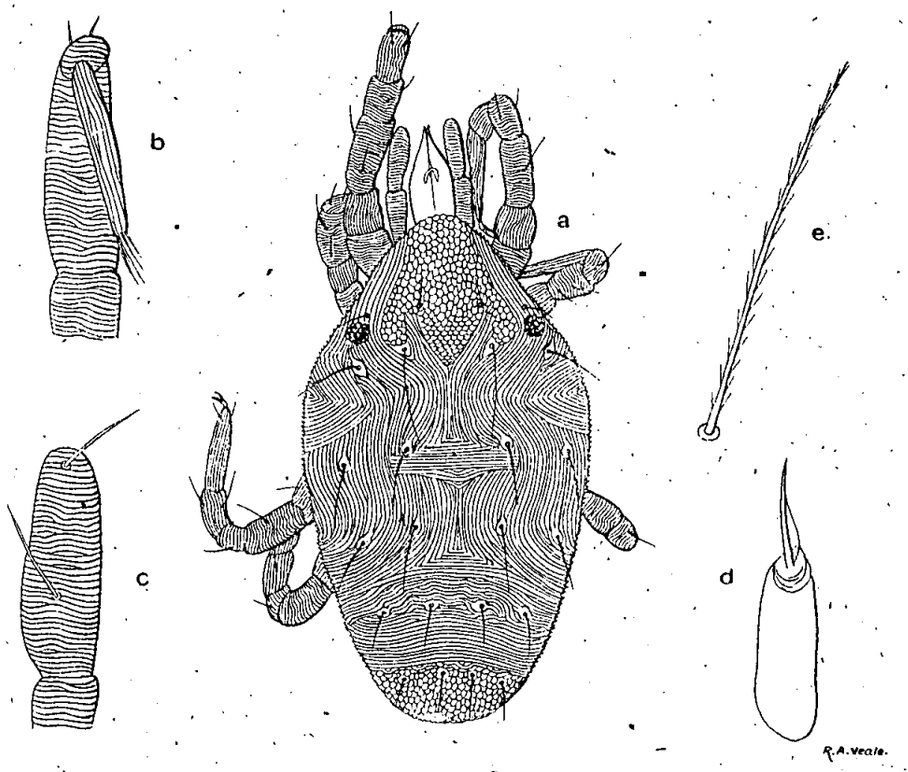
Remarks.—In this genus Sig Thor (loc. cit.) places 5 species. The above would run down by his key to the section containing *L.* (*L.*) *mali* and *L.* (*L.*) *concinna* from both of which it differs in the network on the cephalothorax and particularly in the laterally produced shoulders and the clavate dorsal setae.

LORRYIA LEPTONYCHOTES *sp. nov.* (Text figs. 1*a–c.*)

Description.—Size small, length 200 μ, width 150 μ, not widened at shoulders by lateral expansion. Cephalothorax not separated from abdomen by a suture. Eyes present, 17 μ in diameter. Cephalothorax with a pair of sensory setae 50 μ long, fine and simple, and two other pairs of ordinary setae both 20 μ long and situated as in the preceding species. Palpi 4-segmented, 76 μ long, ratio of segments I : II : III : IV = 5 : 10 : 2 : 5, IV long and slender with usual terminal setae. Mandibles 58 μ long. Legs; coxae in two pairs widely separated; I 195 μ long, II 136 μ, III 152 μ, IV 163 μ; tarsi with two claws and empodial pad; leg setae up to 23 μ long. Dorsal body setae arranged as in preceding species, but 34 μ long, slightly ciliated and tapering to a point. Dorsal cuticle patterned and striated as in figure. Ventral surface with setae and striation as shown. Genital orifice large.

Locality.—A single specimen, isolated by Prof. T. H. Johnston from among Cestodes taken from the intestine of a Weddell Seal, *Leptonychotes weddelli*, from Commonwealth Bay, King George V Land, 1913.

Remarks.—From the preceding this species differs in that the dorsal setae are not clavate. From *L.* (*L.*) *mali* and *L.* (*L.*) *concinna* it differs in the arrangement of the patterning and striations.



Lorryia leptonychotes sp. nov.
Text-fig. 1.—*a* Dorsal view of entire animal. *b* Palp. *c* Sepment II of palp from above. *d* Mandible. *e* Dorsal seta.

Family ALYCHIDAE *Canest.* 1891.

Genus NANORCHESTES *Tops. and Trst.* 1890.

NANORCHESTES AMPHIBIUS *Tops. and Trst.* 1890. (Plate II, fig. 10.)

Locality.—A single specimen from green seaweeds from Macquarie Island October, 1913.

Remarks.—According to Sig Thor (Zool. Anz., 95, 1931, 100–110) there are three species of this genus known, of which two, *N. arboriger* (Berl.) and *N. amphibius* Tops. and Trst. have been named. The third, recorded from England by Hirst (J. Zool. Res., 2, 110–122) as *N. amphibius*, is regarded by Sig Thor as a distinct species. The three species are separated by differences in size. A fourth, non-littoral species was, however, described by Hirst (P.Z.S., 1921) from England under the name of *N. collinus*. The last species has the dorsal setae of the chelicerae divided. In the other species this is not so.

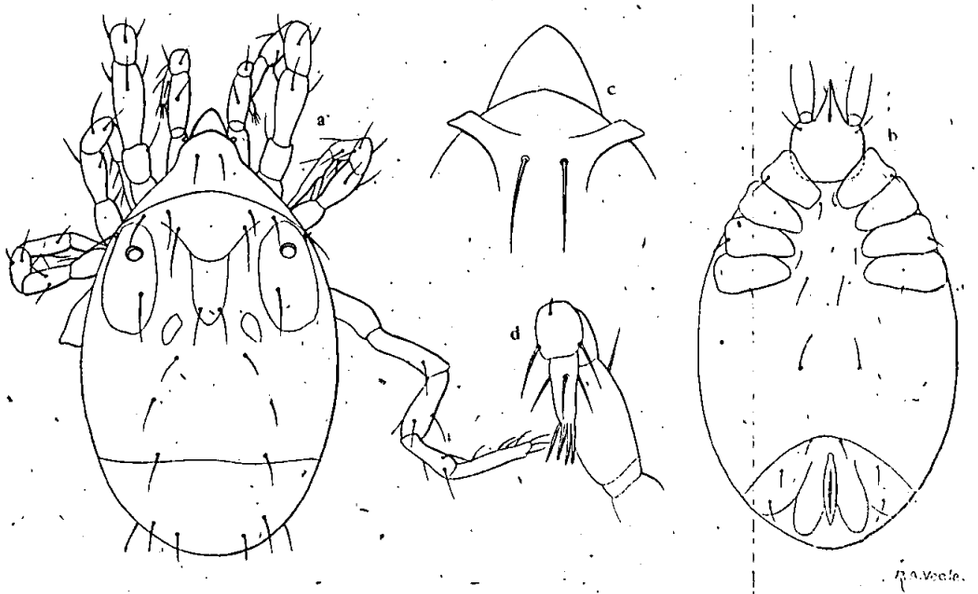
The specimen recorded above from the Subantarctic agrees with the data given by Sig Thor (loc. cit.) for *N. amphibius* and as no other morphological differences can be seen, it is referred to that species. Hitherto it has only been recorded from Europe, on the coasts of England, Ireland and France.

Family RAPHIGNATHIDAE *Kramer* 1877.

Genus RAPHIGNATHUS *Duges* 1834.

RAPHIGNATHUS JOHNSTONI *sp. nov.* (Text figs. 2*a–d.*)

Description.—Length 360 μ, width 192 μ. Colour ?. Eyes, one on each side. Cephalothorax not divided from the abdomen by a suture, but there is a forwardly curved line in front of the eys. Anterior of this line is a pair of long setae. Dorsum anteriorly with six plates, a medial one divided into two parts by a fine transverse line, the front half of this plate is broad, the posterior half parallel-sided with rounded apex; laterally on each side of this plate is a large oval plate bearing the eye; between the apices of the lateral and median plates are a pair of small plates; at the posterior end is a fairly large plate with rounded anterior margin; all these plates are poorly chitinised



Raphignathus johnstoni sp. nov.

Text-fig. 2—*a* Dorsal view of entire animal. *b* Ventral view of body. *c* Stigmata. *d* Palp.

and indistinct; the medial plate carries a single pair of setae on the anterior half and a pair of shorter setae at the apex of the posterior half, the ocular plates carry two setae, one just in front of the eye, the other subposterior. Behind the plates there are ten dorsal setae in three rows of two and a posterior row of four; outside of the ocular plates is another seta. The apices of the dorsal plates lie in a line with the fourth coxae. Palpi 135 μ long, ratio of segments I : II : III : IV : V = 4 : 22 : 10 : 10 : 10 (those of III and IV are only approximate owing to the foreshortened view), V with 2–3 setae, IV with 2 setae, II with 2 setae. Legs long, with relatively few long setae; tarsi normal. All coxae in a single group with epimera touching; I and III with a single seta; coxae IV twice as wide apart as coxae I. Venter with 4 pairs of setae, a pair between coxae I,

III and IV and another in the middle of the venter. Genital opening long and narrow. Mandibles normal. Spiracles opening in short horns on each side of base of gnathosoma. Dorsal cuticle between plates finely striated.

Locality.—A single specimen isolated by Prof. T. H. Johnston from amongst Cestodes from the intestine of a Weddell seal from Commonwealth Bay, King George V Land, 1913.

Remarks.—This is the first record of the occurrence of a member of this family from the Antarctic regions. It is named in honour of Prof. Johnston.

Super-family HYDRACHNOIDEA *Banks* 1904.

Family Halacaridae *Murray* 1877.

Sub-family Rhombognathinae *Vietz* 1927.

Genus Rhombognathus *Trouessart* 1888.

Sub-genus Rhombognathus s. str. *Vietz* 1927.

Rhombognathus magnirostris *Trst.* var. lionyx *Trst.* 1889.

Numerous specimens referable to this form were collected from amongst green seaweeds between tide-marks at the northern end of Macquarie Island on 28th October, 1913, and a few more from rock-scrapings taken by Mr. H. Hamilton below tide-marks in the same locality on 14th October, 1912.

Sub-family Halacarinae *Vietz* 1927.

Genus Copidognathus *Trouessart* 1888.

Sub-genus Copidognathus s. str. (*Trouessart* 1888) *Vietz* 1927.

Copidognathus *sp.* (Plate VIII, figs. 1–5.)

Description of Nymph.—Length of animal to tip of palp 410 μ; idiosoma 90 μ, gnathosoma 70 μ, opisthosoma 116 μ. Length of palpi 90 μ, ratio of segments I : II : III : IV = 5 : 19 : 5 : 20, IV long and narrow, slightly curved and somewhat widened just before tip. Hypostome reaching tip of palp II and with posteriorly divergent sides. Legs short and fairly stout, length I 154 μ, II 167 μ, III 154 μ, IV 141 μ, segment 5 on all legs very much swollen on outer side, more so on I and II than III and IV, outer side on legs I and II with a pair of long strong setae, segment 3 of I and II with inner lamella for almost its whole length, 5 with a short subapical lamella. Claws long, with fine subapical dorsal tooth, median process small, simple. Dorsal surface: anterior plate small and narrow with hexagonal network, not extending posteriorly beyond coxae II; ocular plates fairly large, subtriangular, with network, lenses absent;

posterior plate small, oval, anterior margin not quite reaching coxae IV, with network, striations between plates coarse and broken, setae, if any, indeterminate. Ventral surface as figured; genital plate small and triangular.

Locality.—A single nymph from Commonwealth Bay, in 25 fathoms. September, 1913.

Sub-genus COPIDOGNATHOPSIS *Vietz* 1927.

COPIDOGNATHUS OCULATUS (*Hodge* 1863).

Localities.—One specimen from Station 3, Commonwealth Bay, in 157 fathoms, 1913, two specimens from Commonwealth Bay, in 15–20 fathoms, 1913, two specimens from Commonwealth Bay, in 25 fathoms, 4th September, 1912.

Genus AGAUOPSIS *Vietz* 1927.

Syn. *Agaue* Lohmann 1907.

AGAUOPSIS ANTARCTICA (*Lohmann* 1907).

Locality.—A single specimen of this species was taken from Commonwealth Bay, King George V Land, 4th September, 1912, in 20–25 fathoms.

Remarks.—This interesting species was described from Kerguelen and Antarctica from the material collected by the " Gauss " Expedition. While in the text Lohmann gives the name as *Agaue antarctica*, in the explanation of his plate it is given as *Agaue polaris*. I can find no previous reference to this curious error but, as the name *antarctica* has page priority, it must be used.

In his paper (Der Halacaridae der Nordsee, Z. wiss. Zool., 1927) Vietz points out that Lohmann in 1883 (Dissert., pp. 50, 86) gave *Halacarus parvus* Chilton, from New Zealand, as the type of his genus *Agaue*. Vietz by a re-examination of Chilton's type shows that it belongs to Lohmann's genus *Polymela* (Das Tierreich, 1901) and that *Polymela* must therefore sink as a synonym, and *Agaue* be used for those species hitherto placed under *Polymela*. As a result of this a new name was required for those included under the old name of *Agaue* by Lohmann. For these Vietz proposes *Agauopsis*, with the type *Agaue brevipalpus* (Trst. 1889).

Genus AGAUE *Lohmann* 1889 (nec. 1901).

Syn. *Polymela* Lohmann 1901.

AGAUE OCCULTUS (*Lohmann* 1908).

Syn. *Halacarus* (*Polymela*) *occultus* Lohmann 1908.

Locality.—Two specimens from Commonwealth Bay, King George V Land, 4th August, 1912, in 25 fathoms; one from Station 3, Commonwealth Bay, in 157 fathoms.

Remarks.—Vietz suggests (loc. cit., p. 92) that *Agaue parva* (Chilton 1883) may be identical with Lohmann's species. An examination of Lohmann's figures of *A. occultus* and of the above specimens, however, shows considerable differences in details from Vietz's figure of *A. parva*. The tip of the fourth segment of the palp in *A. parva* is entirely without setae whereas they are distinctly present in *A. occultus*. The subapical seta of palp III of *A. parva* is long and reaches to halfway or beyond of palp IV. In *A. occultus* it is short and barely passes the base of palp IV.

AGAUE OCCULTUS *var.* SETIFERA *var. nov.* (Plate III, figs. 1–6.)

Description.—As in the typical form but with the fimbriated scale-like seta of palp II replaced by a long strong simple seta.

Localities.—One specimen from Boat Harbour, Commonwealth Bay, in 4½ fathoms; two specimens from Station 3, Commonwealth Bay, in 157 fathoms; six specimens from Commonwealth Bay, in 25 fathoms, 4th September, 1912.

Remarks.—In the two forms of this species we have a parallel to those of *Agaue panopae* (Lohmann) where the typical form has the simple seta on palp II and the variety *squamifera* (Lohmann) has the fimbriated scale-like seta on that segment.

AGAUE AGAUOIDES (*Lohmann* 1907).

Syn. *Halacarus* (*Polymela*) *agauoides* Lohmann 1907.

Locality.—Five males, 4 nymphs, 3 females from Commonwealth Bay, 4th September, 1912, in 20–25 fathoms.

AGAUE HAMILTONI *sp. nov.* (Plate IV, figs. 1–6.)

Description.—Male: Lengths—idiosoma 540 μ, gnathosoma 191 μ, opisothoma 191 μ; width—358 μ. Palpi 147 μ long, ratio of segments I : II : III : IV = 10·5 : 80·5 : 17·5 : 31·5; II swollen medially on inner side, 17·5 μ wide, with subapical simple seta; III with a slight constriction at two-thirds of its length and a short subapical seta; IV normal for genus, with usual setae. Mandibles long and slender; hypostome spathulate, being narrowed towards the base, reaching almost to tip of palpi. Dorsal plates well developed, cephalothoracic plate evenly rounded and extending to beyond base of coxae II; ocular plates large subtriangular with apex reaching to coxae III, with two lenses on each plate, these small; posterior plate large, oval with front end extending beyond apex of ocular plates. The dorsal cuticle between the plates is finely striated as figured, the plates themselves being finely pitted except in the middle portion of the cephalothoracic and posterior plates where they are smooth, these parts being separated from the rest of the plates by irregular longitudinal folds. In the medial smooth part of the cephalothoracic plate are a few peculiar setae which, from a side view, are like a pair

of horns with smaller points in between the horns. These setae are not present on the posterior plate. The other dorsal setae are strong and simple and disposed as in the figure. The legs are fairly stout and 6-segmented; I and II rather stouter than III and IV; all legs without any external skeletal covering, without any specially strong setae. Claws two on each foot, with strong dorsal subapical tooth and short simple stout medial appendage. On the venter the plates are large and the bands of striated cuticle correspondingly narrow as figured. On the sternal and lateral plates are a number of the peculiar setae described above, while the rows of light spots on the sternal plate in line with coxae II, between sternal and lateral plates and on the anterior edge of lateral plates, appear to be of a similar nature. The genital opening is large and surrounded with numerous long fine hairs as figured. Anus terminal.

Locality.—Two specimens from west coast of Macquarie Island, October, 1913.

Remarks.—This species appears to be distinct from all other species and can be easily recognised by the peculiar setae.

Genus HALACARUS *Gosse* 1885.

Sub-genus HALACARUS s. str. *Vietz* 1927.

HALACARUS DRYGALSKII *Lohmann* 1907.

Localities.—Station G.12,422, Commonwealth Bay, King George V Land, in 20–25 fathoms, 1 specimen; northern end, Macquarie Island, in rock scrapings from below low tide, 5 specimens; west coast, Macquarie Island, October, 1912, 4 specimens; Station 3, Commonwealth Bay, in 157 fathoms, 3 specimens.

Remarks.—In his paper (Deuxième Exped. Antarct. Francaise, 1908–10, 9) Trouessart refers his species *Leptospathis alberti antarctica* to this species, as Lohmann had shown that typical *L. alberti* from the Arctic was not the same as *L. drygalskii*, differing from it in the shape and sizes of the dorsal plates. I have not been able to see the original description or figures of *L. alberti* but judging from Trouessart's figure of *L. alberti antarctica* it is obvious that this species cannot be referred, as Trouessart has done, to *L. drygalskii* Lohmann.

HALACARUS MINOR *Lohmann* 1907.

A single specimen referable to this species was from Station 3, Commonwealth Bay, in 157 fathoms.

HALACARUS GRACILE-UNGUICULATUS *Lohmann* 1907.

A single specimen of this species found amongst rock scrapings taken by Mr. H. Hamilton from below low tide at the northern end of Macquarie Island, 14th October, 1913.

HALACARUS LOHMANNI *sp. nov.* (Plate V, figs. 1–7.)

Description.—Male, total length 900 μ, length of idiosoma 700 μ, gnathosoma 205 μ, opisthosoma 191 μ. Length of palpi 159 μ, ratio of segments I : II : III : IV = 10 : 30 : 8 : 20; II with 2 setae, III with an inner blunt appendage, IV with 3 basal setae and one or two apical setae. Hypostome not constricted basally and reaching tip of palp II. Cephalothorax with paired adjacent eyes on each side but not on ocular plates, and with a median eye spot at base of anterior process which is short, 63 μ long and nearly as wide at base. Anterior dorsal plate not longer than wide with slightly sinuate lateral edges and broadly rounded apex, quite reaching level of posterior eyes. Posterior dorsal plate a little longer than broad with apex reaching level of coxae IV, slightly sinuate lateral edges, apex narrow and rounded. The integument between dorsal plates is finely striated and with few setae, only with two pairs between the dorsal plates and one on each side on level with coxae III. Legs long, I 715 μ, II 635 μ, III 635 μ, IV 715 μ; segment 5 of I with two pairs of stout ventral spines (appendages). Claws with dorsal subapical tooth; median appendage small and simple; all claws without hairs or combs. Ventral surface: anterior plate large with posterior edge evenly curved except in the middle where it is almost straight, with a pair of long subposterior setae; lateral plates large; genitoanal plate small. Each coxa with a single seta. Genital orifice with a number of long setae. Female much as in male, ventral surface as figured. Nymph; 555 μ long, genital plate as shown.

Locality.—Nineteen specimens, males, females and nymphs from Commonwealth Bay, 4th September, 1912, in 25 fathoms.

Remarks.—This species is most closely related to *H. minor* Lohmann from which it differs in the shorter and stouter anterior process on the cephalothorax, and in the shape of the posterior dorsal plate.

Sub-genus HALACARELLUS *Vietz* 1927.

HALACARELLUS HARIOTI HARIOTI *Trst.* 1889. (Plate VI, figs. 1–12.)

Locality.—Twenty specimens, mostly females and nymphs but one male from the west coast of Macquarie Island, October, 1913, from rock scrapings, collected by Mr. H. Hamilton at low tide.

HALACARELLUS NOVUS (*Lohmann* 1907).

Locality.—Ten specimens, adults and nymphs, from rock scrapings at low tide at the northern end of Macquarie Island, October, 1913.

Genus WERTHELLA *Lohmann* 1907.

WERTHELLA JOHNSTONI *sp. nov.* (Plate VII, figs. 1–3.)

Description.—Male—length 435 μ, width 230 μ, idiosoma 321 μ, gnathosoma 115 μ, opisthosoma 103 μ. Length of palp 110 μ, ratio of segments I. : II : III : IV = 5 : 17 : 5 : 15; segment II apparently without setae, III with inner blunt appendage, IV with usual basal setae. Anterior dorsal shield large, broadly rounded, extending to level of coxae II, evenly with large granulations. Ocular plates subtriangular, slightly longer than wide with 2 eyes on each and evenly granulated, posterior end somewhat pointed and extended to level of coxae III. Posterior dorsal plate evenly granular, large, anterior margin evenly rounded extending beyond level of coxae III; all dorsal plates without setae. Intervening membrane striated. Hypostome short, not constricted basally, with parallel sides. Legs relatively short and fairly stout, femora and basal segments granulated; length of I 465 μ, II 420 μ, III 460 μ, IV 460 μ; claws 2 on each foot, strong, with small dorsal subapical tooth and distinct comb on all feet; segment 5 of leg I with two single stout ventral spines (appendages), one subapical, the other more distal; median claw or appendage of foot small and bifurcate. Ventral surface with all plates evenly granulated; anterior plate large with posterior edge forwardly concave and with a number of peculiar setae as in *Agauopsis hamiltoni* sp. nov.; just outside of the posterolateral corners of this plate is a single simple seta; lateral plates long and narrow without setae; posterior plate as broad as long, anterior edge almost reaching coxae III and somewhat square. Genitalia large and surrounded by a number of setae which are fairly long. The setae on the legs are normal and of moderate length.

Locality.—A single specimen from the northern end of Macquarie Island, 14th October, 1913.

Remarks.—This species is most closely related to *W. bouvieri* Trst. from which it differs in the ornamentation of the dorsal plates, in the shape and size of the plates, in the peculiar setae on the anterior ventral plate and in the distal segments of the legs not being tuberculated or granulated.

Sub-family SIMOGNATHINAE *Vietz* 1927.

Genus SIMOGNATHUS *Trst.* 1889.

SIMOGNATHUS SCULPTUS (*Brady* 1875). (Plate IX, figs. 1–4.)

Locality.—A single specimen, a larva, which, except for its larval condition, agrees with the description of this species, was isolated from the residue of material collected from rock scrapings from the northern end of Macquarie Island, 14th October, 1913.

Remarks.—The specimen has only the three pairs of legs and lacks both the posterior dorsal and ventral plates while the ocular plates, although distinct, are smaller than in the adult. The species has hitherto been recorded only from the English and French coasts.

SUB-ORDER MESOSTIGMATA *Kramer* 1877.

SUPER-FAMILY PARASITOIDEA *Banks* 1904.

Family PARASITIDAE *Oudemans* 1902.

Genus HYDROGAMASUS *Berlese* 1892.

HYDROGAMASUS ANTARCTICUS *Trägärdh* 1907. (Plate X, figs. 1–2.)

Locality.—One female and two first nymphs from between tide-marks from Macquarie Island, 28th October, 1913.

Remarks.—This species was previously only known from the adults of both sexes. It was recorded by Trägärdh from Paulet Island (Schwed. Sudpolar. Exped., 1901–3, 5, (2), 12). The description of the first nymphal stage follows.

Description of *First Nymph.*—Lengths: idiosoma 740 μ, gnathosoma 143 μ, opisthosoma 315 μ; palpi 210 μ; legs I 530 μ, II 450 μ, III 500 μ, IV 530 μ. Relative lengths of palpal segments = 7 : 9 : 7 : 5 : 5; palpi 5-segmented. Length of chelicerae 100 μ. Epistoma as in the adult. Claws and caroncle of legs I much smaller than the others. Spiracle small, lying below coxae IV, peritreme long and narrow. Dorsal surface with roughly scale-like markings except for a band of cross striations behind coxae IV; dorsal setae 53 μ long, strong, on the posterior edge two pairs 170 μ long; posteriorly there are four subcircular markings in a transverse row. Ventral surface: sternal plate long and tapering, suddenly narrowing on a level with the anterior edge of coxae IV, it carries four pairs of setae and there is another pair off the plate and in line with coxae IV; jugularia not differentiated from the plate; anal plate large with rounded anterior edge and subterminal anus which has a pair of lateral short setae and a longer terminal seta; the anal plate has an anterior row of four setae. Both sternal and anal plates are patterned with hexagonal areas which are internally pitted. The rest of the ventral surface is finely striated. Just below the cuticle between the sternal and anal plates can be discerned the outline of the ventral plate of the next instar; its anterior edge is almost straight, the remainder evenly curved.

Family PACHYLAELAPTIDAE *Vitzthum* 1933.

Genus PACHYLAELAPS *Berlese* 1888.

PACHYLAELAPS MACQUARIENSIS *sp. n.* (Plate XI, figs. 1–6.)

Description.—Lengths: idiosoma 580 μ, gnathosoma 230 μ, opisthosoma 215 μ; greatest width 350 μ, in line with coxae IV. Length of leg I 750 μ, II 570 μ, III 450 μ, IV 640 μ, all including caruncle and claws; I long and slender with elongate and geniculate

praetarsus and small claws, II moderately thickened and tarsus with a single thick subapical spine and with shorter and non-geniculate praetarsus. Sternal shield 170 μ long by 185 μ wide, with three pairs of setae. Jugularia well developed with broader outer end. Anal plate triangular with 3 setae. Genito-ventral plate as figured with an anterior submedian pair and two lateral pairs of setae. Between the sternal and genito-ventral shields are a pair of small parapodia each with a single setae. A pair of small shields laterally at the apical corners of the sternal shield. Tritosternum and episternum as figured. Dorsal shield entire, the setae comparatively short, 40–45 μ long.

Locality.—A single female taken between tide-marks on the west coast of Macquarie Island, 28th October, 1913.

Remarks.—The first species of this genus to be recorded from the Southern Hemisphere.

Genus PACHYSEIUS *Berlese.*

PACHYSEIUS ADELIENSIS *sp. nov.* (Plate XII, figs. 1–3.)

Description.—Lengths: idiosoma 465 μ, gnathosoma 83 μ, opisthosoma 215 μ; width 330 μ. Dorsum with a single entire shield not entirely covering the body, 465 μ long by 285 μ wide. Palpi 133 μ long. Mouthparts not observed in detail. Legs: I 413 μ, II 330 μ, III 330 μ, IV 550 μ long, II only a little stouter than the others, claws small and weakly chitinised, praetarsi short. Tarsus of leg IV at the base with a long fine seta very much longer than the rest. Ventral surface; sternal shield rectangular and shorter than broad with the posterior lateral corners only slightly produced, with 2 pairs of setae. Genito-ventral shield narrow, rather square-ended posteriorly, with a single pair of lateral setae; laterally on each side of the anterior end of the genito-ventral shield is a small shield carrying two small setae. The anal plate is large, subtriangular with the anus at the posterior end, the anterior margin is straight and wider than the posterior margin of the genito-ventral shield on which it almost abuts; there are no small shields between the anal and genito-ventral shields but there is a pair of small parapodia in line with the widest part of the anal shield. The body setae both dorsally and ventrally are long and slender, the two posterior setae somewhat longer than the rest. The anal shield carries 10 setae. The stigma lies between coxae III and IV with a long peritreme.

Locality.—A single female from Commonwealth Bay, King George V Land, in 24–30 fathoms on 20th January, 1913.

Remarks.—The first species of the genus to be recorded from the Antarctic. Whether this species is a deep water form might be open to question. If so, then, as far as I am aware, it is the first species of the Parasitoidea to be recorded from such a habitat.

Family LAELAPTIDAE *Berlese* 1892.

Genus EULAELAPS *Berlese* 1903.

EULAELAPS MAWSONI *sp. n.* (Plate XII, figs. 4–7.)

Description.—Lengths: idiosoma 1,083 μ, gnathosoma 216 μ, opisthosoma 664 μ; width 664 μ. Dorsum with a single shield not entirely covering body, 830 μ long by 430 μ wide. Palpi 200 μ long. Mandibles as figured. Legs I 915 μ long and thin, II stouter 780 μ, III slender 665 μ, IV 1,000 μ, praetarsi short, claws small and weakly chitinised. Inside of segments 4 and 5 of legs II and III are some stout slightly ciliated spine-like setae. Ventral surface: sternal plate short with deeply concave posterior edge, the posterior lateral corners well produced and extending to coxae IV, with 3 pairs of setae; jugularia present; genito-ventral shield as figured with rounded anterior edge protruding into concavity of sternal shield; laterally of apex of genito-ventral shield on each side is a small parapodium; anal shield small, triangular, with 3 setae. Dorsal and ventral surface covered with fairly numerous short setae of which the genito-ventral shield bears 18; stigma in line with coxae IV, peritreme long.

Locality.—A single female from between tide-marks, west coast of Macquarie Island, 28th October, 1913.

Remarks.—Only one other species of this genus has been recorded previously from the South Polar regions, namely *E. grahamensis* described by Trägärdh from Graham's Land. The present species is dedicated to the leader of the Australasian Antarctic Expedition, Sir Douglas Mawson.

SUB-ORDER CRYPTOSTIGMATA *Kramer* 1877.

SUPER-FAMILY SARCOPTOIDEA *Banks* 1904.

Family LENTUNGULIDAE *Berlese* 1897.

Genus HYADESIA *Megnin* 1889.

HYADESIA UNCINIFER *Megnin* 1889.

Locality.—In large numbers from green seaweeds from between tide-marks, west coast of Macquarie Island, 28th October, 1913.

Family TYROGLYPHIDAE *Donnadieu* 1868.

Genus TYROGLYPHUS *Latreille* 1795.

TYROGLYPHUS FARINAE (*Linne* 1758).

Locality.—A few specimens were found in the container labelled "Fresh-water Lakes, Macquarie Island, Oct. 3rd, 1913." Adults and hypopi.

Remarks.—Probably an infestation of the container from the ship's stores. It was also recorded by Berlese, similarly, from the material brought back by the Deuxième Exped. Antarctique Francaise (1917, vol. 3).

Family TYROPHAGIDAE *Oudemans* 1924.

Genus TYROPHAGUS *Oudemans* 1924.

TYROPHAGUS DIMIDIATUS (*Hermann* 1804), *var.* LONGIOR (*Gervais* 1844).

Locality.—A few specimens from material in a container labelled "?Commonwealth Bay, Adelie Land, 24-39 fathoms, 20th January, 1913."

Remarks.—Probably accounted for as in the above species.

Family GLYCYPHAGIDAE *Berlese* 1897.

Genus GLYCYPHAGUS *Hering* 1838.

GLYCYPHAGUS DOMESTICUS (*de Geer* 1778).

Locality.—Two specimens from material in a container labelled "W 542, Macquarie Island, at low tide, Oct. 1913."

Remarks.—As with the foregoing two species.

SUPER-FAMILY ORIBATOIDEA BANKS 1904.

Family NOTASPIDIDAE *Sellnick* 1929.

Genus HALOZETES *Berlese* 1916.

HALOZETES MARINA (*Lohmann* 1903).

Localities.—(1) In numbers from green seaweeds from between tide-marks, west coast of Macquarie Island, 28th October, 1913, nymphs and adults; (2) Fresh-water lakes, Macquarie Island, 3rd October, 1913; (3) Probably below tide mark, Macquarie Island, 1913.

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EXPLANATIONS OF PLATES.

PLATE II.

Figs. 1–4.—*Tydeus antipodus* sp. nov.—1. Cephalothoracic suture. 2. Palp. 3. Mandible. 4. Dorsal seta. 5–9.—*Lorryia polaris* sp. nov.—5. Dorsal view of body. 6. Ventral view of entire animal. 7. Tip of palp IV. 8. Leg I. 9. Dorsal seta. 10. *Nanorchestes amphibius* Tops. and Trst. dorsal view entire.

PLATE III.

Figs. 1–6.—*Agaue occultus* var. *setifera* var. nov.—1. Dorsal view of entire animal. 2. Ventral view of body. 3. Palp. 4. Leg I. 5. Tarsus and claws of leg IV. 6. Tarsus and claws of leg I.

PLATE IV.

Figs. 1–6.—*Agaue hamiltoni* sp. nov.—1. Dorsal view of entire animal. 2. Ventral view of body. 3. Palp. 4. Segment 5 of leg I from below. 5. Specialised seta. 6. Segments 5 and 6 of leg I from side.

PLATE V.

Figs. 1–7.—*Halacarus lohmanni* sp. nov.—1. Dorsal view of male. 2. Ventral view of body of male. 3. Ventral view of body of female. 4. Palp. 5. Segments 5 and 6 of leg I. 6. Apex of abdomen of first nymph, ventral. 7. Apex of abdomen of second nymph, ventral.

PLATE VI.

Figs. 1–12.—*Halacarellus harioti harioti* Trst.—1. Entire dorsal view of female. 2. Ventral view of body of female. 3. Dorsal view of body of male. 4. Ventral view of body of male. 5. Dorsal view of body of second nymph. 6. Ventral view of body of second nymph. 7. Palp. 8. Mandible. 9. Tarsus of leg I. 10. Segment 5 of leg I. 11. Segment 3 of leg I. 12. Ovipositor extruded.

PLATE VII.

Figs. 1–3.—*Werthella johnstoni* sp. nov.—1. Entire dorsal view. 2. Ventral view of body. 3. Segments 5 and 6 of leg I.

PLATE VIII.

Figs. 1–5.—*Copidognathus* sp., nymph.—1. Dorsal view of body. 2. Entire ventral view. 3. Palp. 4. Leg I. 5. Segment 5 of leg I from below.

Plate IX.

Figs. 1–4.—*Simognathus sculptus* (Brady), larva.—1. Entire dorsal view. 2. Entire ventral view. 3. Leg I. 4. Leg II.

Plate X.

Figs. 1–2.—*Hydrogamasus antarcticus* Trägårdh, first nymph.—1. Dorsal view entire. 2. Ventral view entire.

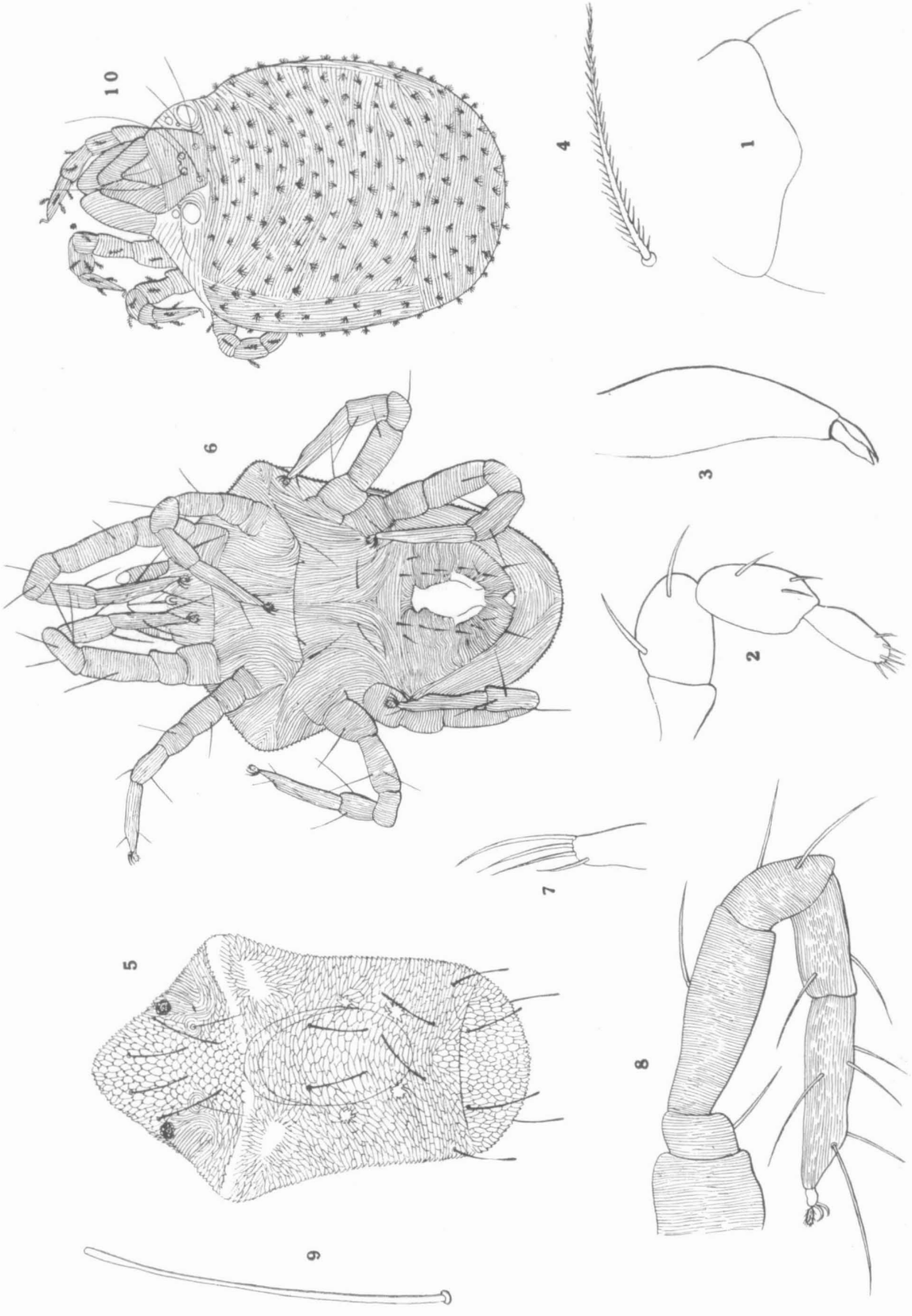
Plate XI.

Figs. 1–6.—*Pachylaelaps macquariensis* sp. nov.—1. Entire ventral view of female. 2. Mouth parts from below. 3. Epistome. 4. Tritosternum. 5. Tip of tarsus of leg I. 6. Last two segments of leg II.

Plate XII.

Figs. 1–3.—*Pachyseius adeliensis* sp. nov.—1. Ventral view of female. 2. Dorsal view of body. 3. Leg IV.

Figs. 4–7.—*Eulaelaps mawsoni* sp. nov. 4. Ventral view of female. 5. Dorsal view of body. 6. Mandible. 7. Leg II.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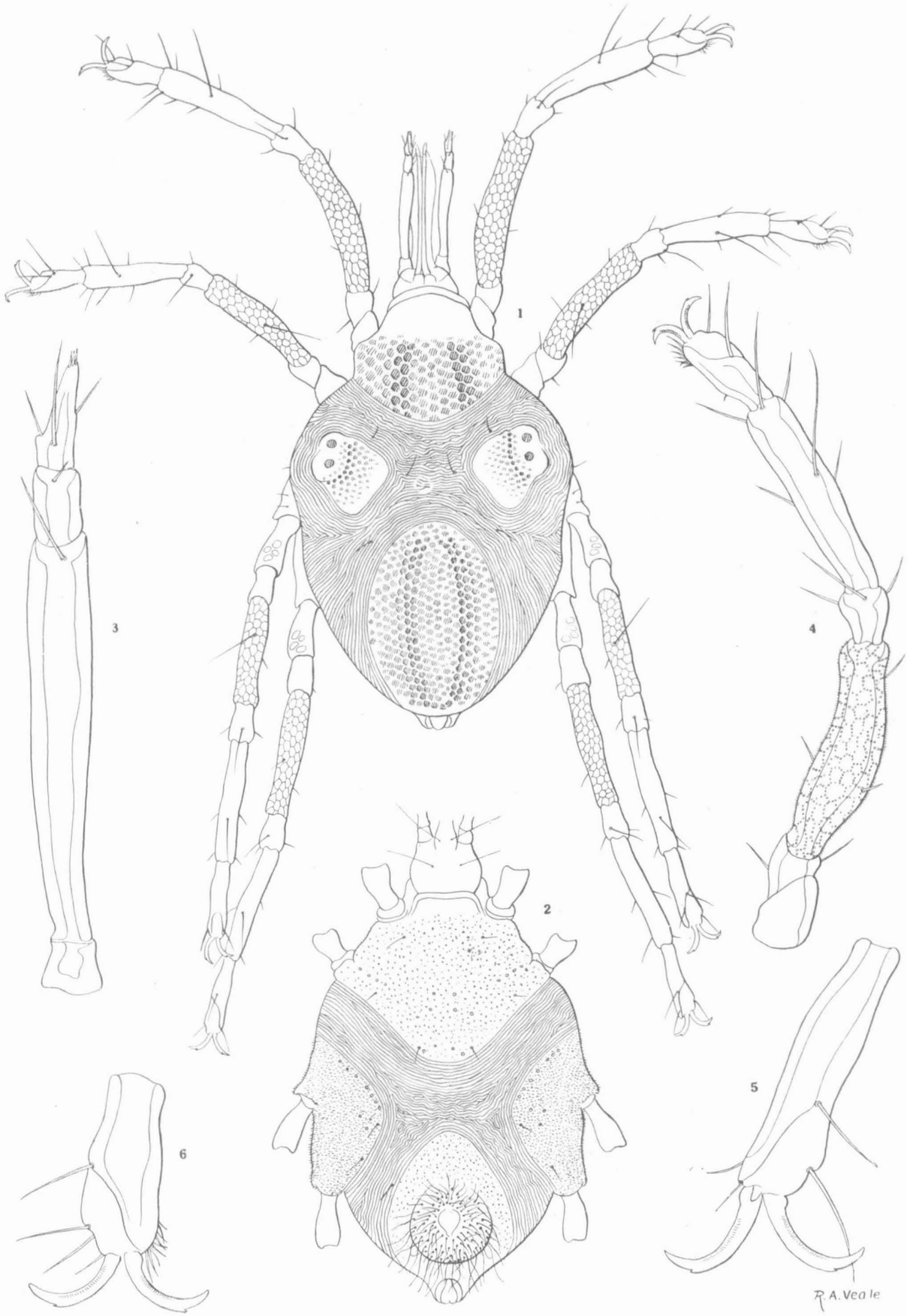
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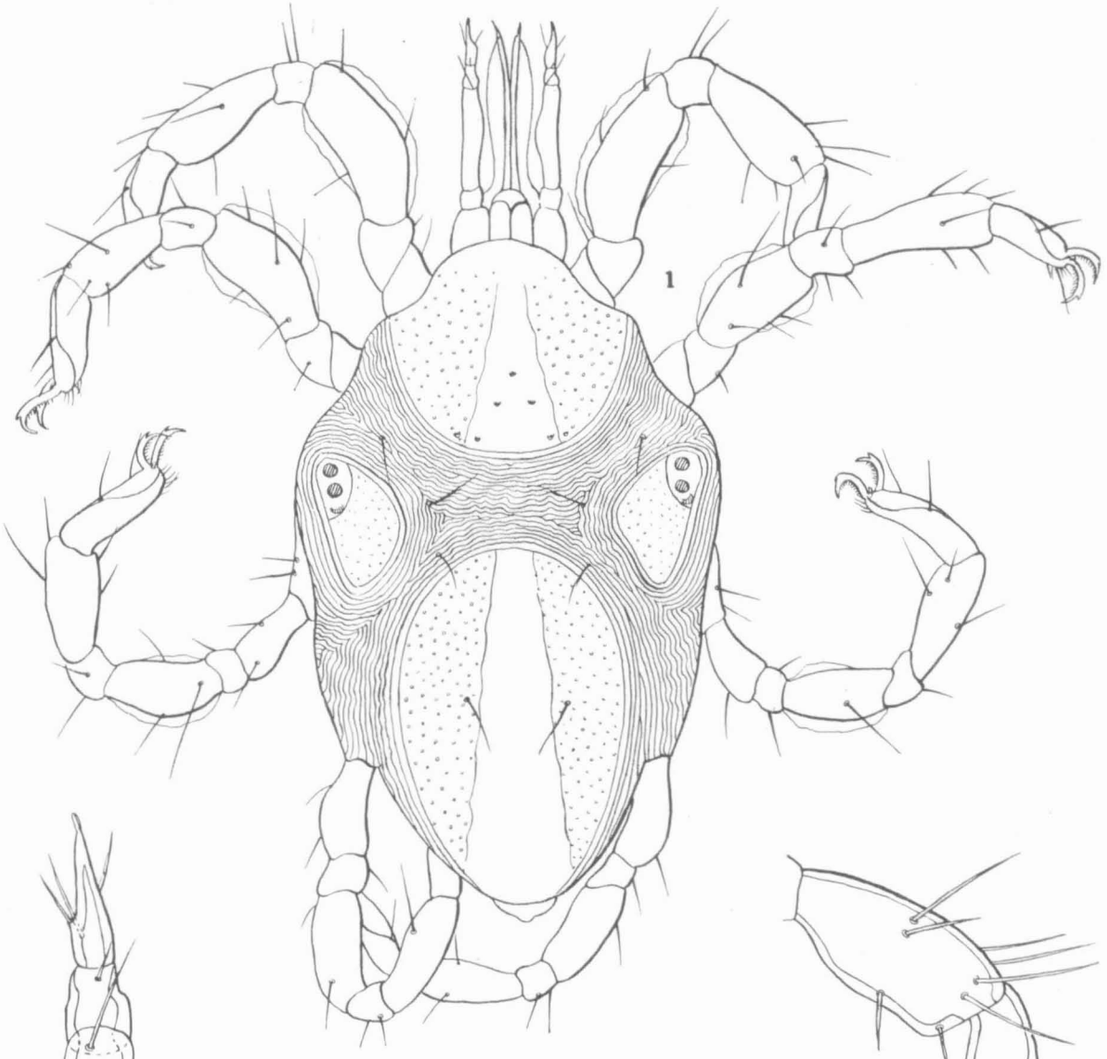

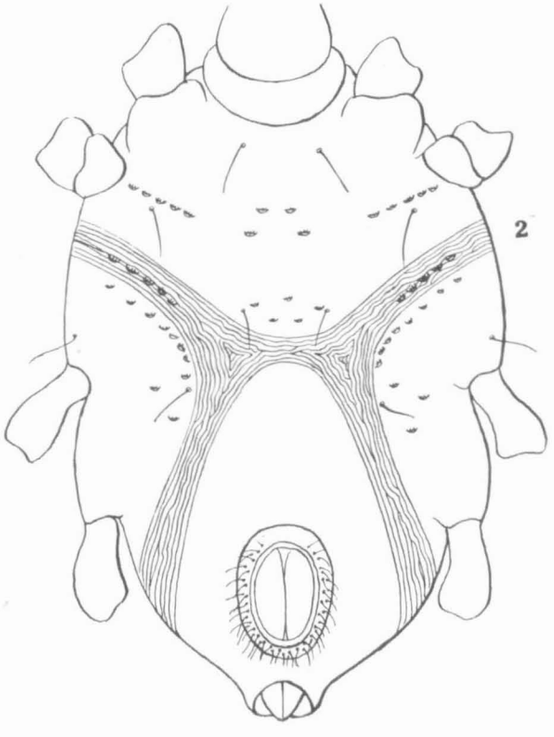

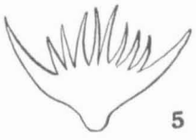

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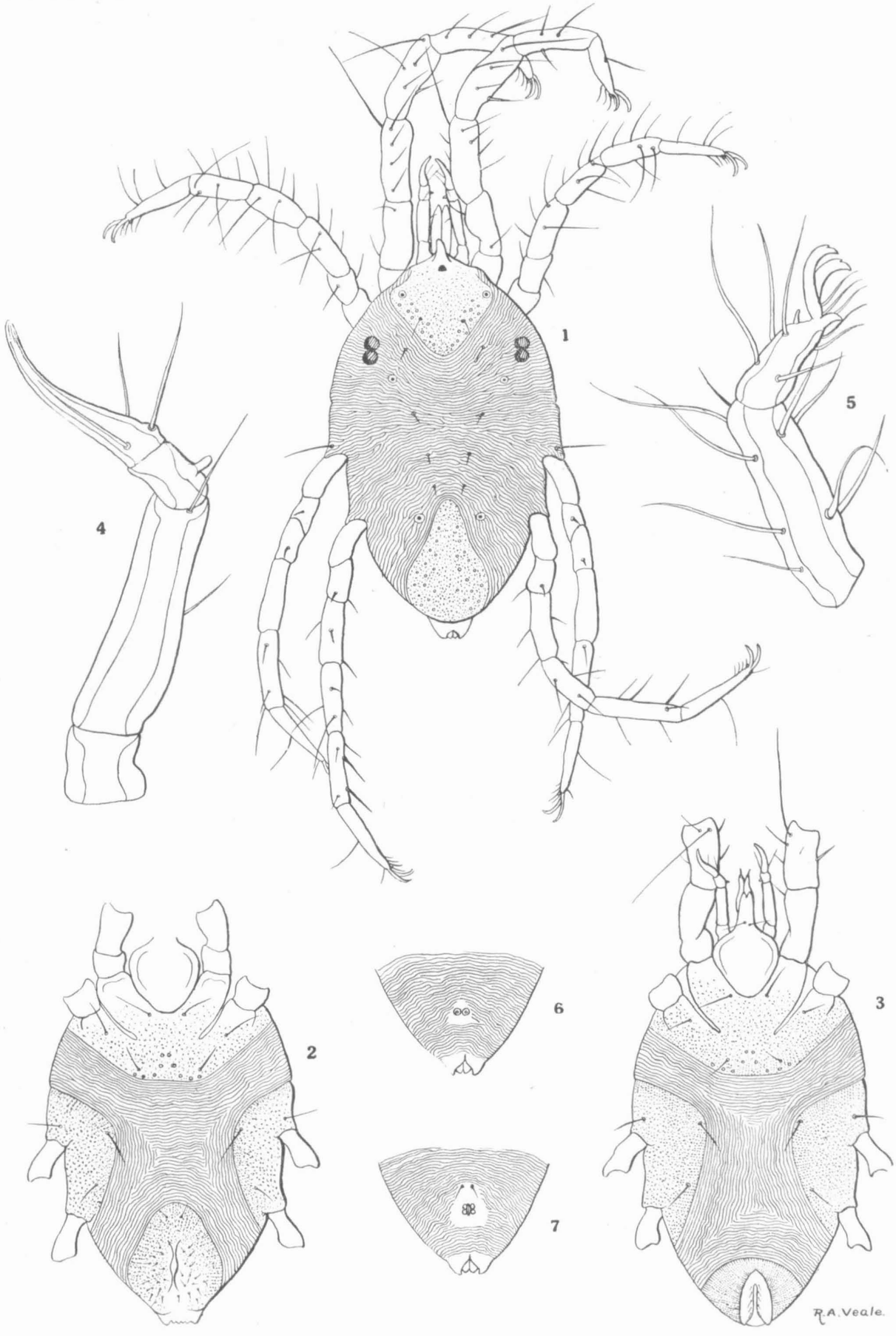
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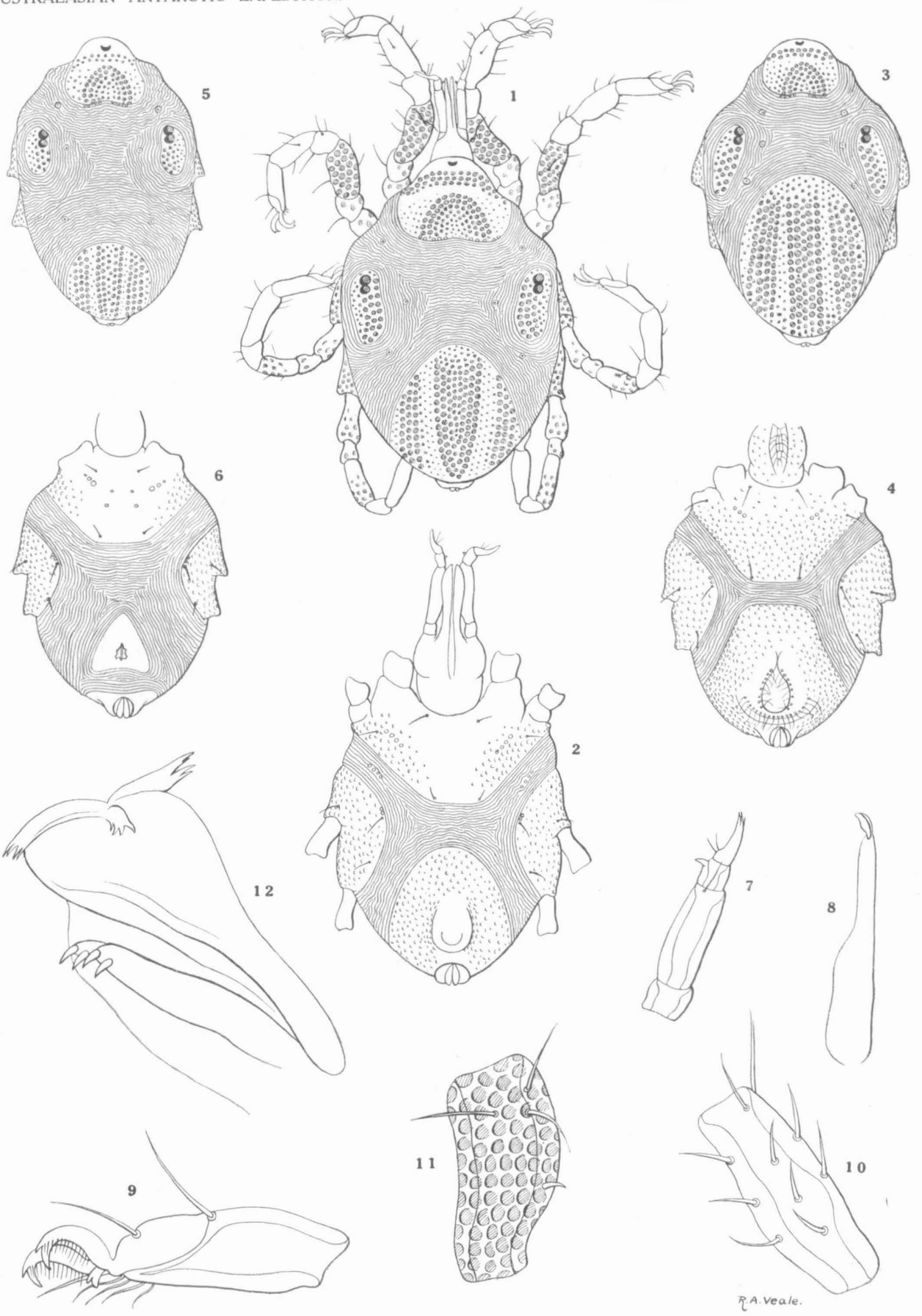
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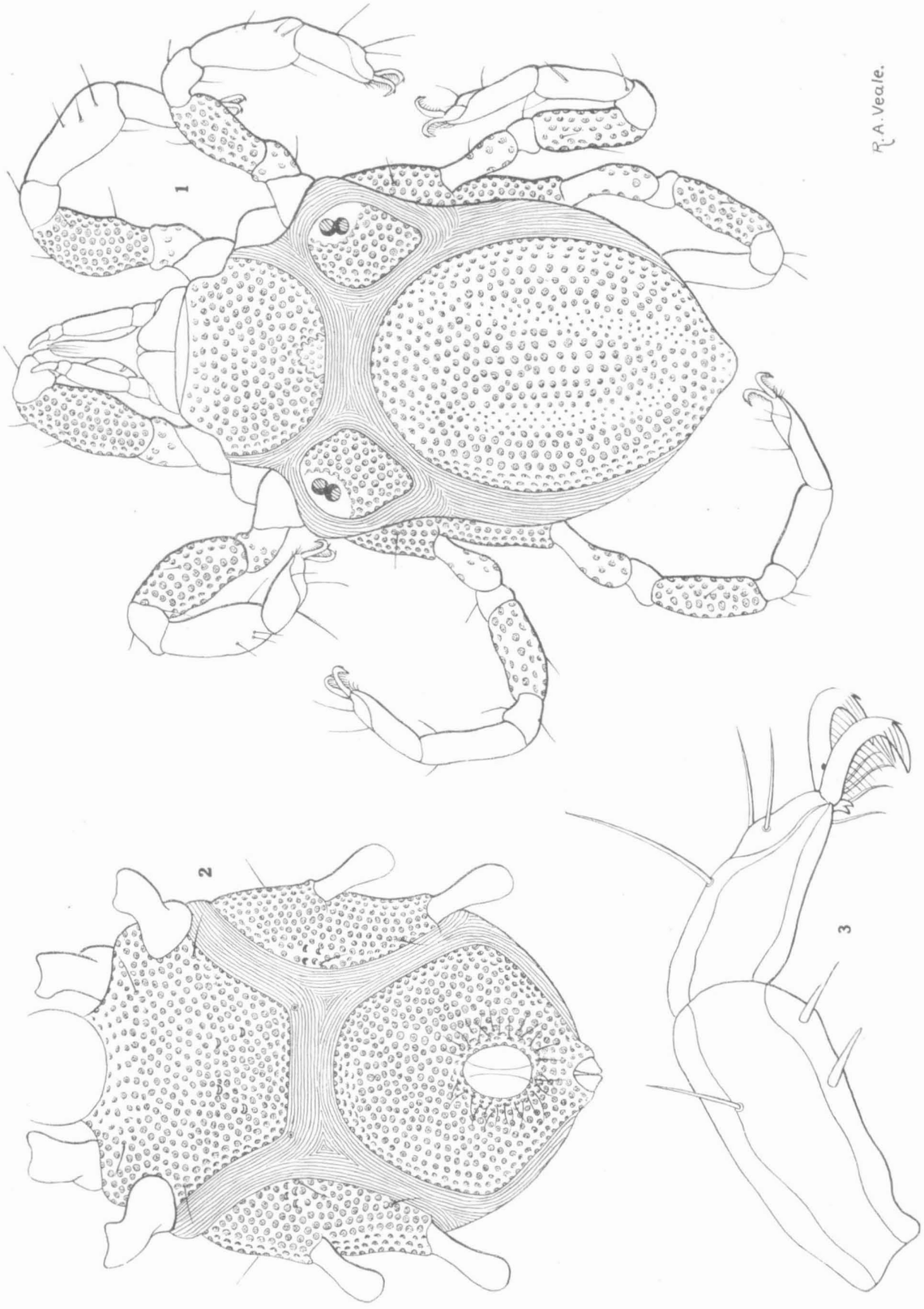
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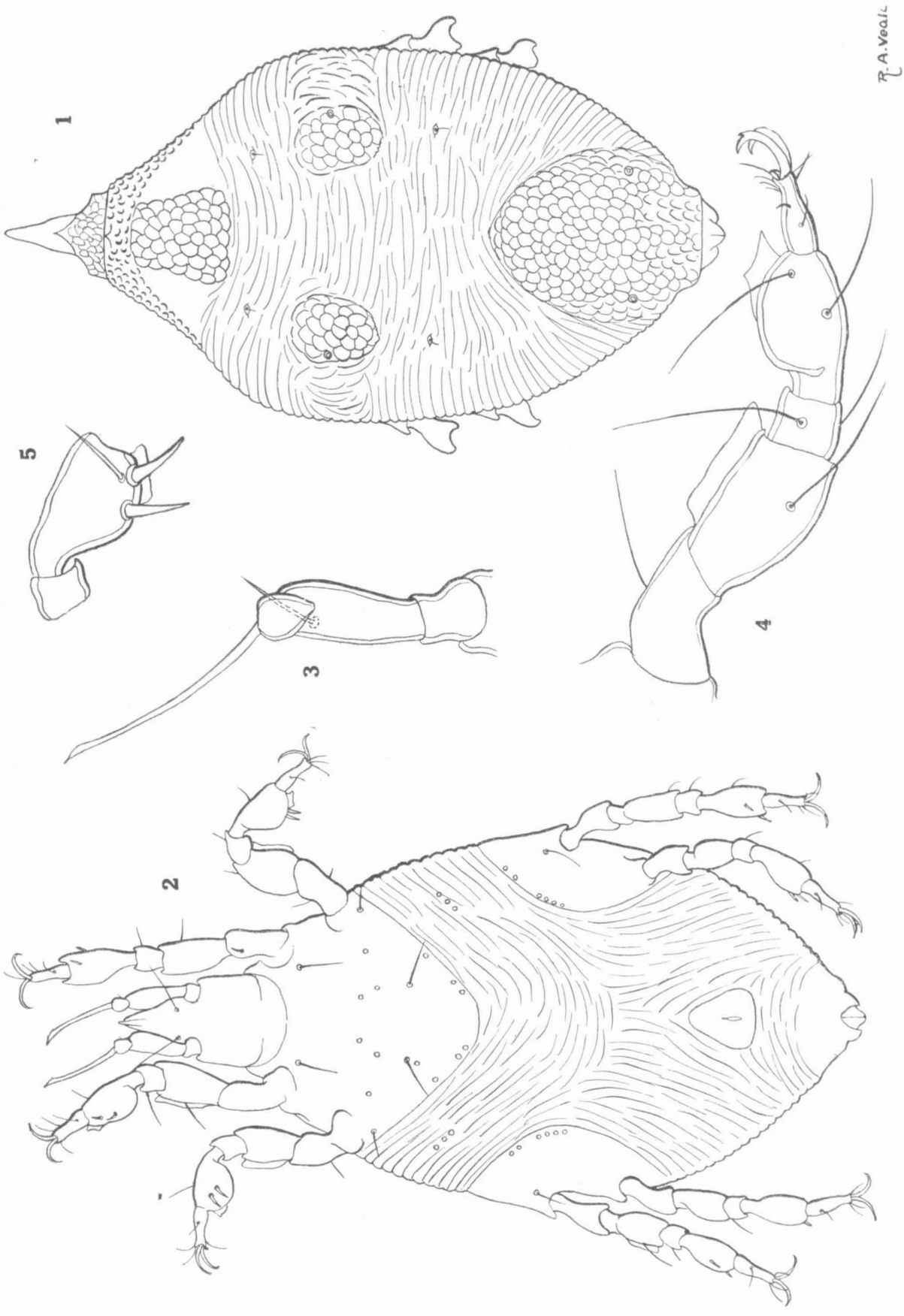
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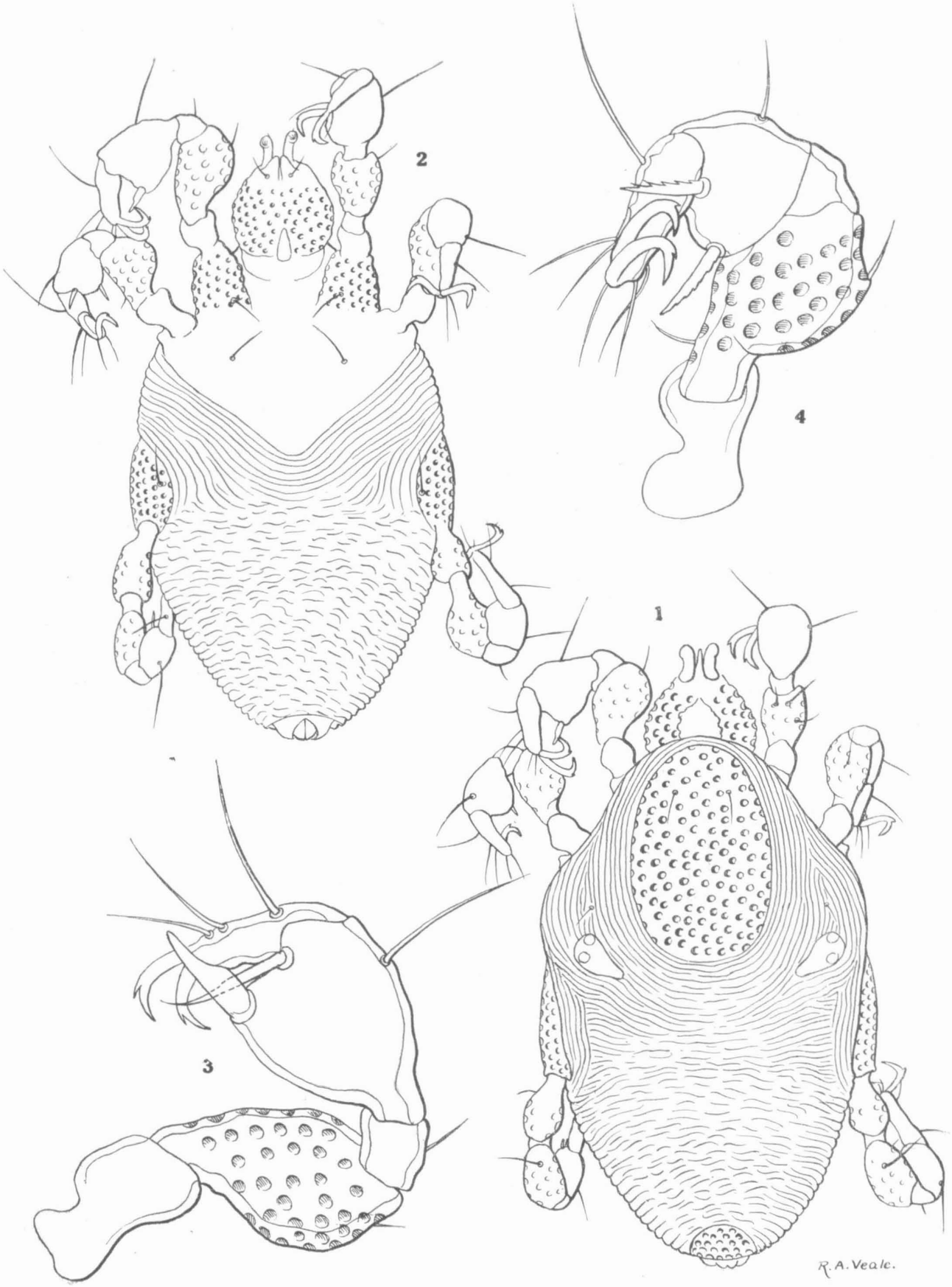
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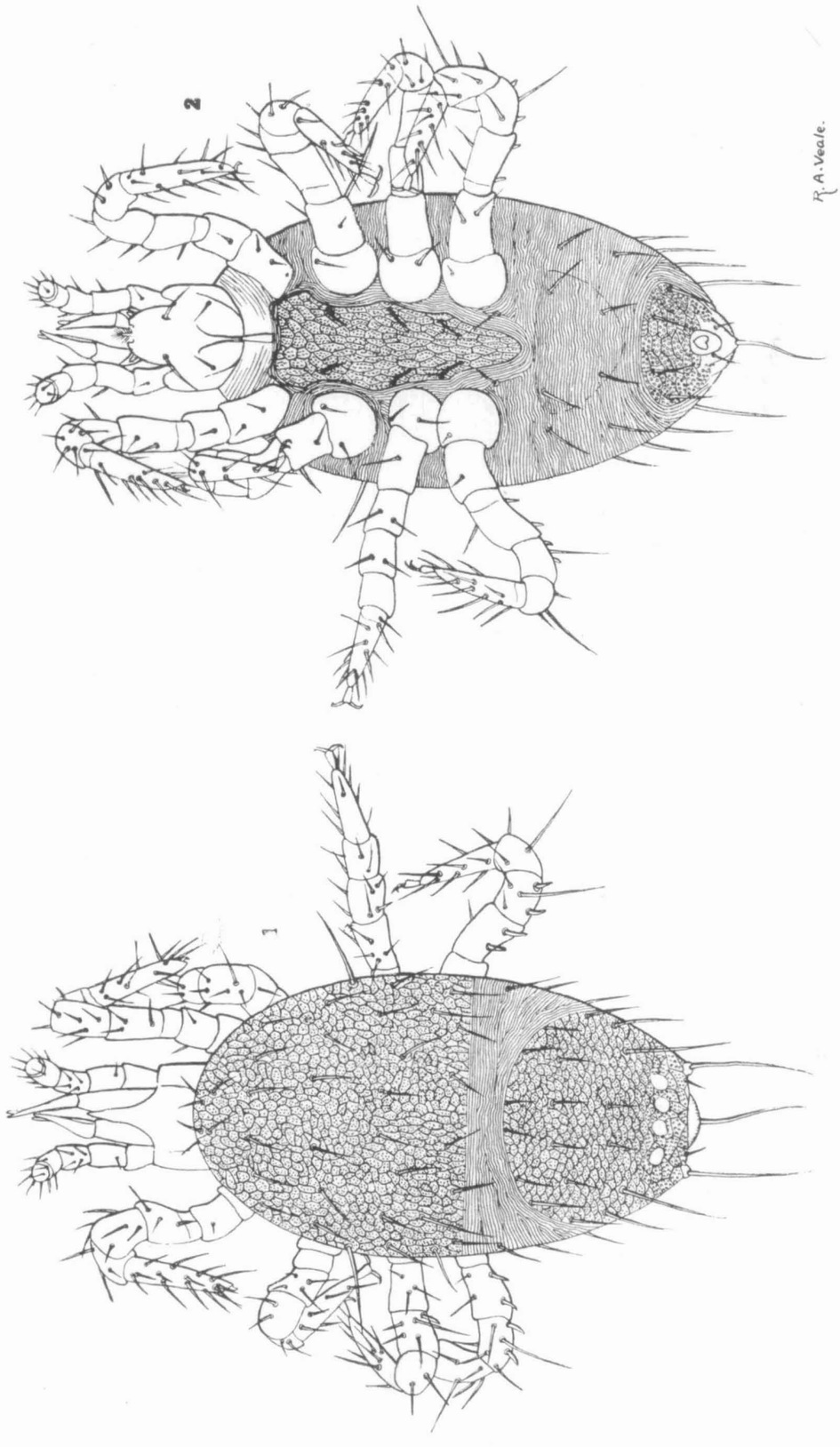
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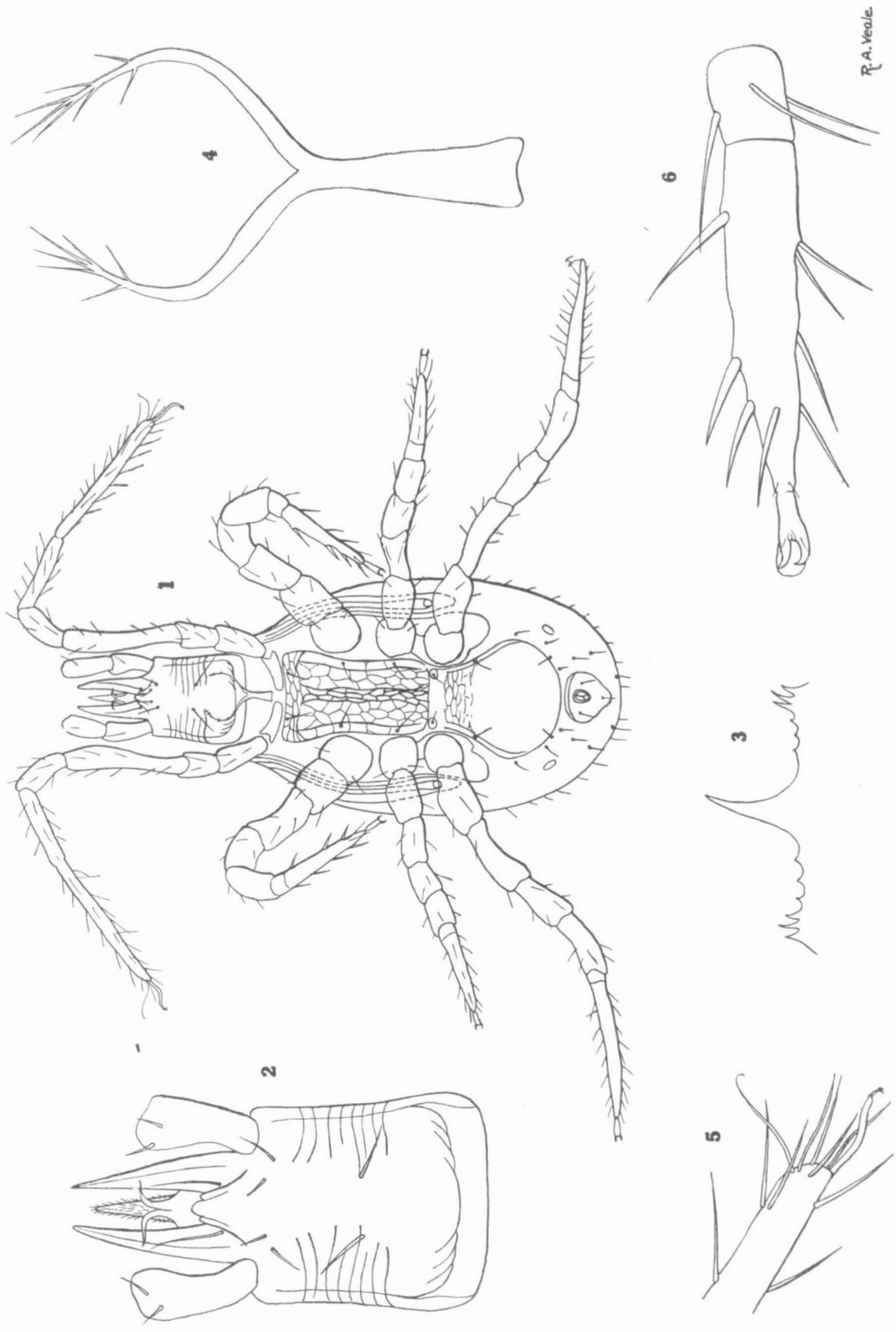
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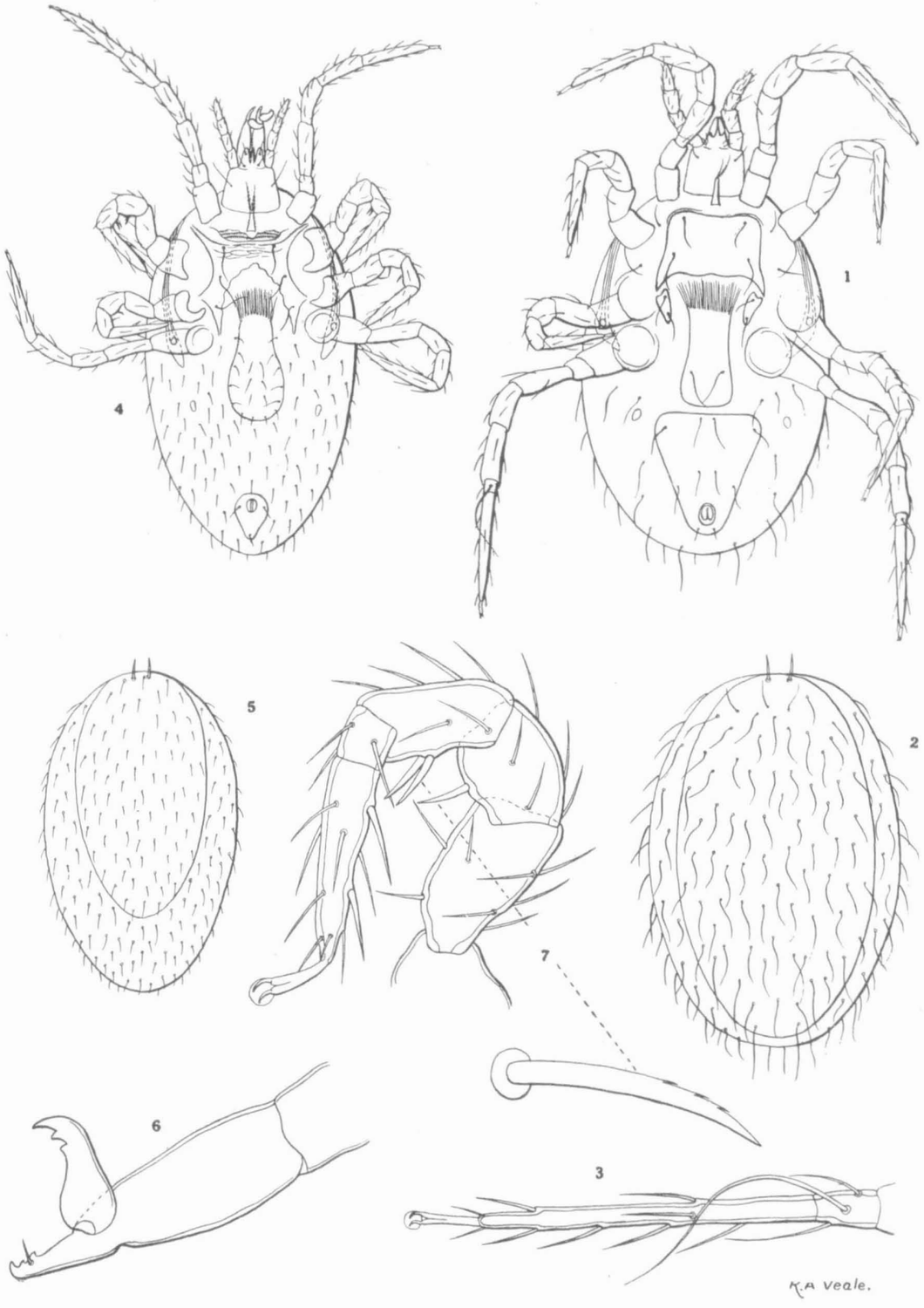
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„ 3.—LEECHES. By Prof. J. P. Moore, University of Pennsylvania. (*In press.*)	
„ 4.—CESTODA. By Prof. T. Harvey Johnston, University of Adelaide	0 10 0
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„ 6.—ACARINA. By H. Womersley, A.L.S., F.R.E.S., South Australian Museum	0 6 0
„ 7.—ECHINODERIDA. By Prof. T. Harvey Johnston, University of Adelaide. (*In press.*)	

The Reports on the Birds, Mammals and certain Invertebrata will be included in the records of the British, Australian and New Zealand Antarctic Expedition of 1929–1931 as joint reports.