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**Keys, Species and Host List, and Bibliography for
Nasal Mites of North American Birds (Acarina:
Rhinonyssinae, Turbinoptinae, Speleognathinae,
and Cytoditidae)**

Danny B. Pence

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Keys, Species and Host List, and Bibliography for Nasal Mites of North American Birds (Acarina: Rhinonyssinae, Turbinoptinae, Speleognathinae, and Cytoditidae)

Danny B. Pence

The nasal mites of birds are a heterogenous group of endoparasitic acarids represented by a single mesostigmatic subfamily of the Dermanyssidae (Rhinonyssinae); one subfamily of the prostigmatic family Ereyneidae (Speleognathinae); and two families of the Astigmata, Epidermoptidae (Turbinoptinae) and Cytoditidae. Of these, the Rhinonyssinae and Turbinoptinae are exclusively intranasal parasites of birds, whereas the Speleognathinae also occur in the nasal passages of mammals. The genus *Cytonyssus* of the family Cytoditidae is exclusively parasitic in the nasal passages, whereas the remaining genus in this family, *Cytodites*, is found most often in the lungs and air sacs of birds. Although ticks and chiggers, as well as some other acarids, occasionally have been reported from this microhabitat, these are not considered herein.

Avian nasal mites were reported first by European workers (Giebel, 1871; Berlese and Trouessart, 1889; Trägårdh, 1904; Hirst, 1921, 1923). Their status was reviewed and additional species described by Vitzthum (1935). The pioneering efforts of Castro (1948) and Pereira and Castro (1949) on the South American fauna was followed shortly by the work of Strandmann (1948, 1951, 1952, 1956) and later by his students (Brooks and Strandmann, 1960; George, 1961) on the North American species. Subsequent contributions were made by Furman (1957), Hyland (1961, 1962), and Clark (1958, 1960, 1964). The most extensive review of the North American species is that of Pence (1973), who recorded 51 species of Rhinonyssinae, seven species of Turbinoptinae, 13 species of Speleognathinae, and two species of Cytoditidae from more than 1900 specimens representing 193 species of birds collected in southern Louisiana. Extensive reviews of the Rhinonyssinae, Turbinoptinae, and Speleognathinae of the African and European faunas have been completed by Fain (1956, 1957, 1963). A most significant contribution is that of Domrow (1969), who extensively reviewed the eastern Australian fauna.

Although information concerning these endoparasitic Acarina in many host species is still incomplete or lacking, there exists at present a sizable amount of literature, mostly systematic in nature, on the North American species. To date, there are recorded 89 species of Rhinonyssinae, seven species of Turbinoptinae, two of Cytoditidae, and 25 of Speleognathinae from this geographic area. Because of their blood feeding (Rhinonyssinae) or tissue feeding (Turbinoptinae, Speleognathinae, and Cytoditidae) habits, wide geographic range, and relatively high incidence in avian populations, these mites may be regarded as potential disease vectors. Also, as pointed out by Bregetova (1964), a more intimate knowledge of

their systematics may prove to be a valuable tool for use in the interpretation of avian systematics and phylogeny. Because assessment of the taxonomy and distribution of these parasites is essential to subsequent studies on their biology and vector potential, the following keys to the known genera and species, list of species and their hosts, and bibliography to the nasal mites of birds endemic to North America (north of México) are presented.

Keys for the genera of each of the major groups precede those for the species. Figures illustrating each species of nasal mite from North American birds follow in chronological order the listing of species as they occur in the keys. The host-parasite list included herein follows an alphabetical listing of species from the various genera of mites.

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Family DERMANYSSIDAE

Subfamily RHINONYSSINAE

Key to Rhinonyssine Genera (Females)

1. Cheliceral shaft diameter uniform throughout; cheliceral digits more than 1/8 total length 2
- Cheliceral shaft at least somewhat attenuated distally; cheliceral digits less than 1/10 total length 6
- 2.(1) Both cheliceral digits present 3
- Fixed cheliceral digit absent *Rhinoecius* Cooreman
- 3.(2) Stigmata with peritremes 4
- Stigmata without peritremes *Rhinonyssus* Berlese and Trouessart
- 4.(3) Periterminalia on dorsolateral margins of mesosoma 5
- Periterminalia on posterior margin of opisthosoma
- *Rallinyssus* Strandtmann
- 5.(4) Podosomal plate entire; opisthosomal plate entire, fragmented, or absent *Tinaminyssus* Strandtmann and Wharton
- All idiosomal plates fragmentary *Laryinyssus* Strandtmann
- 6.(1) Stigmata with peritremes; gnathosoma terminal; anal plate subterminal
- *Ptilonyssus* Berlese and Trouessart
- Stigmata without peritremes; gnathosoma at least partially withdrawn ventrally; anal plate terminal *Sternostoma* Berlese and Trouessart

Rhinonyssus

Key to Species (Females)

- 1. Anal plate present; distal palp segments stubby, barely longer than trochanter 2
- Anal plate absent; distal palp segments well developed, longer than trochanter 5
- 2.(1) Ventral opisthosomal setae blunt-tipped, heavy 3
- Ventral opisthosomal setae with swollen bases tapering to slender flexible tips 4
- 3.(2) Two paranal setae, postanal seta, and cribrum on anal plate
- *colymbicola* Fain and Bafort (Figs. 1-6)
- Postanal seta and cribrum absent from anal plate
- *alberti* Strandtmann (Figs. 7-13)
- 4.(2) Postanal seta absent; podosomal plate triangular anteriorly with angulate posterolateral margins beginning from near middle of plate, mid-posterior margin straight *podilymbi* Pence (Figs. 14-20)
- Postanal seta usually present; podosomal plate triangular anteriorly from near level of stigmata, midposterior margin with a small triangular projection posteriorly
- *rhinolethrum* Berlese and Trouessart (Figs. 21-27)
- 5.(1) Sternal plate absent 6
- Sternal plate present 9
- 6.(5) Idiosoma, especially hysterosoma, elongate; podosomal plate horseshoe shaped and fragmented; genital plate elongate 7
- Idiosoma normal, hysterosoma rounded; podosomal plate not horseshoe shaped and little fragmented; genital plate not markedly elongate . . . 8
- 7.(6) Sternal setae setiform; podosomal plate very eroded with several adjacent small platelets *spinactitis* Dusbábek (Figs. 28-34)
- Sternal setae normal; podosomal plate may be somewhat eroded but not broken into small platelets
- *coniventris* Berlese and Trouessart (Figs. 35-41)
- 8.(6) Four ventral opisthosomal setae; two pairs sternal setae
- *caledonicus* Hirst (Figs. 42-48)
- Eight ventral opisthosomal setae; three pairs sternal setae
- *waterstoni* Hirst
- 9.(5) Two ventral opisthosomal setae
- *pluvialis* Fain and Johnston (Figs. 49-54)
- More than 15 ventral opisthosomal setae 10
- 10.(9) Posterior margins of podosomal plate with angulate lateral corners, about 25 microns (average); ventral opisthosomal setae long
- *strandtmanni* Fain and Johnston (Figs. 55-61)

Posterior margins of podosomal plate rounded, 20 microns (average);
ventral opisthosomal setae short
. *himantopus* Strandtmann (Figs. 62-68)

Rallinyssus

Key to Species (Females)

Podosomal plate well developed
. *caudistigmus* Strandtmann (Figs. 69-75)
Podosomal plate reduced to fragments representing areas of muscle in-
sertions *verheyeni* Fain and Bafort (Figs. 76-82)

Larinyssus

There is a single species, *Larinyssus orbicularis* Strandtmann, known from North American birds (Figs. 83-89).

Tinaminyssus

Key to Species (Females)

1. Tritosternum present
. *ixoreus* Strandtmann and Clifford (Figs. 90-96)
Tritosternum absent 2
- 2.(1) With 2 large dorsal plates (podosomal and opisthosomal) 3
With 3 large dorsal plates (podosomal, opisthosomal, and pygidial)
. *carapachibeyus* Dusbábek (Figs. 97-102)
- 3.(2) Small poststigmatal platelet present 4
Small poststigmatal platelet absent 5
- 4.(3) Opisthosomal plate widest posteriorly; 10 to 11 pairs of long ventral
opisthosomal setae; paranal setae at level of anus
. *zenaidurae* Crossley (Figs. 103-109)
Opisthosomal plate widest anteriorly; seven to nine pairs of long ventral
opisthosomal setae; paranal setae anterior to anus
. *melloi* Castro (Figs. 110-116)
- 5.(3) Lateral ventral opisthosomal setae long, at least as long as width of anal
plate; opisthosomal plate triangular
. *triangulus* Strandtmann (Figs. 117-123)
Lateral ventral opisthosomal setae small, much shorter than width of
anal plate; opisthosomal plate not triangular 6
- 6.(5) Sternal plate small, lightly sclerotized 7
Sternal plate absent 8
- 7.(6) Opisthosomal plate as large as or larger than podosomal plate, as wide
as long, covering almost entire dorsal opisthosoma; paranal setae at
level of anus *bubulci* Zumpt and Till (Figs. 124-130)

- Opisthosomal plate rectangular, longer than wide, smaller than above and covering only about 1/2 area of opisthosoma; paranal setae above anus *columbae* Crossley (Figs. 131-137)
- 8.(6) All ventral setae noticeably shorter than diameter of anal opening; small; paranal setae at level of, or posterior to, anus 9
Some ventral setae as long as diameter of anal opening; paranal setae anterior to anus *geotrygoni* Dusbábek (Figs. 138-144)
- 9.(8) Opisthosomal plate rectangular, longer than wide, extending to near posterior margin of idiosoma . . . *belopolskii* Bregetova (Figs. 145-151)
Opisthosomal plate round to oval, small, extending less than 1/2 distance to posterior margin of idiosoma
. *neoixobrychi* Pence (Figs. 152-158)

Rhinoecius

Key to Species (Females)

1. With a single dorsal plate (either entire or fragmented), the podosomal; without pair of large subposterior setae at posterior margin of podosomal plate 2
With two dorsal plates, podosomal and opisthosomal; two large setae on subposterior margin of podosomal plate
. *bisetosus* Strandtmann (Figs. 159-164)
- 2.(1) Podosomal plate fragmented with one large anterior platelet and four smaller posterior fragments *tytonis* Fain (Figs. 165-170)
Podosomal plate entire or with two accessory platelets on podosoma but much larger and not as above 3
- 3.(2) Sternal plate present; 1 accessory platelet at lateral margin of each side of posterior podosomal plate 4
Sternal plate absent; no accessory platelets on podosoma
. *cooremani* Strandtmann (Figs. 171-176)
- 4.(3) Podosomal plate bell shaped, with two small setae on posterior margin *grandis* Strandtmann (Figs. 177-182)
Podosomal plate broadly rounded anteriorly and laterally with lateral margins not excavated; no setae on podosomal plate
. *oti* Cooreman (Figs. 183-188)

Sternostoma

Key to Species (Females)

1. With a single dorsal plate, the podosomal 2
With two dorsal plates, the podosomal and opisthosomal 4
- 2.(1) Sternal and coxal setae globose; 6 pairs of setae on podosomal plate, eight pairs on dorsal opisthosoma
. *dumetellae* Pence (Figs. 189-194)

- Sternal and coxal setae spatulate; five pairs of setae on podosomal plate, five to six pairs on dorsal opisthosoma 3
- 3.(2) Podosomal plate triangular anteriorly with angulate lateral margins and posterior margin deflected downward to form a small triangle *technaui* Vitzthum (Figs. 195-200)
 Podosomal plate rounded anteriorly with slightly rounded lateral margins and posterior margin almost straight; four pairs of ventral opisthosomal setae *spatulatum* Furman (Figs. 201-206)
- 4.(1) All subapical ventral and ventrolateral setae of tarsi II to IV in the form of very minute spines, barely visible 5
 At least some subapical setae of tarsi II to IV enlarged, variously modified, pronounced 7
- 5.(4) Idiosoma in gravid female triangular, greatly enlarged; opisthosomal plate subcircular, wider than long *strandtmanni* Furman (Figs. 207-212)
 Idiosoma in gravid female normal; opisthosomal plate elongate, much longer than wide 6
- 6.(5) Tarsus I with one long attenuated seta *trachaecolum* Lawrence (Figs. 213-218)
 Tarsus I with 3 or 4 long attenuated setae *hutsoni* Furman (Figs. 219-224)
- 7.(4) Subapical ventral and ventrolateral setae of tarsi II to IV long and flattened 8
 Subapical ventral and ventrolateral setae of tarsi II to IV short, cylindrical, spatulate, or spinelike but not flattened 9
- 8.(7) Subapical setae of tarsi II to IV sharply pointed; opisthosomal plate round, wider than long; sternal setae large and blunt *motacillae* Pence (Figs. 225-230)
 Subapical setae of tarsi II to IV blunt; opisthosomal plate trapizoidal, longer than wide, sternal setae small and hairlike *cryptorhynchum* Berlese and Trouessart (Figs. 231-236)
- 9.(7) Subapical ventral and ventrolateral setae of tarsi II to IV spatulate or scoop shaped but not flattened 10
 Subapical setae of tarsi II to IV spinelike, cylindrical, or otherwise, but not spatulate, scoop shaped, or otherwise expanded with distal end larger than proximal end 12
- 10.(9) Legs I to IV with very minute spinelike setae except apical and subapical tarsal setae; sternal plate with distinct reticular pattern; tarsi II to IV with a distal row of three and proximal row of four large ventral subapical spatulate setae *loxiae* Fain (Figs. 237-242)
 Legs I to IV with larger, more distinct spinelike setae; sternal plate hardly discernible, without reticulate pattern; tarsi II to IV with a distal

- row of two and proximal row of three large ventral subapical spatulate or scoop-shaped setae 11
- 11.(10) One pair of ventral gnathosomal setae; anal plate with two pairs of setae *hirundinis* Fain (Figs. 243-248)
Ventral gnathosomal setae absent; anal plate with one pair of setae *sialiphilus* Hyland (Figs. 249-254)
- 12.(9) Sternal plate 2.5 times as long as wide; one pair paranal setae; postanal seta present 13
Sternal plate only slightly longer than wide; one pair of paranal setae lateral to margin of anal plate present or absent, postanal seta absent 14
- 13.(12) Pososomal and opisthosomal plates with a network of small subreticular lines on surface; anterior margin of opisthosomal plate straight or slightly rounded; anterior dorsal apical setae of tarsus IV strongly swollen *porteri* Hyland (Figs. 255-259, 261)
Podosomal and opisthosomal plates not as above; anterior margin of opisthosomal plate inverted in the form of a "V"; anterior dorsal apical setae of tarsus IV not swollen, hairlike *hylandi* Fain and Johnston (Fig. 260)
- 14.(12) Subapical setae of tarsi II to IV with three papillate setae distally and two papillate setae proximally, with a short, loaf-shaped, blunt seta between them *kelloggi* Hyland (Figs. 262-267)
Subapical setae of tarsi II to IV otherwise 15
- 15.(14) Opisthosomal plate round to oval in shape, wider than long; subapical setae of tarsus II to IV long, cylindrical, blunt; sternal plate with pattern of subcuticular reticulations 16
Opisthosomal plate rectangular or trapizoidal, much longer than wide; subapical setae of tarsi II to IV cylindrical or spinelike, sharply pointed; sternal plate with reticular pattern (except *S. lanorium*) . . . 17
- 16.(15) Palp tarsus with a modified apical seta expanded and mushroom shaped at tip; podosomal plate longer than wide *longisetosae* Hyland (Figs. 268-273)
Palp tarsus without modified apical seta; podosomal plate as wide as or wider than long *pirangae* Pence (Figs. 274-279)
- 17.(15) Subapical setae of tarsus II to IV small, cylindrical, sometimes very slightly flattened; anal plate without chitinized lateral margins; a pair of setae on posterior margin of podosomal plate *boydi* Strandtmann (Figs. 280-285)
Subapical setae of tarsi II to IV larger, cylindrical, sharply pointed; anal plate with chitinized lateral margins; two pairs of setae on posterior margin of podosomal plate 18
- 18.(17) Podosomal plate broadly rounded anteriorly; palp genu with a single

dorsal and one lateral seta; chelicera attenuated, with a lateral membraneous protuberance in region of attenuation
 *tyrannus* Brooks and Strandtmann (Figs. 286-291)
 Podosomal plate triangular anteriorly; palp genu with two dorsal and one lateral setae; chelicera not attenuate and without membraneous protuberance
 *lanorium* Fain (Figs. 292-297)

Ptilonyssus

Key to Species (Females)

1. Stigmata with peritremes 2
 Stigmata without peritremes *angrensis* Castro (Figs. 298-303)
- 2.(1) Three dorsal plates (excluding mesosomal shieldlets), podosomal, opisthosomal, and pygidial (latter two usually fused into single plate 3
 Two dorsal plates (excluding mesosomal shieldlets), podosomal and pygidial 15
- 3.(2) Chelae with fixed digit almost entirely membraneous and slightly more than 1/5 length of chelicera; dorsal surface of genu III with two short, stout spines located close together
 *fluvicolae* Hyland and Moorehouse (Figs. 304-309)
 Chelae otherwise; dorsal surface of genu III without two short spines (although four spines in proximity may be present) 4
- 4.(3) Oblique row of four stout, proximate spines on dorsum of genu III 5
 Oblique row of four spines absent from genu III 7
- 5.(4) Podosomal, opisthosomal, and pygidial plates present; large heavy spines on venter of legs
 *spinusus* Brooks and Strandtmann (Figs. 310-315)
 Only podosomal and opisthosomal plates present (pygidial plate completely fused to opisthosomal plate); smaller spinelike setae on legs 6
- 6.(5) Podosomal plate oval in outline, longer than wide, with rounded lateral margins *tyrannus* Brooks and Strandtmann (Figs. 316-321)
 Podosomal plate rounded anteriorly and posteriorly but greatly extended laterally with winglike extensions, wider than long
 *callinectoides* Brooks and Strandtmann (Figs. 322-327)
- 7.(4) Setae of podosomal, opisthosomal, sternal, and genital plates, on ventral opisthosoma, and on dorsal margins of tarsi II to IV long and inflated distally *capitatus* Strandtmann (Figs. 328-333)
 Idiosomal and leg setae not inflated at tip 8
- 8.(7) Posterior margin of opisthosomal plate with small round extension representing incompletely fused pygidial plate; cribrum absent from anal plate *corvi* Pence (Figs. 334-339)

- Opisthosomal and pygidial plates completely fused, opisthosomal plate rectangular or rounded without round posterior extension; cribrum present 9
- 9.(8) Sternal plate wider than long, with reticulate pattern, metasternal setae absent; three pairs ventral opisthosomal setae
 *morofskyi* Hyland (Figs. 340-345)
 Sternal plate longer than wide, with or without reticulate pattern, metasternal setae present; at least four or more pairs of ventral opisthosomal setae 10
- 10.(9) Opisthosomal plate widened anteriorly, lateral margins sharply excavated at middle of plate, posterior margin of plate 1/3 or less than anterior width; dorsal and sternal plates without substructure 11
 Opisthosomal plate rectangular or rounded, lateral margins rounded or only very slightly excavated, if at all, posterior margin of plate 1/2 or greater than width of dorsal margin; either or both dorsal and sternal plates with punctations, reticulations, or other substructure 12
- 11.(10) Opisthosomal plate distinctly mushroom shaped with very excavated lateral margins; idiosoma elongate; four to five pairs of ventral opisthosomal setae *vireonis* Dusbábek (Figs. 346-351)
 Opisthosomal plate with midlateral margins less eroded but still sharply excavated; idiosoma rounded, less distinctly elongate; at least seven pairs of ventral opisthosomal setae
 *hoseini* Fain and Aitken (Figs. 352-357)
- 12.(10) Tarsi II to IV with two prominent stout spines on ventral apical margins; opisthosomal plate rounded anteriorly, slightly inverted in the form of a "V" posteriorly, nearly as wide as long 13
 Tarsi II to IV without, or with only one, small stout spine on ventral apical margin; opisthosomal plate nearly twice as long as wide, posterior margin rounded 14
- 13.(12) Lateral margins of opisthosomal plate somewhat excavated; five pairs of ventral opisthosomal setae . . . *pirangae* Dusbábek (Figs. 358-363)
 Lateral margins of opisthosomal plate rounded; six to seven pairs of ventral opisthosomal setae . . . *icteridius* Strandtmann (Figs. 364-369)
- 14.(12) All sternal setae on sternal plate; anterior margin of opisthosomal plate straight; six to seven pairs of ventral opisthosomal setae
 *pari* Fain and Hyland (Figs. 370-375)
 Sternal setae located off sternal plate usually some distance to its lateral margins; anterior margin of opisthosomal plate distinctly rounded; eight to 10 pairs of ventral opisthosomal setae
 *hirsti* Castro (Figs. 376-381)
- 15.(2) Tritosternum present *nitzschi* Giebel (Figs. 382-387)
 Tritosternum absent 16

- 16.(15) Pygidial plate absent or fragmented into two very small platelets, sub-posterior pair of setae absent 17
 Pygidial plate entire, large, or if fragmented into two plates, subposterior pair of setae on fragments 19
- 17.(16) Pygidial plate or fragments thereof absent; lateral margin of anal plate sclerotized; posterior margin of podosomal plate slightly rounded *donatoi* Castro (Figs. 392, 394)
 Pygidial plate represented by two small vestigial fragments; lateral margins of anal plate not sclerotized; posterior margin of podosomal plate otherwise 18
- 18.(17) Posterior margin of podosomal plate with posteriorly directed extension in the form of a triangle; sternal plate represented by very small vestigial platelets with eroded margins; three pairs of small punctate platelets on dorsal opisthosoma *ohioensis* Fain and Johnston (Figs. 388-391, 393, 395, 396)
 Posterior margin of podosomal plate excavated in the form of an inverted "U"; sternal plate well developed without eroded margins with sternal setae at lateral margins of plate; no dorsal platelets on opisthosoma but a single large punctate area just posterior to podosomal plate *cerchneis* Fain (Figs. 397-402)
- 19.(16) Sternogenital area consisting of a small triangular shaped vestigial sternal plate with three pairs of sternal setae adjacent to plate also in form of a triangle and with posterior pair much larger than anterior pairs, genital plate very narrow (about 10 times longer than wide, with posterior end very pointed) 20
 Sternogenital area otherwise; sternal plate (if present) and sternal setae not in form of a triangle; genital plate much wider with rounded posterior margin (length/width ratio 1:5 or less) 21
- 20.(19) Eleven to 12 pairs of large, heavy spinous ventral opisthosomal setae; setae of coxae, trochanters, and on dorsal opisthosoma blunt tipped and inflated *echinatus* Berlese and Trouessart (Figs. 403-408)
 Four to five small sharp-tipped ventral opisthosomal setae; setae of coxae, trochanters, and on dorsal opisthosoma either sharp tipped and drawn to a fine flexible tip or spinelike *tachycinetae* George (Figs. 409-414)
- 21.(19) Two setae on anal plate 22
 Three setae on anal plate 23
- 22.(21) Four pairs blunt-tipped ventral opisthosomal setae; one long frayed seta on apical margin of tarsus I *perisorei* George (Figs. 415-420)
 Seven pairs of small spinelike ventral opisthosomal setae; no frayed setae on tarsus I *lanii* Fain (Figs. 421-426)

- 23.(21) All (or sometimes all but one pair) lateral mesosomal setae adjacent to podosomal plate very small, hairlike or spinelike, and of approximately same size; subposterior pair of setae small, off margin of podosomal plate 24
 At least two pairs of lateral mesosomal setae (usually pairs adjacent to posterolateral margins of podosomal plate) enlarged and spinelike (2 times length of other mesosomal setae); subposterior pair of setae usually on posterior margin of plate (if not, large and spinelike) 30
- 24.(23) Pygidial plate fragmented into two platelets 25
 Pygidial plate entire 26
- 25.(24) Podosomal plate entire or only slightly excavated at posterior margin *motacillae* Fain (Figs. 427-432)
 Podosomal plate fragmented into a large anterior plate and eight small accessory platelets *trogodytis* Fain (Figs. 433-438)
- 26.(24) Paranal setae posterior to anus 27
 Paranal setae at level of or above anus 28
- 27.(26) Midposterior margin of podosomal plate considerably excavated in form of inverted "U" *sialiae* George (Figs. 439-444)
 Posterior margin of podosomal plate entire, straight
 *bombycillae* Pence (Figs. 445-450)
- 28.(26) Podosomal plate widest posteriorly, posterior margin trilobate; ventral opisthosomal setae small *agelaii* Fain and Aitken (Figs. 451-456)
 Podosomal plate widest anteriorly, posterior margin straight; ventral opisthosomal setae enlarged and spinelike 29
- 29.(28) Dorsal opisthosomal setae short and blunt tipped; one pair of large posteriorly curved spines on anterior edge of tarsi III and IV; eight pairs of ventral opisthosomal setae . . *salpinctis* George (Figs. 457-462)
 Dorsal opisthosomal setae long and spinelike, sharp tipped; spines as described above absent on tarsi III and IV; seven pairs of ventral opisthosomal setae *thryothori* Pence (Figs. 463-468)
- 30.(23) Subposterior pair of setae on podosomal plate or at posterior margin of plate nearly as large as or as large as the two largest pairs of mesosomal setae, long and spinelike 31
 Subposterior pair of setae small (less than 1/2 length of two largest pairs of mesosomal setae), short and thornlike 33
- 31.(30) Podosomal plate trilobed posteriorly, entire with margins not eroded; setae of dorsal idiosoma short, thornlike 32
 Podosomal plate with posterior margin not trilobate, considerably eroded; dorsal idiosomal setae large, slender, sharp tipped
 *acrocephali* Fain (Figs. 469-474)
- 32.(31) Idiosoma elongate, posterior margin of opisthosoma with a concave depression; 10 pairs of dorsal opisthosomal setae; four heavy blunt-

- tipped setae on proximal dorsal surface of tarsus I
 *toxostomae* Pence (Figs. 475-480)
 Idiosoma less elongate, posterior margin broadly rounded; seven pairs
 of dorsal opisthosomal setae; three heavy, blunt-tipped setae on proxi-
 mal end of tarsus I *mimi* George (Figs. 481-486)
- 33.(30) Sternal plate distinct with sternal setae on plate; most ventral and dor-
 sal opisthosomal and all anal setae very small and blunt tipped; tro-
 chanters I and III with only two setae . . . *nudus* Hirst (Figs. 487-492)
 Sternal plate indistinct or if lightly sclerotized setae at lateral margins
 of plate but not on plate; idiosomal and anal setae longer, sharp tipped;
 trochanter I with four and III with at least three setae 34
- 34.(33) Large, heavily sclerotized forms; most dorsal and ventral idiosomal
 setae and coxal setae very large and spinelike; lateral margins of pod-
 osomal plate eroded with some setae at plate margins; podosomal
 plate widest in middle with rounded lateral margins, not trilobed pos-
 teriorly or excavated laterally
 *euroturdi* Fain and Hyland (Figs. 493-498)
 Smaller, less sclerotized forms; all dorsal and ventral idiosomal setae
 spinelike or thornlike but not heavy; podosomal plate entire, widest
 at anterior margin with distinctly excavated midlateral margins, pos-
 terior margin rounded, straight, or trilobed 35
- 35.(34) Paranal setae considerably below anus
 *richmondinae* George (Figs. 499-504)
 Paranal setae at level of or above anus 36
- 36.(35) Paranal setae above anterior margin of anus, anal setae taper abruptly
 from their enlarged base to a thin flexible tip
 *phainopeplae* George (Figs. 505-510)
 Paranal setae at level of anus, anal setae spinelike and sharp tipped
 37
- 37.(36) Four pairs of mesosomal setae lateral to podosomal plate; posterior
 margin of podosomal plate distinctly trilobed
 *japuibensis* Castro (Figs. 511-516)
 Five pairs of mesosomal setae lateral to podosomal plate; posterior
 margin of podosomal plate not distinctly trilobate 38
- 38.(37) Seven pairs of setae on podosomal plate (including subposterior pair)
 *ludovicianus* Černý (Figs. 517-522)
 Eight pairs setae on podosomal plate (including subposterior pair)
 *sairae* Castro (Figs. 523-528)

Family EPIDERMOPTIDAE
 Subfamily TURBINOPTINAE

Key to Genera (Males and Females)

- 1. Female 2
 Male 5
- 2.(1) Endogynium absent; vulva transverse *Turbinoptes* Boyd
 Endogynium present; vulva in form of inverted "Y" 3
- 3.(2) Tarsi I and II very short, in form of a very cuticularized ringlike structure with a single curved apical claw *Colinoptes* Fain
 Tarsi I and II normal, larger, less cuticularized with a single apical slightly curved claw 4
- 4.(3) Tarsi III and IV without terminal claws *Schoutedenocoptes* Fain
 Tarsi III and IV with a single terminal claw *Congocoptes* Fain
- 5.(1) All tarsi with two claws; legs III and IV subequal .. *Turbinoptes* Boyd
 Tarsi I and II with single claw; legs III and IV unequal 6
- 6.(5) Tarsi III and IV without claws *Schoutedenocoptes* Fain
 Tarsi III and IV with one or two claws 7
- 7.(6) Posterior idiosomal lobes well developed, flattened, well cuticularized *Colinoptes* Fain
 Posterior idiosomal lobes very poorly developed, indistinct, rounded, not well cuticularized *Congocoptes* Fain

Turbinoptes

The genus is represented by a single cosmopolitan species, *Turbinoptes strandtmanni* Boyd (Figs. 529-540).

Colinoptes

Colinoptes is represented by a single species, *Colinoptes cubanensis* Fain (Figs. 541-552).

Schoutedenocoptes

There is a single species, *Schoutedenocoptes americanus* Fain and Hyland, from North American birds (Figs. 553-564).

Congocoptes

Key to Species (Males and Females)

- 1. Female 2
 Male 4
- 2.(1) Pronounced protuberance on posterior margin of idiosoma; three pairs denticles on dorsal opisthosoma *dryocopi* Pence (Figs. 565-570)
 Posterior idiosoma rounded; denticles absent from idiosoma 3

- 3.(2) Setae l_2 long (50 microns) and spinelike *furmani* Fain (Figs. 577-582)
- Setae l_2 short (25 microns) and hairlike *sphyrapicicola* Pence (Figs. 589-594)
- 4.(1) Epimera III not fused by punctate band *furmani* Fain (Figs. 583-588)
- Epimera III fused by punctate band 5
- 5.(4) Setae l_2 small and hairlike; opisthosomal shield with irregular anterior margin, extending nearly to level of setae l_2 *dryocopi* Pence (Figs. 571-576)
- Setae l_2 large and spinelike; opisthosomal shield with rounded anterior margin, extending only 1/2 or less distance from posterior to level of setae l_2 *sphyrapicicola* Pence (Figs. 595-600)

Family CYTODITIDAE

Key to Genera (Females)

- 1. Chelicera very small, trident; idiosoma with punctate areas on dorsal and ventral surface *Cytonyssus* Fain
- Chelicera larger, not trident; idiosoma without punctate areas *Cytodites* Oudemans

Cytodites Oudemans

There is a single species, *Cytodites therae* Hyland, from North American birds (Figs. 601-606).

Cytonyssus Fain

Cytonyssus troglodyti Pence is the only species reported from North America (Figs. 607-612).

Family EREYNETIDAE

Subfamily SPELEOGNATHINAE

Key to Genera (Females)

- 1. All idiosomal and leg setae barbulate; dorsal shield and eyes absent *Boydaia* Womersley
- Idiosomal and leg setae an admixture of barbulate and filamentous setae; dorsal shield substantial, weak, or absent; eyes present or absent 2
- 2.(1) Eyes absent *Neoboydaia* Fain
- Eyes present 3
- 3.(2) Dorsal shield substantial *Astrida* Fain
- Dorsal shield absent *Ophthalmophagus* Dubinin

Astrida*Key to Species (Females)*

- Dorsal opisthosomal setae of type Nz or BNz or at least some setae divided distally *caprimulgi* Fain (Figs. 613-618)
 Dorsal opisthosomal setae of type BEd or barbulate, but not divided distally into two hairlike extensions . . . *coccyzae* Pence (Figs. 619-624)

Neoboydaia*Key to Species (Females)*

1. Palps with one well formed segment; presensillae normal
 *aureliania* Fain (Figs. 625-630)
 Palps with two or three well-formed segments; presensillae minute . . 2
- 2.(1) Sensillae with spinose surface; genital setae formula 6:6; anal setae formula 2:2 or 1:1 3
 Sensillae with smooth surface; genital setae formula 5:5; anal setae formula 3:3 *lateralli* Fain (Figs. 631-636)
- 3.(2) Coxal setae formula 2-1-1-1; sternal setae formula 3:3
 *colymbiformi* Clark (Figs. 637-642)
 Coxal setae formula 2-1-1-0; sternal setae formula 2:2
 *philomachi* Fain (Figs. 643-648)

Boydaia*Key to Species (Females)*

1. Coxal setae formula 2-1-1-1 *sturni* Boyd (Figs. 649-654)
 Coxal setae formula otherwise 2
- 2.(1) External setae on coxa I minute 3
 External setae on coxa I normal 4
- 3.(2) Two and one setae on dorsolateral margins of tibia I and genu I, respectively, large and swollen, of type Bf, or similar; femur I with five setae *psalidoprocnei* Fain (Figs. 655-660)
 Large swollen setae of type Bf, or similar, absent from tibia I and genu I; femur I with six setae *hirundoae* Fain (Figs. 661-666)
- 4.(3) Coxal setae formula 1-1-2-1 *tyrannus* Ford (Figs. 667-672)
 Coxal setae formula otherwise 5
- 5.(4) Coxal setae formula 2-1-2-0 *agelaii* Fain and Aitken (673-678)
 Coxal setae formula 2-1-1-0 6
- 6.(5) Trochanter setae formula 0-0-0-0 *nigra* group
 (*nigra* and *sturnellae* differentiated only in larval stage) (Figs. 679-684)
 Trochanter setae formula otherwise 7
- 7.(6) Femoral setae formula 6-4-3-3 *colini* group
 (*colini* and *clarki* differentiated only in larval stage) (Figs. 685-690)
 Femoral setae formula otherwise 8

- 8.(7) All claws terminating in fine pinpoint endings
 *spatulata* group (*spatulata*,
quiscali, and *mimi* differentiated only in larval stage) (Figs. 691-696)
 Certain claws with relatively fine but rounded apex 9
- 9.(8) Claws on tarsi II to IV considerably dilated in apical part
 *loxiae* Fain (Figs. 699-702)
 Claws of tarsi II to IV with rounded apex but without dilation in
 apical part 10
- 10.(9) Sensillae short, distal end inflated to considerably larger diameter than
 proximal end; palps well developed, tibia twice as long as tarsus
 *rosickyi* Černý and Dusbábek (Figs. 703-704)
 Sensillae slender, not markedly inflated at distal end; palps other-
 wise 11
- 11.(10) Palp tarsus very short, stubby; sensillae long, slender, slightly larger in
 diameter at distal end than in proximal end (about 36 microns long)
 *faini* Černý and Dusbábek (Figs. 705-706)
 Palp tarsus longer, more pronounced; sensillae shorter, slender, not
 inflated at tip (about 30 microns long)
 *americana* Fain (Figs. 707-708)

Key to Species of nigra group (Larvae)

- Setiated pluvillus on tarsi absent *nigra* Fain (Fig. 716)
- Small setiated pluvillus present on tarsi .. *sturnellae* Clark (Fig. 715)

Key to Species of colini group (Larvae)

- Tarsus II very long with a single long claw *colini* Clark (Fig. 713)
- Tarsus II shorter with two unequal claws ... *clarki* Fain (Fig. 714)

Key to Species of spatulata group (Larvae)

- 1. Claws of tarsus I of approximately equal length; one terminating in
 small recurved pinpoint ending, the other with apical extremity curved
 at a right angle and terminating in a small club
 *jordani* Van Eynhoven (Fig. 710)
 Claws of tarsus I otherwise 2
- 2.(1) One long recurved claw less than 1/2 (usually about 1/3) length of
 second claw and curved ventrally downward on tarsus II
 *quiscali* Clark (Fig. 712)
 Claws of tarsus II of equal or subequal length 3
- 3.(2) Claws of tarsus II only very slightly curved (not recurved), thick and
 heavy, both ending in sharp tips (not pinpoint)
 *mimi* Fain and Hyland (Fig. 711)
 Claws of tarsus II otherwise; at least 1 claw ending in a pinpoint tip and
 very recurved *spatulata* Fain (Fig. 709)

Ophthalmophagus*Key to Species (Females)*

- Anal setae formula 2:2; 1 seta on palp tibia *striatus* Crossley (Figs. 717-722)

 Anal setae formula 1:1; no setae on palp tibia
 *womersley* Fain (Figs. 723-728)

SPECIES AND HOST LIST

Mite species	Host(s)	Locality	Reference
Rhinonyssinae (Dermanyssidae)			
<i>Rhinonyssus</i>			
<i>R. alberti</i>	<i>Colymbus caspicus</i>	Washington	Strandtmann, 1956a
<i>R. caledonicus</i>	<i>Cerorhincha monocerata</i> * <i>Uria grylle</i>	Washington Shetland Isls.	Strandtmann, 1956a Hirst, 1921
<i>R. colymbicola</i>	* <i>Podiceps auritus</i>	Belgium	Fain and Bafort, 1963
<i>R. coniventris</i>	<i>Arenaria interpres</i>	Texas, Cuba	Strandtmann, 1951 Černý and Dusbábek, 1970
	<i>Arquatella ptilocnemis</i>	Alaska	Strandtmann, 1956a
	<i>Catoptrophorus semipalmatus</i>	Texas, Louisiana	Strandtmann, 1951 Pence, 1972a
	<i>Charadrius alexandrinus</i>	Florida	Strandtmann, 1956a
	<i>Charadrius hiaticula</i>	Texas	Strandtmann, 1951
	<i>Charadrius melodus</i>	Texas, Cuba	Strandtmann, 1951 Černý and Dusbábek, 1970
	<i>Charadrius wilsoni</i>	Texas, Cuba, Louisiana	Strandtmann, 1951 Černý and Dusbábek, 1970 Pence, 1972a
	<i>Erolia alpina</i>	Texas	Strandtmann, 1956a
	* <i>Erolia maritima</i>	Shetland Isls.	Hirst, 1921
	<i>Totanus flavipes</i>	Texas, Louisiana	Strandtmann, 1951 Pence, 1972a
<i>R. himantopus</i>	<i>Himantopus mexicanus</i>	Texas, Cuba, Louisiana	Strandtmann, 1951 Černý and Dusbábek, 1970 Pence, 1972a
	<i>Recurvirostra americana</i>	Texas	Strandtmann, 1959
<i>R. pluvialis</i>	<i>Pluvialis dominica</i>	Ohio	Fain and Johnston, 1966
<i>R. podilymbi</i>	<i>Podilymbus podiceps</i>	Louisiana	Pence, 1972a
<i>R. rhinolethrum</i>	<i>Anas acuta</i>	Texas	Strandtmann, 1951 Mitchell and Rhodes, 1960
	<i>Anas carolinensis</i>	California, Texas	Strandtmann, 1951 Mitchell and Rhodes, 1960 Wilson, 1968
	<i>Anas discors</i>	Texas	Mitchell and Rhodes, 1960
	<i>Anas platyrhynchos</i>	Texas, Louisiana	Strandtmann, 1951 Pence, 1972a Mitchell and Rhodes, 1960
	<i>Anas strepera</i>	Texas	Strandtmann, 1951

*Collected from locality other than North America.

	<i>Aix sponsa</i>	Louisiana	Pence, 1972a
	<i>Aythya affinis</i>	Texas	Strandtmann, 1951
	<i>Aythya valisineria</i>	Texas	Mitchell and Rhodes, 1960
	<i>Mareca americana</i>	Texas	Strandtmann, 1951
			Mitchell and Rhodes, 1960
	<i>Melanitta deglandi</i>	Washington	Strandtmann, 1956a
	<i>Mergus serrator</i>	Texas	Mitchell and Rhodes, 1960
	<i>Spatula clypeata</i>	Texas,	Strandtmann, 1951
		California	Mitchell and Rhodes, 1960
			Wilson, 1966
	<i>Branta canadensis</i>	Texas	Strandtmann, 1951
			Mitchell and Rhodes, 1960
	<i>Chen caerulescens</i>	Texas	Mitchell and Rhodes, 1960
	<i>Chen rossi</i>	Texas	Mitchell and Rhodes, 1960
	<i>Fulica americana</i>	Louisiana	Pence, 1972a
<i>R. spinactitis</i>	* <i>Actitis macularia</i>	Cuba	Dusbábek and Černý, 1969
<i>R. strandtmanni</i>	<i>Charadrius vociferus</i>	Texas, Ohio,	Strandtmann, 1959
		Louisiana	Fain and Johnston, 1966
			Pence, 1972a
<i>R. waterstoni</i>	* <i>Alca torda</i>	Shetland Isl.	Hirst, 1921
<i>Rallinyssus</i>			
<i>R. caudistigmus</i>	<i>Fulica americana</i>	Texas,	Strandtmann, 1948
		Louisiana	Pence, 1972a
	<i>Rallus elegans</i>	Texas	Strandtmann, 1948
<i>R. verheyeni</i>	<i>Rallus elegans</i>	Louisiana	Pence, 1972a
	<i>Rallus limicola</i>	Louisiana	Pence, 1972a
<i>Larinyssus</i>			
<i>L. orbicularis</i>	<i>Larus argentatus</i>	Texas,	Strandtmann, 1948
		Louisiana	Pence, 1972a
	<i>Larus atricilla</i>	Texas, Cuba,	Strandtmann, 1948
		Louisiana	Pence, 1972a
			Černý and Dusbábek, 1970
	<i>Larus delawarensis</i>	Texas,	Strandtmann, 1948
		Louisiana	Pence, 1972a
	<i>Sterna hirundo</i>	Louisiana	Pence, 1972a
	<i>Sterna maxima</i>	Texas	Strandtmann, 1948
	<i>Rynchops nigra</i>	Cuba	Černý and Dusbábek, 1970
<i>Tinaminyssus</i>			
<i>T. belopolskii</i>	<i>Butorides virescens</i>	Cuba,	Černý and Dusbábek, 1970
		Louisiana	Pence, 1972a
	<i>Florida caerulea</i>	Cuba,	Černý and Dusbábek, 1970
		Louisiana	Pence, 1972a
	<i>Leucophoyx thula</i>	Cuba,	Černý and Dusbábek, 1970
		Louisiana	Pence, 1972a
	<i>Hydranassa tricolor</i>	Texas,	Strandtmann, 1956b
		Louisiana	Pence, 1972a
<i>T. bubulci</i>	<i>Bubulcus ibis</i>	Cuba,	Černý and Dusbábek, 1970
		Louisiana	Pence, 1972a
<i>T. carapachibeyus</i>	* <i>Geotrygon chrysia</i>	Cuba	Dusbábek and Černý, 1969
<i>T. columbae</i>	<i>Columba livia</i>	Alabama,	Crossley, 1951
		Georgia,	Crossley, 1952
		Kentucky	Wilson, 1966
<i>T. geotrygoni</i>	* <i>Geotrygon chrysia</i>	Cuba	Dusbábek, 1969
<i>T. ixoreus</i>	<i>Ixoreus naevius</i>	Montana	Strandtmann and Clifford, 1962

<i>T. melloi</i>	<i>Columba livia</i>	Texas, Kentucky	Crossley, 1950 Crossley, 1951 Wilson, 1966
<i>T. neoixobrychi</i>	<i>Ixobrychus exilis</i>	Louisiana	Pence, 1972a
<i>T. triangulus</i>	<i>Zenaidura asiatica</i>	Texas	Strandtmann, 1961
<i>T. zenaidurae</i>	<i>Columbigallina passerina</i>	Texas	Crossley, 1952
	<i>Zenaidura macroura</i>	Texas, Georgia, Alabama, Mississippi, California, Louisiana	Crossley, 1952 Owen, 1958 Wilson, 1968 Pence, 1973b
<i>Rhinoecius</i>			
<i>R. bisetosus</i>	<i>Speotyto cunicularia</i>	Texas	Strandtmann, 1952
<i>R. cooremani</i>	<i>Strix varia</i>	Texas, Louisiana	Strandtmann, 1952 Pence, 1973b
<i>R. grandis</i>	<i>Bubo virginianus</i>	Texas	Strandtmann, 1952
<i>R. oti</i>	* <i>Asio otus</i>	Belgium	Correman, 1946
<i>R. tytonis</i>	* <i>Tyto alba</i>	Africa	Fain, 1957 Fain, 1960
<i>Sternostoma</i>			
<i>S. boydi</i>	<i>Arenaria interpres</i>	Texas	Strandtmann, 1951
	<i>Crocethia alba</i>	Texas	Strandtmann, 1951
	<i>Totanus melanoleucus</i>	Louisiana	Pence, 1972c
	<i>Larus argentatus</i>	Louisiana	Pence, 1972c
	<i>Larus atricilla</i>	Texas, Louisiana	Strandtmann, 1951 Pence, 1972c
	<i>Larus delawarensis</i>	Texas, Louisiana	Strandtmann, 1951 Pence, 1972c
	<i>Sterna hirundo</i>	Louisiana	Pence, 1972c
<i>S. crypto-</i> <i>rhynchum</i>	* <i>Passer domesticus</i>	Europe	Furman, 1957
<i>S. dumetellae</i>	<i>Dumetella carolinensis</i>	Louisiana	Pence, 1972c
<i>S. hirundinis</i>	<i>Bombycilla cedrorum</i>	Louisiana	Pence, 1973b
	<i>Hirundo rustica</i>	Louisiana, Cuba	Pence, 1972c Černý and Dusbábek, 1970
	<i>Progne subis</i>	Louisiana	Pence, 1972
<i>S. hutsoni</i>	<i>Hylocichla ustulata</i>	California	Furman, 1957
<i>S. hylandi</i>	<i>Dendrocopos pubescens</i>	Ohio	Fain and Johnston, 1966
<i>S. kelloggi</i>	<i>Dumetella carolinensis</i>	Michigan	Hyland and Clark, 1959
	<i>Mimus polyglottos</i>	Cuba	Černý and Dusbábek, 1970
	<i>Toxostoma rufum</i>	Louisiana	Pence, 1972c
<i>S. lanorium</i>	* <i>Lanius excubitor</i>	Africa, Europe	Fain, 1956 Fain, 1957 Feider and Mironescu, 1969
	<i>Lanius ludovicianus</i>	Louisiana	Pence, 1973c
<i>S. longisetosae</i>	* <i>Empidonax alnorum</i>	Mexico	Hyland and Moorehouse, 1970
	* <i>Empidonax trailli</i>	Mexico	Hyland and Moorehouse, 1970
	* <i>Empidonax virescens</i>	Mexico	Hyland and Moorehouse, 1970
	* <i>Pyrocephalus rubinus</i>	Mexico	Hyland and Moorehouse, 1970
	<i>Tyrannus tyrannus</i>	Michigan	Hyland, 1961

<i>S. loxiae</i>	* <i>Loxia curvirostra</i>	Belgium	Fain, 1966
<i>S. motacillae</i>	<i>Anthus spinoletta</i>	Louisiana	Pence, 1972c
<i>S. pirangae</i>	<i>Piranga rubra</i>	Louisiana	Pence, 1973c
<i>S. porteri</i>	<i>Colaptes auratus</i>	Michigan, Ohio, Louisiana	Hyland, 1962 Fain and Johnston, 1966 Pence, 1972c
<i>S. sialiphilus</i>	<i>Sialia sialis</i>	Michigan, Louisiana	Hyland and Ford, 1961 Pence, 1972c
<i>S. spatulatum</i>	<i>Hylocichla guttata</i> <i>Hylocichla ustulata</i>	Louisiana California	Pence, 1972c Furman, 1957
<i>S. strandtmanni</i>	<i>Agelaius phoeniceus</i> <i>Agelaius tricolor</i> <i>Cassidix mexicanus</i> <i>Molothrus ater</i> <i>Quiscalus quiscula</i>	California California Louisiana California Louisiana	Furman, 1957 Furman, 1957 Pence, 1972c Furman, 1957 Pence, 1972c
<i>S. technaui</i>	<i>Turdus migratorius</i>	Louisiana	Pence, 1972c
<i>S. trachaecolum</i>	<i>Melospiza melodia</i> <i>Passerina cyanea</i> <i>Passer domesticus</i> <i>Passerella iliaca</i> <i>Poocetes gramineus</i> <i>Spizella pusilla</i> <i>Seiurus aurocapillus</i> <i>Seiurus noveboracensis</i> * <i>Hirundo rustica</i> <i>Iridoprocne bicolor</i> <i>Riparia riparia</i> <i>Myiarchus crinitus</i> <i>Agelaius tricolor</i> <i>Icterus bullocki</i> <i>Molothrus ater</i>	Michigan Michigan Michigan Massachusetts Michigan Michigan Massachusetts Massachusetts Russia Louisiana Michigan Louisiana California California Rhode Island, Louisiana	Fain and Hyland, 1962 Fain and Hyland, 1962 Fain and Hyland, 1962 Fain and Hyland, 1962 Fain and Hyland, 1962 Fain and Hyland, 1962 Fain and Hyland, 1962 Fain and Hyland, 1962 Černý, 1969 Pence, 1972c Fain and Hyland, 1962 Pence, 1972c Furman, 1957 Furman, 1957 Fain and Hyland, 1962 Pence, 1972c
<i>S. tyrannus</i>	<i>Sturnella magna</i> <i>Nuttallornis borealis</i>	Michigan Texas	Fain and Hyland, 1962 Brooks and Strandtmann, 1960
<i>Sternostoma</i> sp.	<i>Thalasseus sandvicensis</i>	Cuba	Černý and Dusbábek, 1970
<i>Ptilonyssus</i>			
<i>P. acrocephali</i>	<i>Regalus calendula</i>	Louisiana	Pence, 1972e
<i>P. agelaii</i>	<i>Agelaius phoeniceus</i> <i>Molothrus ater</i>	Louisiana Louisiana	Pence, 1972e Pence, 1972e
<i>P. angrensis</i>	<i>Iridoprocne bicolor</i>	Texas	Strandtmann and Wharton, 1958
	<i>Petrochelidon fluva</i>	Texas	Strandtmann and Wharton, 1958
	<i>Petrochelidon pyrrhonota</i>	Texas	Strandtmann and Wharton, 1958
	<i>Progne subis</i>	Texas, Louisiana	Strandtmann and Wharton, 1958 Pence, 1972d
<i>P. bombycillae</i>	<i>Bombycilla cedrorum</i>	Louisiana	Pence, 1973b
<i>P. callinectoides</i>	<i>Myiarchus cinerascens</i>	Texas	Brooks and Strandtmann, 1960
	<i>Myiarchus cinitus</i>	Louisiana	Pence, 1972d
<i>P. capitatus</i>	<i>Octocoris alpestris</i>	Utah	Strandtmann, 1956b
<i>P. cerchneis</i>	<i>Falco sparverius</i>	Colorado	Strandtmann, 1961

<i>P. corvi</i>	<i>Corvus brachyrhynchos</i>	Louisiana	Pence, 1972 <i>d</i>
<i>P. donatoi</i>	* <i>Coragyps atratus</i>	Brazil	Fain and Johnston, 1966
<i>P. echinatus</i>	<i>Iridoprocne bicolor</i>	Texas	Strandtmann and Wharton, 1958
	<i>Hirundo rustica</i>	Texas, Florida, Louisiana	Strandtmann and Wharton, 1958.
			George, 1961
			Pence, 1972 <i>c</i>
	<i>Petrochelidon pyrrhonota</i>	Texas	Strandtmann and Wharton, 1958
	<i>Riparia riparia</i>	Texas, Kansas	George, 1961
			Strandtmann and Wharton, 1958
<i>P. euroturdi</i>	<i>Dumetella carolinensis</i>	Michigan, Louisiana	Fain and Hyland, 1963
	<i>Hylocichla mustelina</i>	Louisiana	Pence, 1972 <i>e</i>
<i>P. fluvicolae</i>	* <i>Pyrocephalus rubinus</i>	Mexico	Hyland and Moorehouse, 1970
<i>P. hoseini</i>	<i>Vireo griseus</i>	Louisiana	Pence, 1972 <i>d</i>
<i>P. hirsti</i>	<i>Passer domesticus</i>	Texas, Cuba	Strandtmann and Furman, 1956
			Černý and Dusbábek, 1970
<i>P. icteridius</i>	<i>Agelaius phoeniceus</i>	California, Texas	Strandtmann and Furman, 1956
	<i>Euphagus carolinus</i>	Louisiana	Pence, 1972 <i>d</i>
	<i>Euphagus cyanocephalus</i>	Texas, Louisiana	Strandtmann and Furman, 1956
			Pence, 1972 <i>d</i>
	<i>Icterus galbula</i>	Louisiana	Pence, 1972 <i>d</i>
	<i>Molothrus ater</i>	California, Texas, Louisiana	Strandtmann and Furman, 1956
			Pence, 1972 <i>d</i>
	<i>Quiscalus quiscula</i>	Texas, Louisiana	Strandtmann and Furman, 1956
			Pence, 1972 <i>d</i>
	<i>Sturnella magna</i>	Texas, Louisiana	Strandtmann and Furman, 1956
			Pence, 1972 <i>d</i>
	<i>Xanthocephalus xanthocephalus</i>	California	Strandtmann and Furman, 1956
	<i>Piranga ludoviciana</i>	California	Strandtmann and Furman, 1956
<i>P. japuibensis</i>	<i>Amphispiza bilineata</i>	Texas	George, 1961
	<i>Calamospiza melanocorys</i>	Texas	George, 1961
	<i>Chondestes grammacus</i>	Texas	George, 1961
	<i>Melospiza georgiana</i>	Louisiana	Pence, 1972 <i>e</i>
	<i>Melospiza lincolnii</i>	Texas	George, 1961
	<i>Passerina cyanea</i>	Texas	George, 1961
	<i>Passerculus sandwichensis</i>	Texas	George, 1961
	<i>Pipilo erythrophthalmus</i>	Texas, Louisiana	George, 1961
			Pence, 1972 <i>e</i>
	<i>Pipilo fuscus</i>	Texas	George, 1961

	<i>Poecetes gramineus</i>	Texas	George, 1961
	<i>Spizella passerina</i>	British Columbia, Texas	George, 1961
	<i>Spizella pusilla</i>	Louisiana	Pence, 1972e
	<i>Zonotrichia albicollis</i>	Louisiana	Pence, 1972e
<i>P. lanii</i>	<i>Lanius ludovicianus</i>	Texas	George, 1961
<i>P. ludovicianus</i>	* <i>Pheucticus ludovicianus</i>	Cuba	Černý, 1969
<i>P. mimi</i>	<i>Mimus polyglottos</i>	Texas, Louisiana	George, 1961 Pence, 1972e
<i>P. morofskyi</i>	<i>Ammospiza maritima</i>	Louisiana	Pence, 1972d
	<i>Junco hyemalis</i>	Rhode Island	Hyland, 1962
	<i>Melospiza georgiana</i>	Louisiana	Pence, 1972d
	<i>Melospiza melodia</i>	Michigan, Massachusetts, Rhode Island	Hyland, 1962
	<i>Passerella iliaca</i>	Rhode Island	Hyland, 1962
	<i>Passerculus sandwichensis</i>	Rhode Island	Hyland, 1962
	<i>Pipilo erythrophthalmus</i>	Louisiana	Pence, 1972d
	<i>Poecetes gramineus</i>	Michigan, Louisiana	Pence, 1972d Pence, 1972d
	<i>Spinus tristis</i>	Michigan	Hyland, 1962
	<i>Spizella pusilla</i>	Nebraska	Hyland, 1962
	<i>Zonotrichia albicollis</i>	Louisiana	Pence, 1972d
	<i>Dendroica coronata</i>	Louisiana	Pence, 1972d
	<i>Dendroica pinus</i>	Louisiana	Pence, 1972d
	<i>Geothlypis trichas</i>	Louisiana	Pence, 1972d
	<i>Seiurus motacilla</i>	Louisiana	Pence, 1972d
<i>P. motacillae</i>	<i>Anthus spinoletta</i>	Louisiana	Pence, 1972e
<i>P. nitzschi</i>	<i>Caprimulgus carolinensis</i>	Louisiana	Pence, 1972e
<i>P. nudus</i>	<i>Passer domesticus</i>	Texas	Porter and Strandtmann, 1952
	<i>Parus atricapillus</i>	Texas	George, 1961 Strandtmann and Wharton, 1958
	<i>Hirundo rustica</i>	?U.S.A.	Strandtmann and Wharton, 1958
	<i>Riparia riparia</i>	?U.S.A.	Strandtmann and Wharton, 1958
	<i>Sturnus vulgaris</i>	?U.S.A.	Strandtmann and Wharton, 1958
<i>P. ohioensis</i>	<i>Cathartes aura</i>	Ohio	Fain and Johnston, 1966
<i>P. pari</i>	<i>Parus atricapillus</i>	Michigan, Massachusetts, Rhode Island	Fain and Hyland, 1963
	<i>Parus carolinensis</i>	Louisiana	Pence, 1972d
<i>P. persorei</i>	<i>Cyanocitta stelleri</i>	New Mexico	George, 1961
	<i>Perisoreus canadensis</i>	New Mexico	George, 1961
<i>P. pirangae</i>	<i>Piranga rubra</i>	Louisiana	Pence, 1972d
	<i>Parus bicolor</i>	Louisiana	Pence, 1972d
<i>P. phainopeplae</i>	<i>Phainopepla nitens</i>	Texas	George, 1961
<i>P. richmondinae</i>	<i>Richmondena cardinalis</i>	Texas, Kansas, Georgia, Louisiana	George, 1961 Pence, 1972d
<i>P. sairae</i>	<i>Dendroica auduboni</i>	Texas	George, 1961

	<i>Dendroica cerulea</i>	Cuba	Černý and Dusbábek, 1970
	<i>Dendroica coronata</i>	North Carolina, Louisiana, Michigan	George, 1961 Pence, 1972 ^e Ford, 1961
	<i>Dendroica dominica</i>	Cuba	Černý and Dusbábek, 1970
	<i>Dendroica magnolia</i>	Louisiana	Pence, 1972 ^e
	<i>Dendroica petechia</i>	Cuba	Černý and Dusbábek, 1970
	<i>Dendroica pinus</i>	Georgia, Louisiana	George, 1961 Pence, 1972 ^e
	<i>Dendroica tigrina</i>	Cuba	Černý and Dusbábek, 1970
	<i>Dendroica virens</i>	Cuba	Černý and Dusbábek, 1970
	<i>Dolichonyx oryzivorus</i>	Michigan	Ford, 1961
	<i>Mniotilta varia</i>	Texas, Louisiana	George, 1961 Pence, 1972 ^e
	<i>Oporornis tolmiei</i>	California	George, 1961
	<i>Parula americana</i>	Louisiana, Cuba	Pence, 1972 ^e Černý and Dusbábek, 1970
	<i>Piranga rubra</i>	Louisiana	Pence, 1972 ^e
	<i>Poocetes gramineus</i>	Michigan	Ford, 1961
	<i>Prothonotaria citrea</i>	Louisiana	Pence, 1972 ^e
	<i>Setophaga ruticilla</i>	Louisiana	Pence, 1972 ^e
	<i>Vermivora chrysoptea</i>	Cuba	Černý and Dusbábek, 1970
	<i>Wilsonia citrina</i>	Texas	George, 1961
	<i>Wilsonia pusilla</i>	Texas	George, 1961
	<i>Empidonax flaviventris</i>	Louisiana	Pence, 1972 ^e
	<i>Parus carolinensis</i>	Louisiana	Pence, 1972 ^e
<i>P. salpinctis</i>	<i>Salpinctes obsoletus</i>	Texas	George, 1961
<i>P. sialiae</i>	<i>Sialia currucoides</i>	Texas	George, 1961
<i>P. spinosus</i>	<i>Muscivora forficata</i>	Texas	Brooks and Strandtmann, 1960
	<i>Tyrannus dominicensis</i>	Texas	Brooks and Strandtmann, 1960
	<i>Tyrannus tyrannus</i>	Texas, Michigan	Brooks and Strandtmann, 1960 Hyland, 1961
	<i>Tyrannus verticalis</i>	Texas	Brooks and Strandtmann, 1960
<i>P. tachycinetae</i>	<i>Iridoprocne bicolor</i>	Florida	George, 1961
<i>P. thryothori</i>	<i>Thryothorus ludovicianus</i>	Louisiana	Pence, 1972 ^e
<i>P. toxostomae</i>	<i>Toxostoma rufum</i>	Louisiana	Pence, 1972 ^e
<i>P. troglodyti</i>	* <i>Troglodytis troglodytis</i>	Belgium	Fain, 1964
<i>P. tyrannus</i>	<i>Contopus sordidulus</i>	Texas	Brooks and Strandtmann, 1960
	<i>Contopus virens</i>	Louisiana	Pence, 1972 ^d
	* <i>Empidonax alnorum</i>	Mexico	Hyland and Moorehouse, 1970
	* <i>Empidonax flaviventris</i>	Mexico	Hyland and Moorehouse, 1970
	* <i>Empidonax trailli</i>	Mexico	Hyland and Moorehouse, 1970
	<i>Empidonax mimimus</i>	Texas	Brooks and Strandtmann, 1960
	<i>Empidonax virescens</i>	Louisiana	Pence, 1972 ^d
	<i>Sayornis phoebe</i>	Louisiana	Pence, 1972 ^d

	<i>Sayornis sayi</i>	Texas	Brooks and Strandtmann, 1960
	<i>Nuttallornis borealis</i>	Texas	Brooks and Strandtmann, 1960
<i>P. vireonis</i>	* <i>Vireo falvifrons</i>	Cuba	Dusbábek, 1969
	<i>Vireo olivaceus</i>	Louisiana	Pence, 1972 <i>d</i>
<i>Ptilonyssus</i> sp.	<i>Archilochus colubris</i>	Louisiana	Pence, 1972 <i>d</i>

Turbinoptinae (Epidermoptidae)

<i>Colinoptes</i>			
<i>C. cubanensis</i>	<i>Colinus virginianus</i>	Louisiana, Cuba	Pence, 1972 <i>f</i> Fain, 1960
<i>Schoutedenocoptes</i>			
<i>S. americanus</i>	<i>Coccyzus erythrophthalmus</i>	Michigan	Fain and Hyland, 1967
	<i>Coccyzus americanus</i>	Louisiana	Pence, 1972 <i>f</i>
<i>Turbinoptes</i>			
<i>T. strandtmanni</i>	<i>Hydroprogne caspia</i>	Louisiana	Pence, 1972 <i>f</i>
	<i>Larus argentatus</i>	Louisiana	Pence, 1972 <i>f</i>
	<i>Larus atricilla</i>	Louisiana	Pence, 1972 <i>f</i>
	<i>Larus delawarensis</i>	Massachusetts, Louisiana	Boyd, 1949 Pence, 1972 <i>f</i>
<i>Congocoptes</i>			
<i>C. dryocopi</i>	<i>Dryocopus pileatus</i>	Louisiana	Pence, 1972 <i>f</i>
<i>C. furmani</i>	<i>Centurus carolinus</i>	Louisiana	Pence, 1972 <i>f</i>
<i>C. sphyrapicicola</i>	<i>Sphyrapicus varius</i>	Louisiana	Pence, 1972 <i>f</i>
<i>Congocoptes</i> sp.	<i>Dendrocopos pubescens</i>	Louisiana	Pence, 1972 <i>f</i>

Cytoditidae

<i>Cytodites</i>			
<i>C. therae</i>	<i>Coccyzus americanus</i>	Louisiana	Pence, 1973 <i>b</i>
<i>Cytonyssus</i>			
<i>C. troglodyti</i>	<i>Thryothorus ludovicianus</i>	Louisiana	Pence, 1972 <i>b</i> Pence, 1972 <i>f</i>

Speleognathinae (Ereynetidae)

<i>Neoboydaia</i>			
<i>N. aureliani</i>	* <i>Tyto alba</i>	Africa, Belgium	Fain, 1955 Fain, 1963
<i>N. colymbiformi</i>	<i>Colymbus nigricollis</i>	California	Clark, 1964
	<i>Podilymbus podiceps</i>	Louisiana	Pence, 1973 <i>a</i>
<i>N. lateralli</i>	<i>Fulica americana</i>	Louisiana	Pence, 1973 <i>a</i>
<i>N. philomachi</i>	<i>Capella gallinago</i>	Louisiana	Pence, 1973 <i>a</i>
	<i>Erolia minutilla</i>	Louisiana	Pence, 1973 <i>a</i>
	<i>Limnodromus scolapaceus</i>	Louisiana	Pence, 1973 <i>a</i>
	<i>Erolia melanotos</i>	Texas	Clark, 1964
	<i>Totanus flavipes</i>	Texas, Louisiana	Clark, 1964 Pence, 1973 <i>a</i>
	<i>Totanus melanoleucus</i>	Texas, Louisiana	Clark, 1964 Pence, 1973 <i>a</i>
<i>Neoboydaia</i> sp.	<i>Tyto alba</i>	Cuba	Černý and Dusbábek, 1970
<i>Boydaia</i>			
<i>B. americana</i>	* <i>Piranga rubra</i>	South America	Fain, 1963

<i>B. agelaii</i>	<i>Agelaius phoeniceus</i>	Delaware	Fain and Aitken, 1967
<i>B. clarki</i>	* <i>Callipepla squamata</i>	Belgium	Fain, 1963
<i>B. colini</i>	<i>Colinus virginianus</i>	Maryland, Louisiana	Clark, 1958 Pence, 1973a
<i>B. faini</i>	<i>Dendroica cerulea</i>	Cuba	Dusbábek and Černý, 1969
<i>B. hirundoae</i>	<i>Hirundo rustica</i>	Louisiana	Pence, 1973a
	* <i>Progne subis</i>	Mexico	Fain and Hyland, 1970
<i>B. jordani</i>	<i>Turdus migratorius</i>	Montana	Clark, 1967
<i>B. loxiae</i>	* <i>Loxia curvirostra</i>	Belgium	Fain, 1963
<i>B. mimi</i>	<i>Mimus polyglottos</i>	Louisiana	Pence, 1973a
<i>B. nigra</i>	<i>Anthus spinoletta</i>	Louisiana	Pence, 1973a
	<i>Passer domesticus</i>	Texas	Fain, 1963
<i>B. psalidoprocnei</i>	<i>Iridoprocne bicolor</i>	Louisiana	Pence, 1973a
<i>B. quisicali</i>	<i>Agelaius phoeniceus</i>	Louisiana	Pence, 1973a
	<i>Cassidix mexicanus</i>	Louisiana	Pence, 1973a
	<i>Molothrus ater</i>	Louisiana	Pence, 1973a
	<i>Quiscalus quisicala</i>	Pennsylvania, Louisiana	Clark, 1960 Pence, 1973a
<i>B. rosickyi</i>	<i>Passerina cyanea</i>	Cuba	Černý and Dusbábek, 1970
<i>B. spatulata</i>	* <i>Piranga rubra</i>	Brazil	Fain, 1963
	<i>Sialia sialis</i>	Louisiana	Pence, 1973c
<i>B. sturnellae</i>	<i>Sturnella magna</i>	Maryland	Clark, 1960
<i>B. sturni</i>	<i>Sturnus vulgaris</i>	Massachusetts, Louisiana	Boyd, 1948 Pence, 1973a
	<i>Passer domesticus</i>	Texas	Porter and Strandtmann, 1952
<i>B. tyrannus</i>	<i>Tryannus dominicensis</i>	Cuba	Dusbábek and Černý, 1969
	<i>Tyrannus tyrannus</i>	Michigan	Ford, 1959
	<i>Tyrannus verticalis</i>	Texas	Brooks and Strandtmann, 1960
<i>Ophthalmophagus</i>			
<i>O. striatus</i>	<i>Columba livia</i>	Texas	Crossley, 1951 Crossley, 1952
<i>O. womersleyi</i>	<i>Anas acuta</i>	Minnesota, Texas	Clark, 1958
	<i>Anas strepera</i>	Texas	Clark, 1958
	<i>Aythya affinis</i>	Texas	Clark, 1958
<i>Astrida</i>			
<i>A. caprimulgi</i>	<i>Caprimulgus carolinensis</i>	Louisiana	Pence, 1973c
<i>A. coccyzae</i>	<i>Coccyzus americanus</i>	Louisiana	Pence, 1973a

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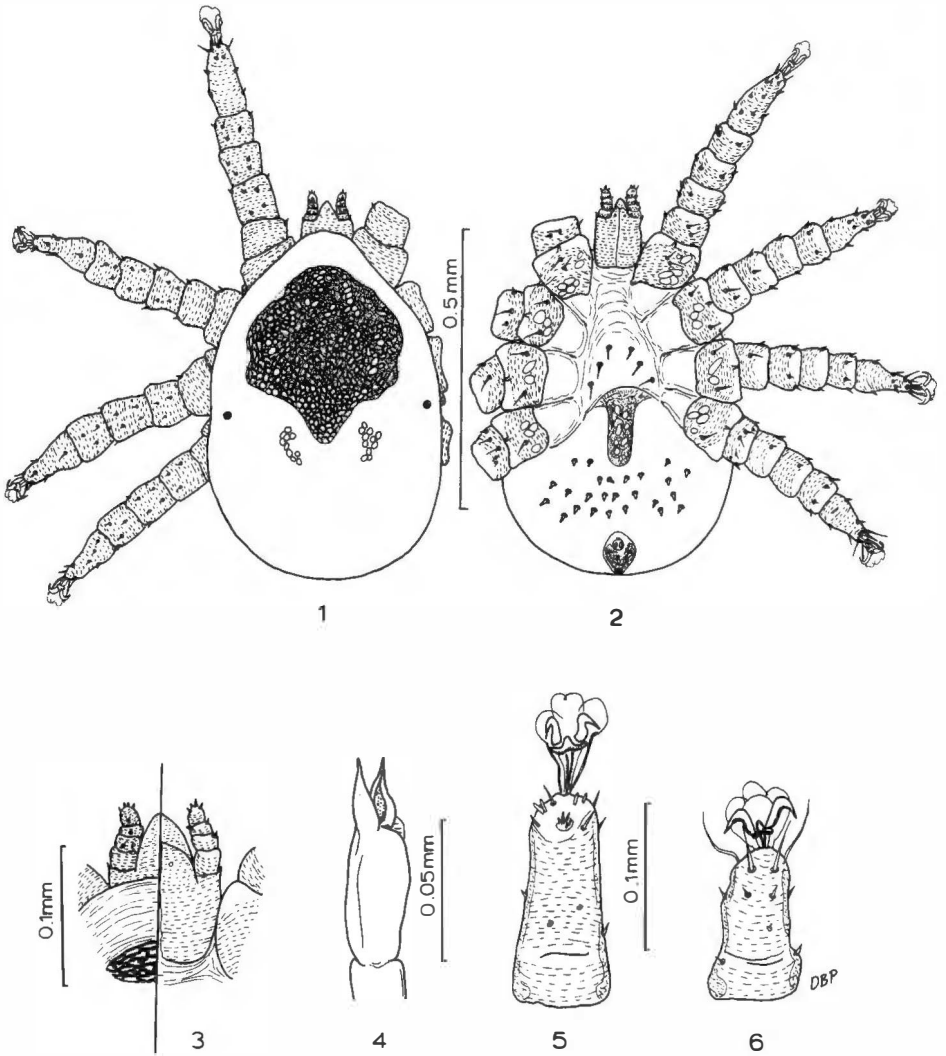
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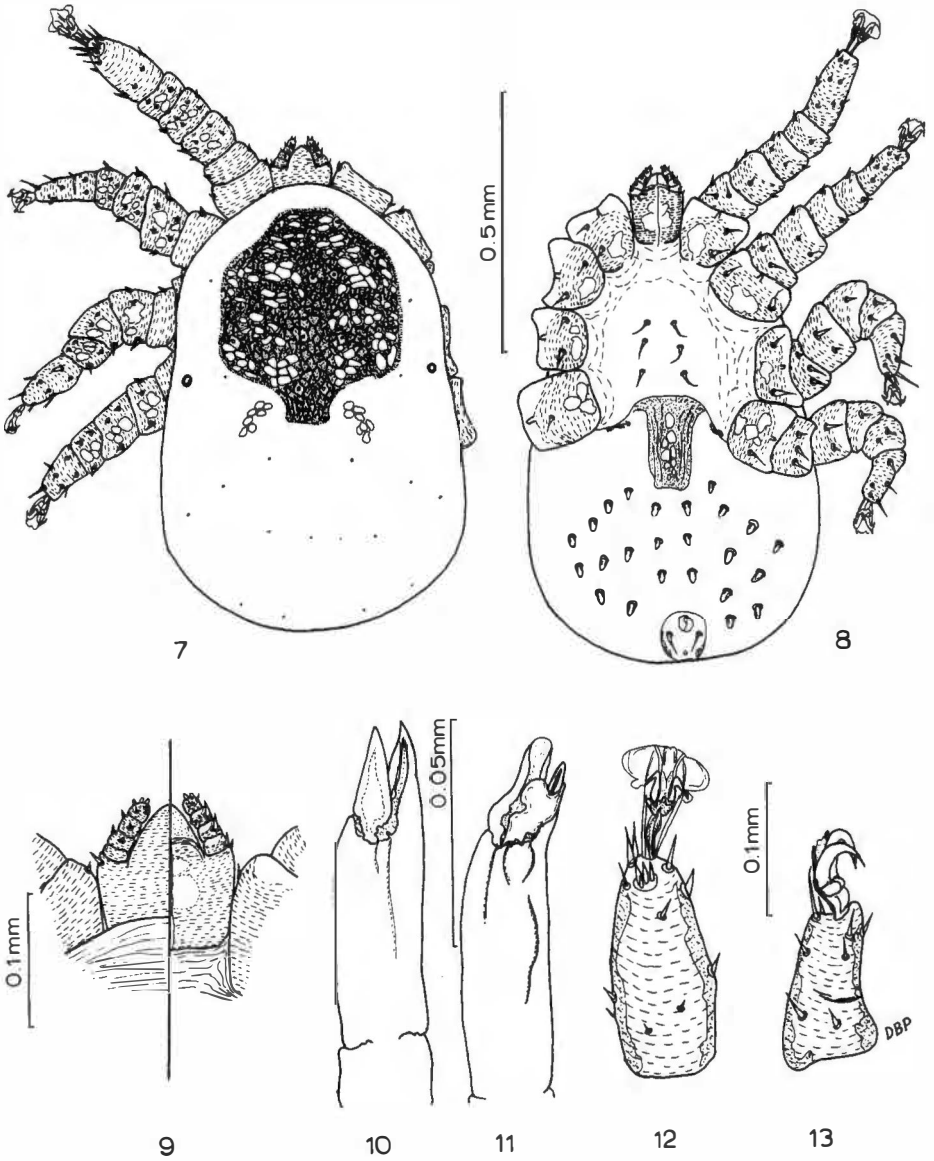
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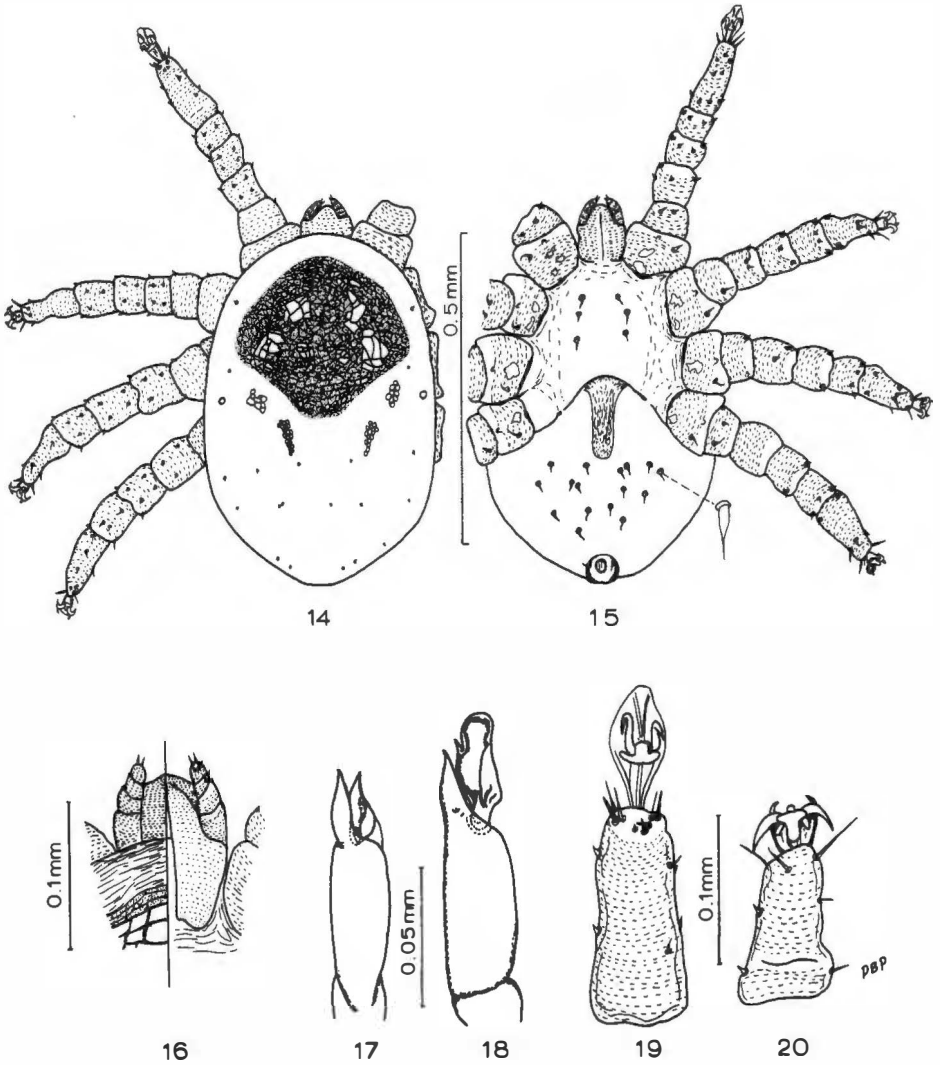
Address of author: *The Museum, Texas Tech University, and the Department of Veterinary and Zoological Medicine, Texas Tech University School of Medicine, Lubbock, 79409.*



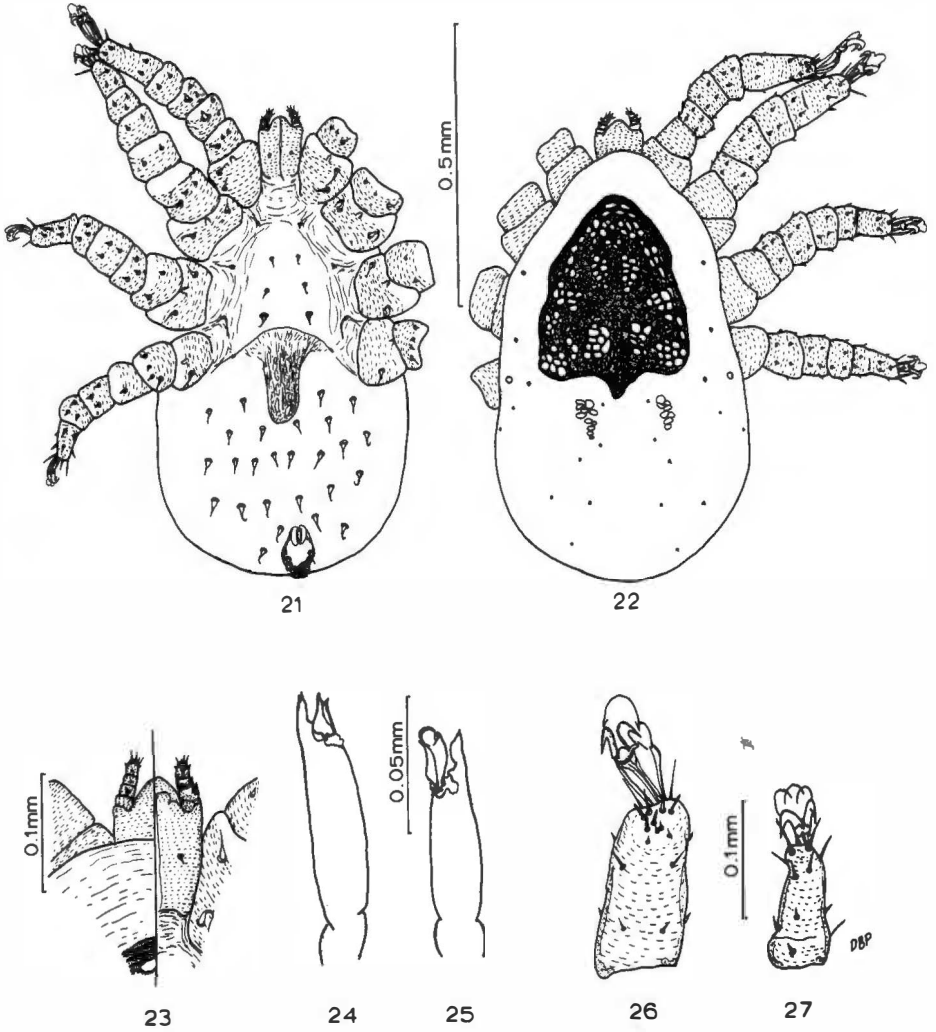
FIGS. 1-6.—*Rhinonyssus colymbicola* Fain and Bafort: 1, female dorsum; 2, female venter; 3, gnathosoma, dorsal and ventral views, respectively; 4, female chelicera; 5, tarsus I, dorsal view; 6, tarsus IV, ventral view.



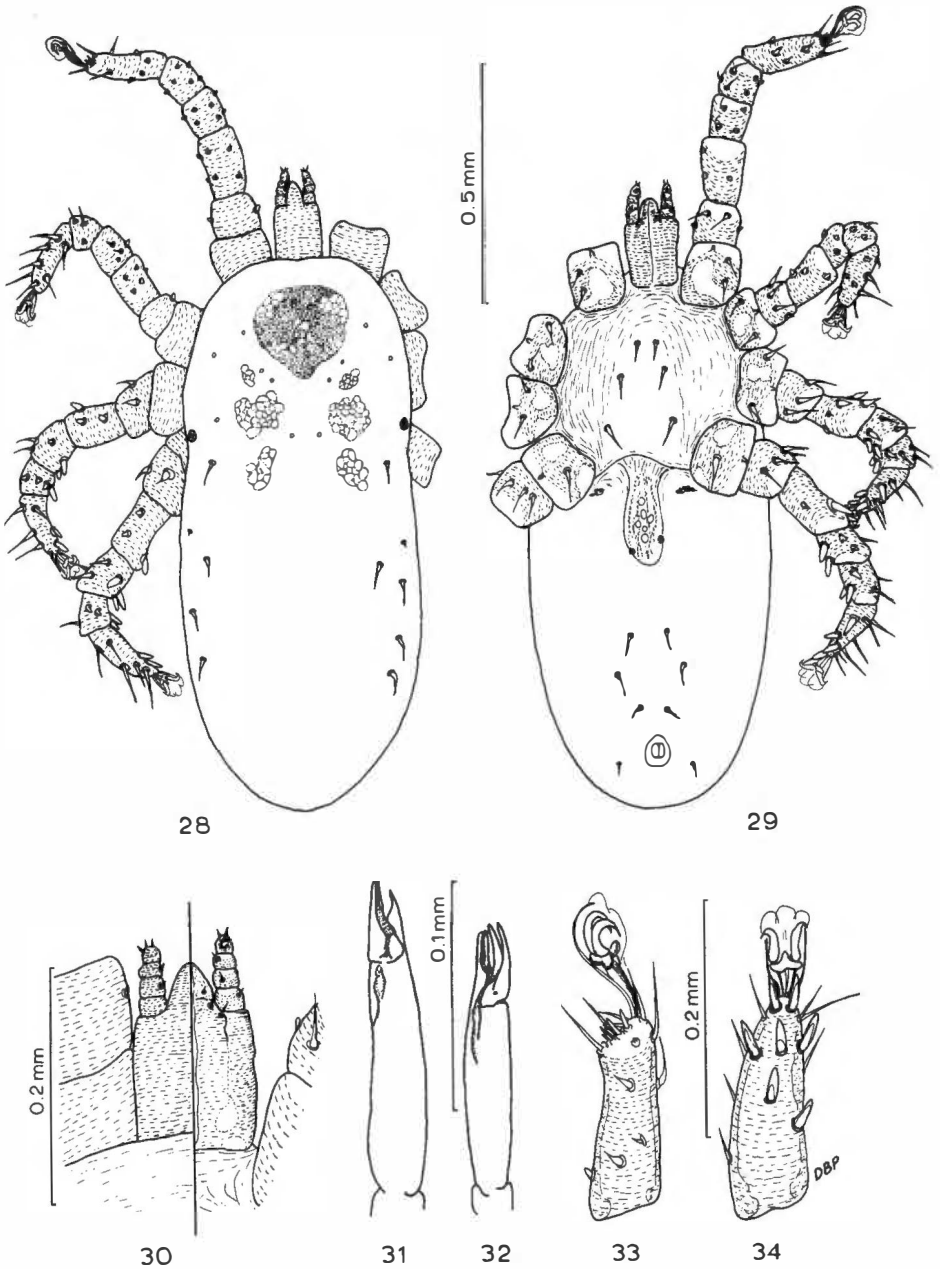
FIGS. 7-13.—*Rhinonyssus alberti* Strandtmann: 7, female dorsum; 8, female venter; 9, gnathosoma, dorsal and ventral views, respectively; 10, female chelicera; 11, male chelicera; 12, tarsus I, dorsal view; 13, tarsus IV, ventral view.



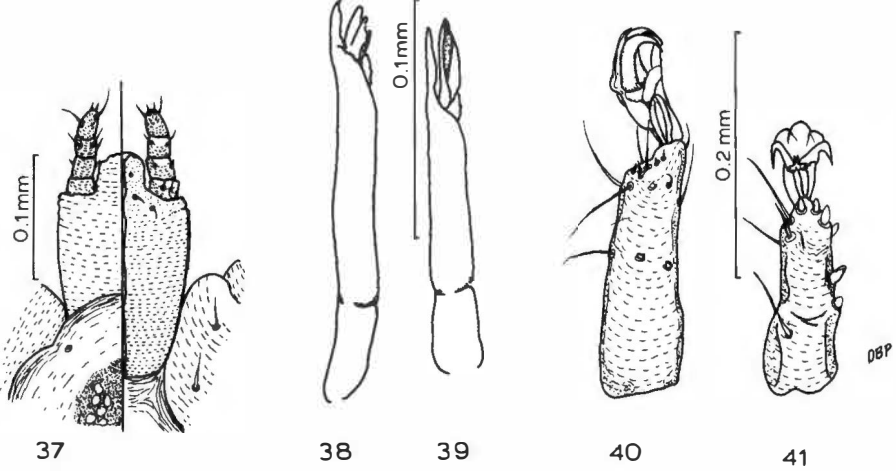
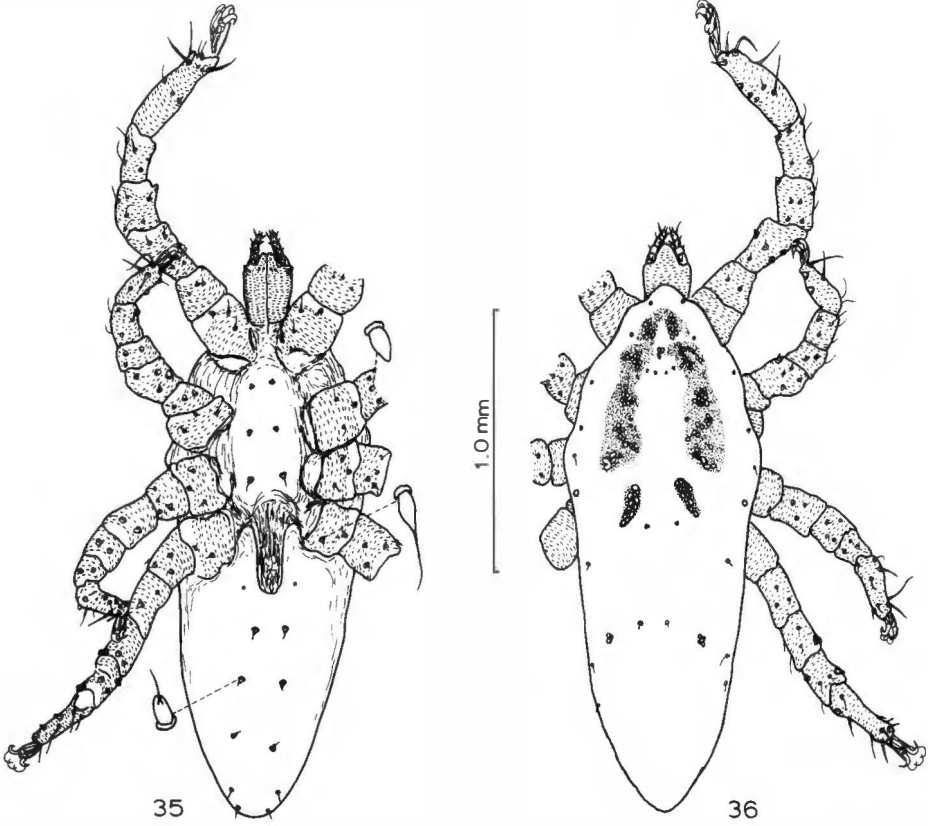
FIGS. 14-20.—*Rhinonyssus podilymbi* Pence: 14, female dorsum; 15, female venter; 16, gnathosoma, dorsal and ventral views, respectively; 17, female chelicera; 18, male chelicera; 19, tarsus I, dorsal view; 20, tarsus IV, ventral view.



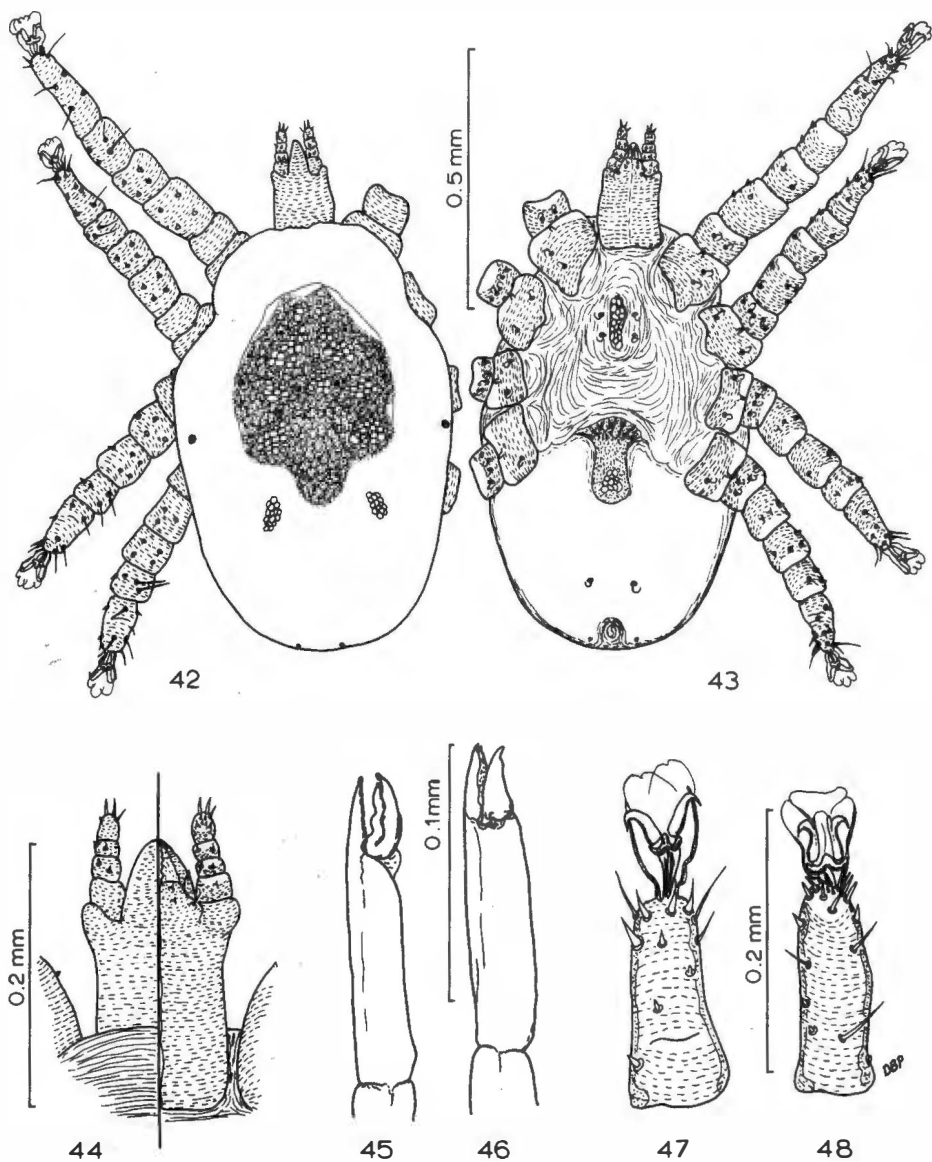
FIGS. 21-27.—*Rhinonyssus rhinolethrum* Berlese and Trouessart: 21, female venter; 22, female dorsum; 23, gnathosoma, dorsal and ventral views, respectively; 24, female chelicera; 25, male chelicera; 26, tarsus I, dorsal view; 27, tarsus IV, ventral view.



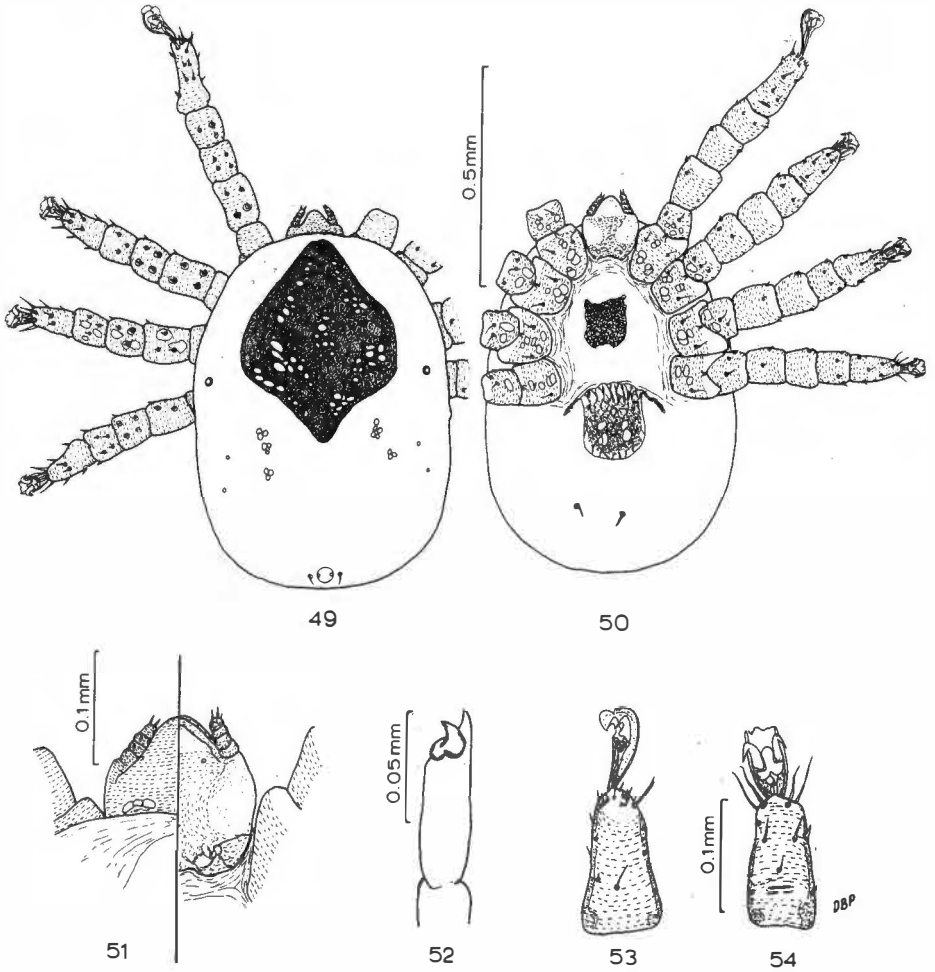
FIGS. 28-34.—*Rhinonyssus spinacitis* Dusbábek: 28, female dorsum; 29, female venter; 30, gnathosoma, dorsal and ventral views, respectively; 31, female chelicera; 32, male chelicera; 33, tarsus I, dorsal view; 34, tarsus IV, ventral view..



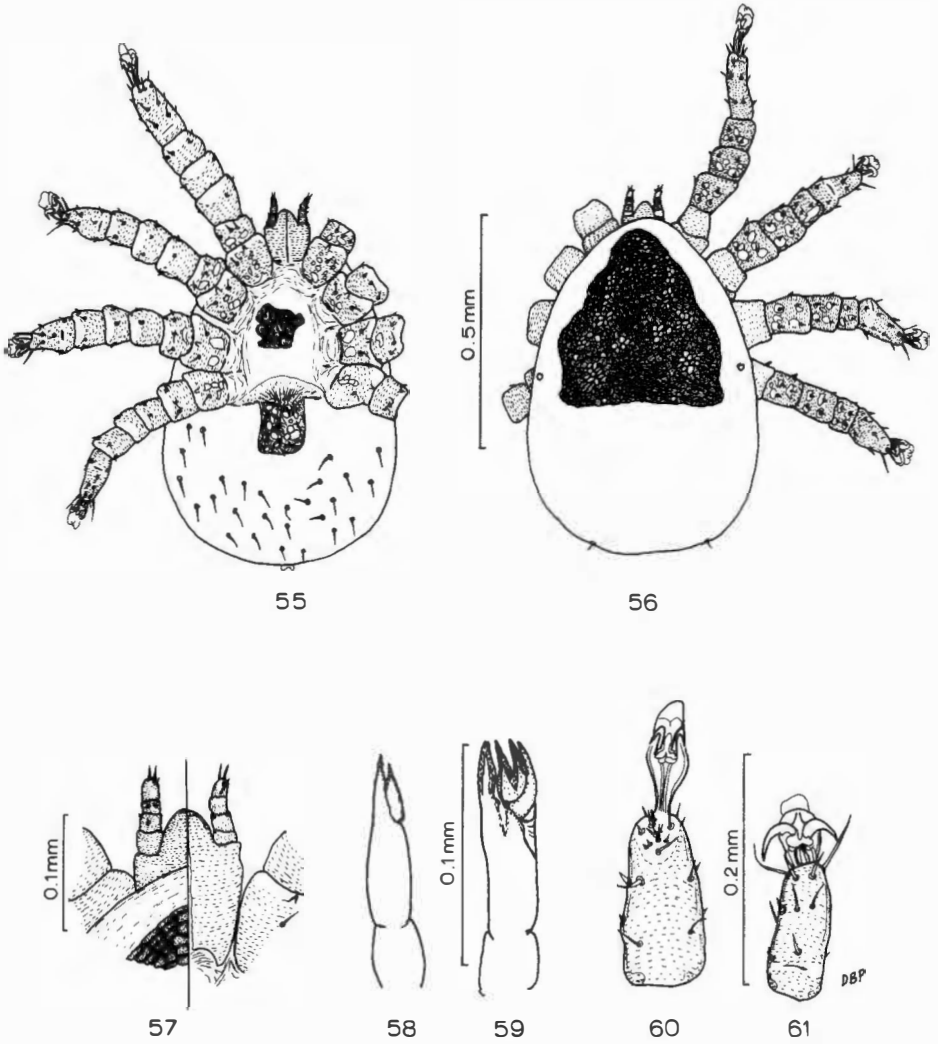
FIGS. 35-41.—*Rhinonyssus coniventris* Berlese and Trouessart: 35, female venter; 36, female dorsum; 37, gnathosoma, dorsal and ventral views, respectively; 38, female chelicera; 39, male chelicera; 40, tarsus I, dorsal view; 41, tarsus IV, ventral view.



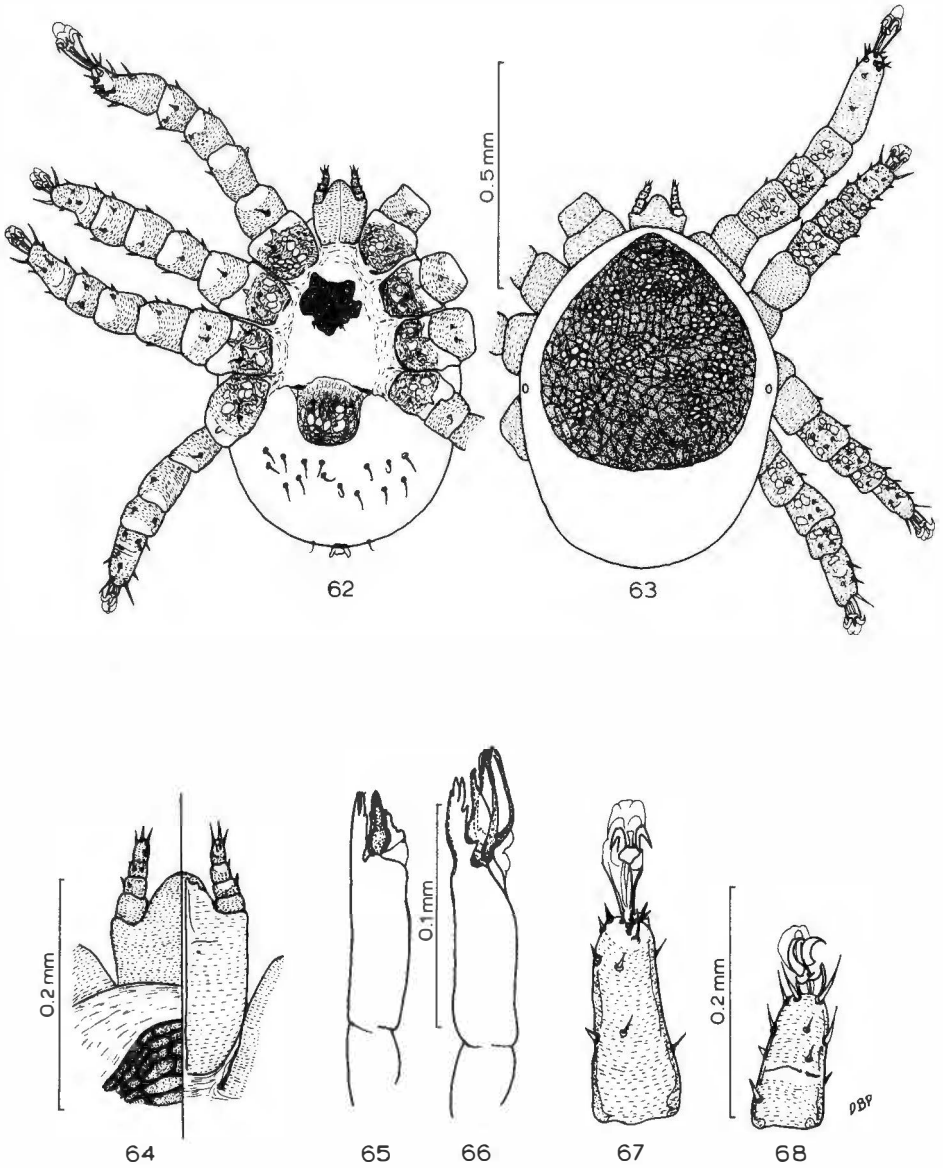
FIGS. 42-48.—*Rhinonyssus caledonicus* Hirst: 42, female dorsum; 43, female venter; 44, gnathosoma, dorsal and ventral views, respectively; 45, male chelicera; 46, female chelicera; 47, tarsus I, dorsal view; 48, tarsus IV, ventral view.



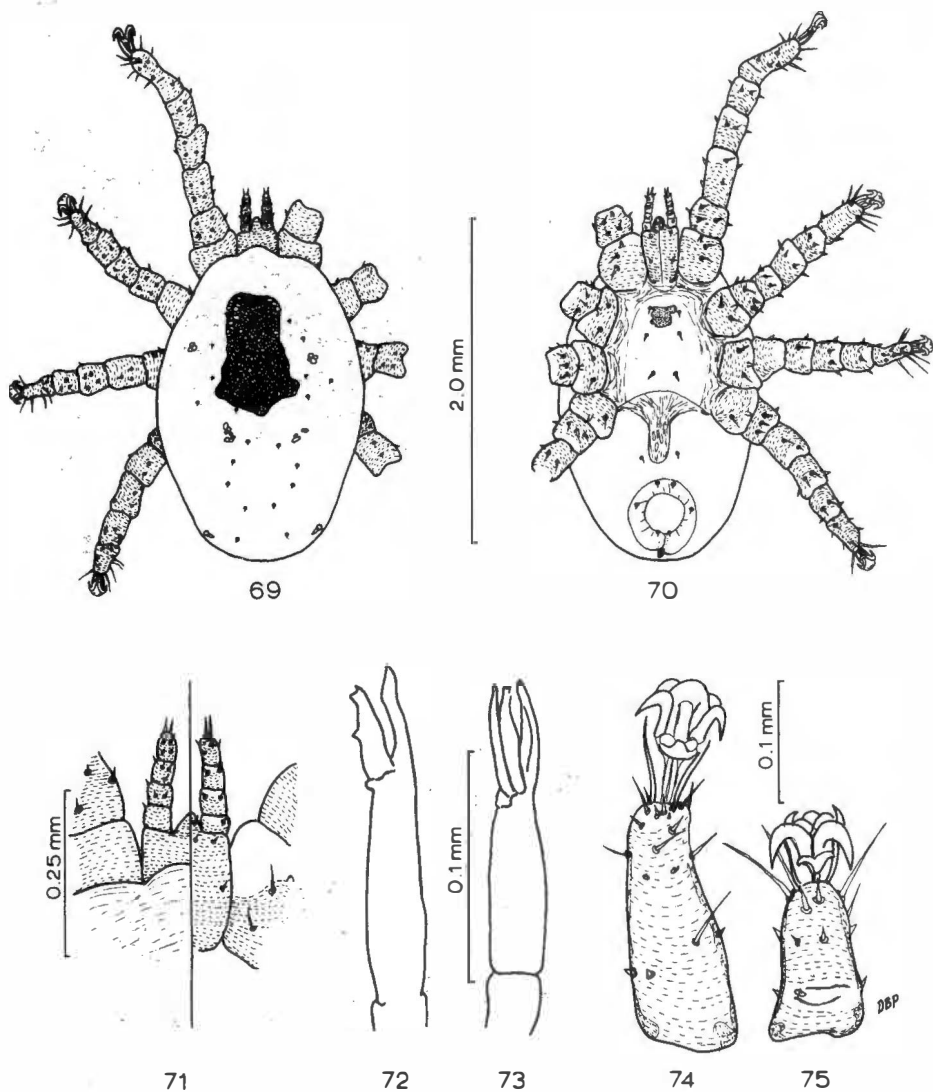
FIGS. 49-54.—*Rhinonyssus pluvialis* Fain and Johnston: 49, female dorsum; 50, female venter; 51, gnathosoma, dorsal and ventral views, respectively; 52, female chelicera; 53, tarsus I, dorsal view; 54, tarsus IV, ventral view.



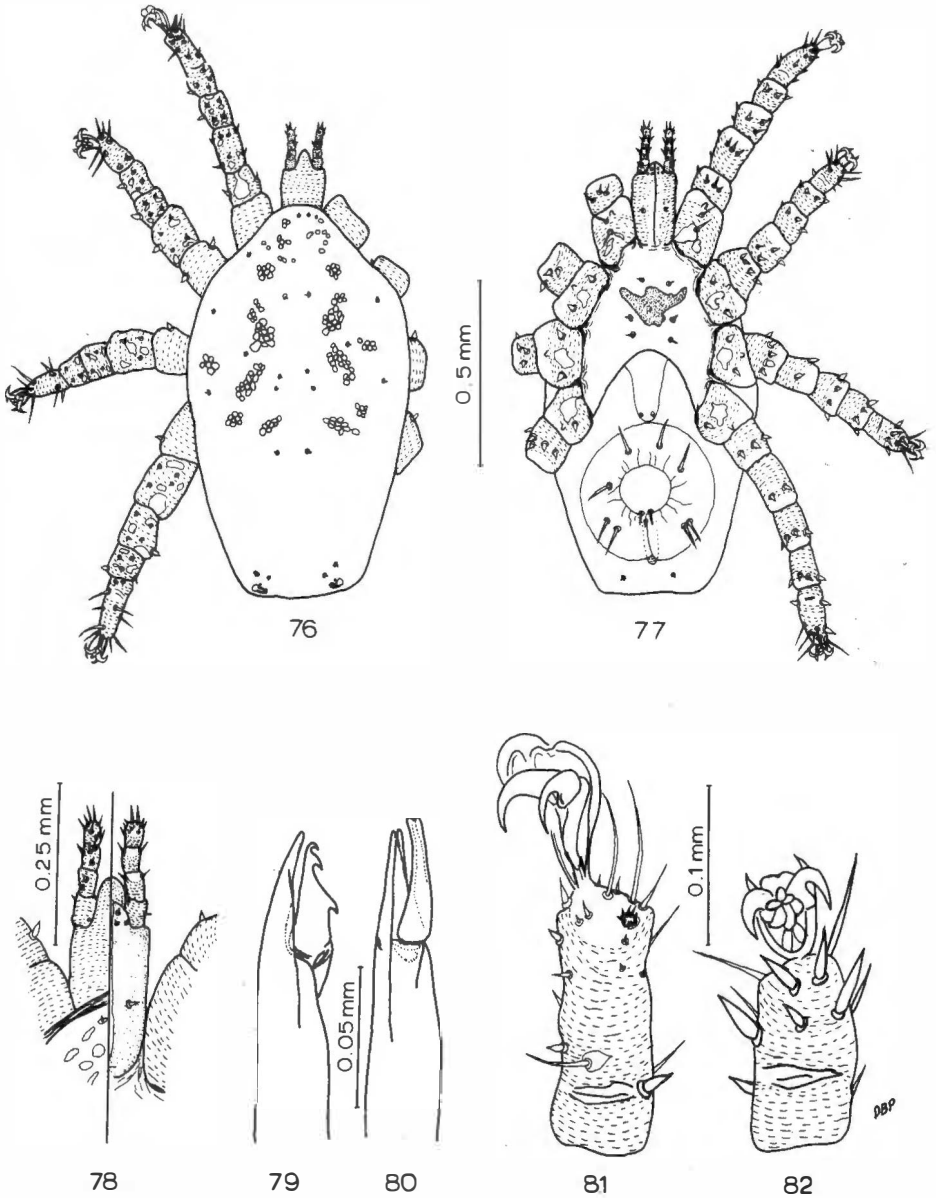
FIGS. 55-61.—*Rhinonyssus strandtmanni* Fain and Johnston: 55, female venter; 56, female dorsum; 57, gnathosoma, dorsal and ventral views, respectively; 58, female chelicera; 59, male chelicera; 60, tarsus I, dorsal view; 61, tarsus IV, ventral view.



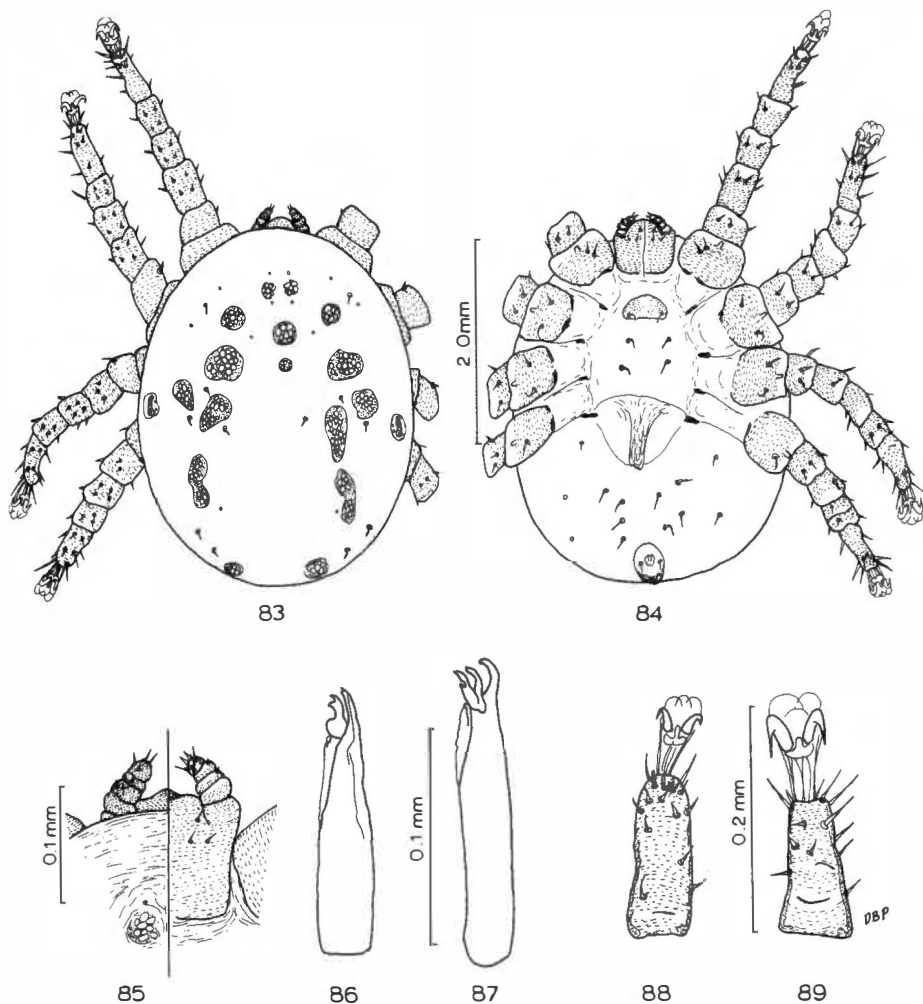
FIGS. 62-68.—*Rhinonyssus himantopus* Strandmann: 62, female venter; 63, female dorsum; 64, gnathosoma, dorsal and ventral views, respectively; 65, female chelicera; 66, male chelicera; 67, tarsus I, dorsal view; 68, tarsus IV, ventral view.



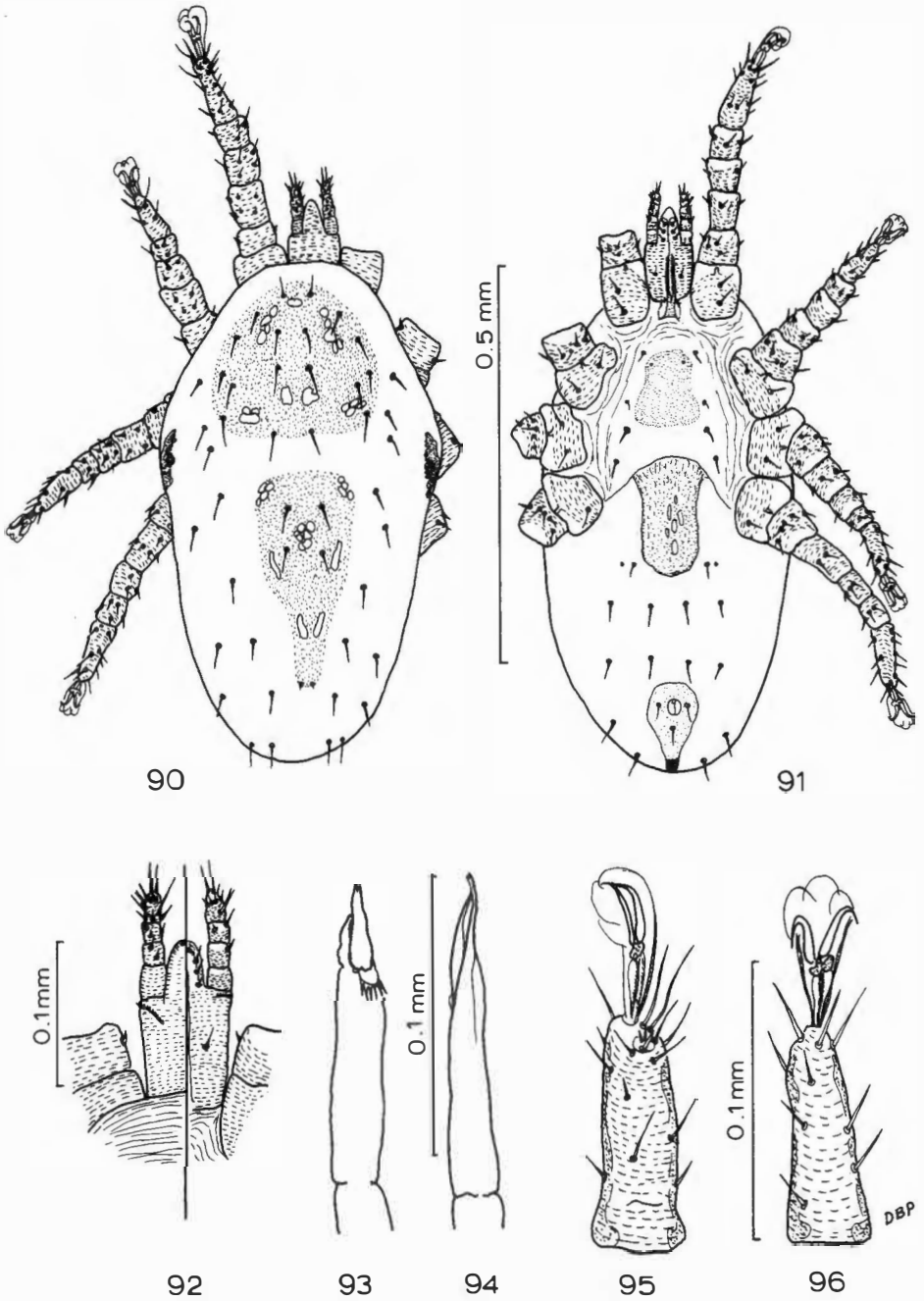
FIGS. 69-75.—*Rallinyssus caudistigmus* Strandmann: 69, female dorsum; 70, female venter; 71, gnathosoma, dorsal and ventral views, respectively; 72, female chelicera; 73, male chelicera; 74, tarsus I, dorsal view; 75, tarsus IV, ventral view.



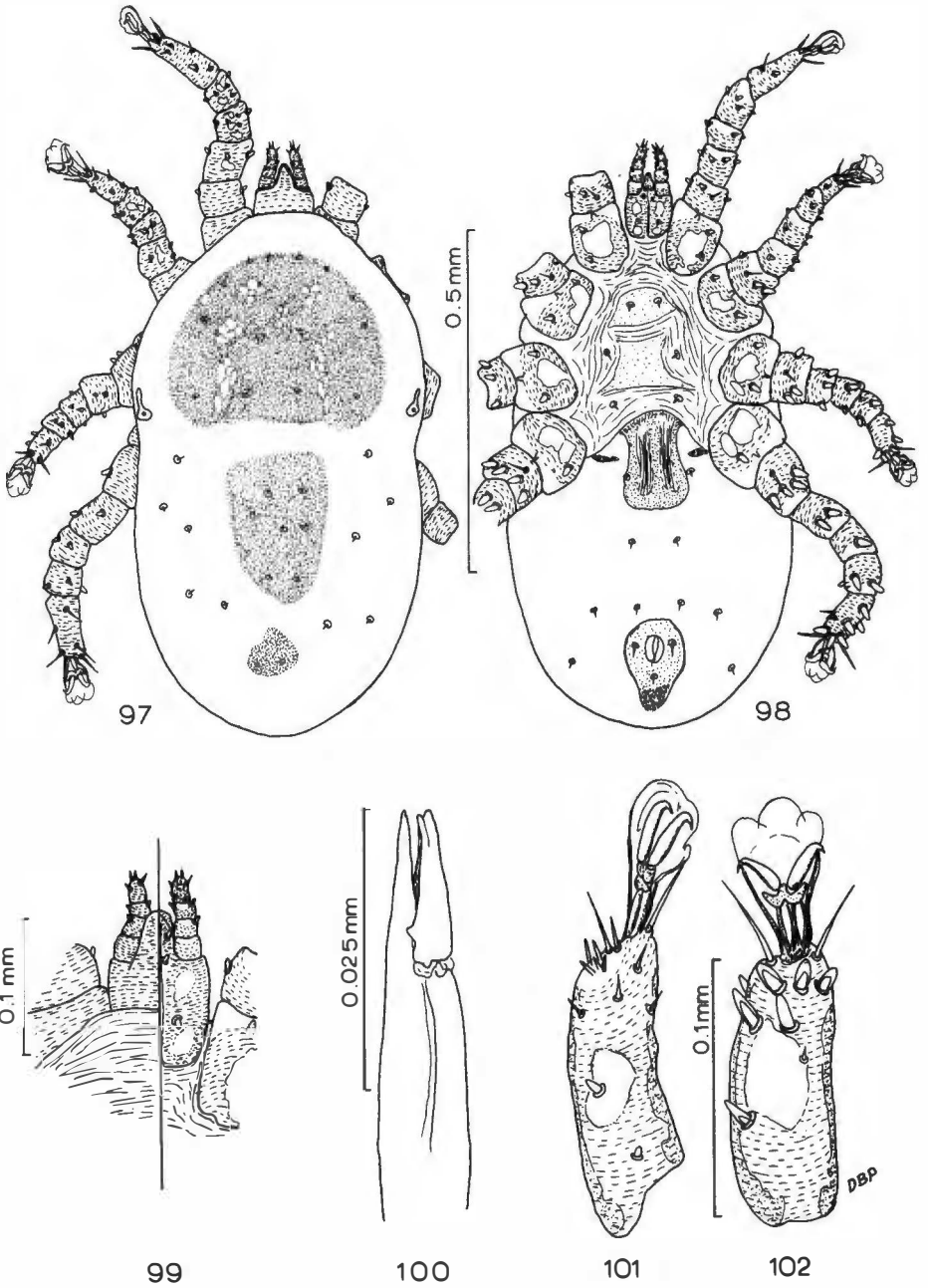
FIGS. 76-82.—*Rallinyssus verheyeni* Fain and Bafort: 76, female dorsum; 77, female venter; 78, gnathosoma, dorsal and ventral views, respectively; 79, female chelicera; 80, male chelicera; 81, tarsus I, dorsal view; 82, tarsus IV, ventral view.



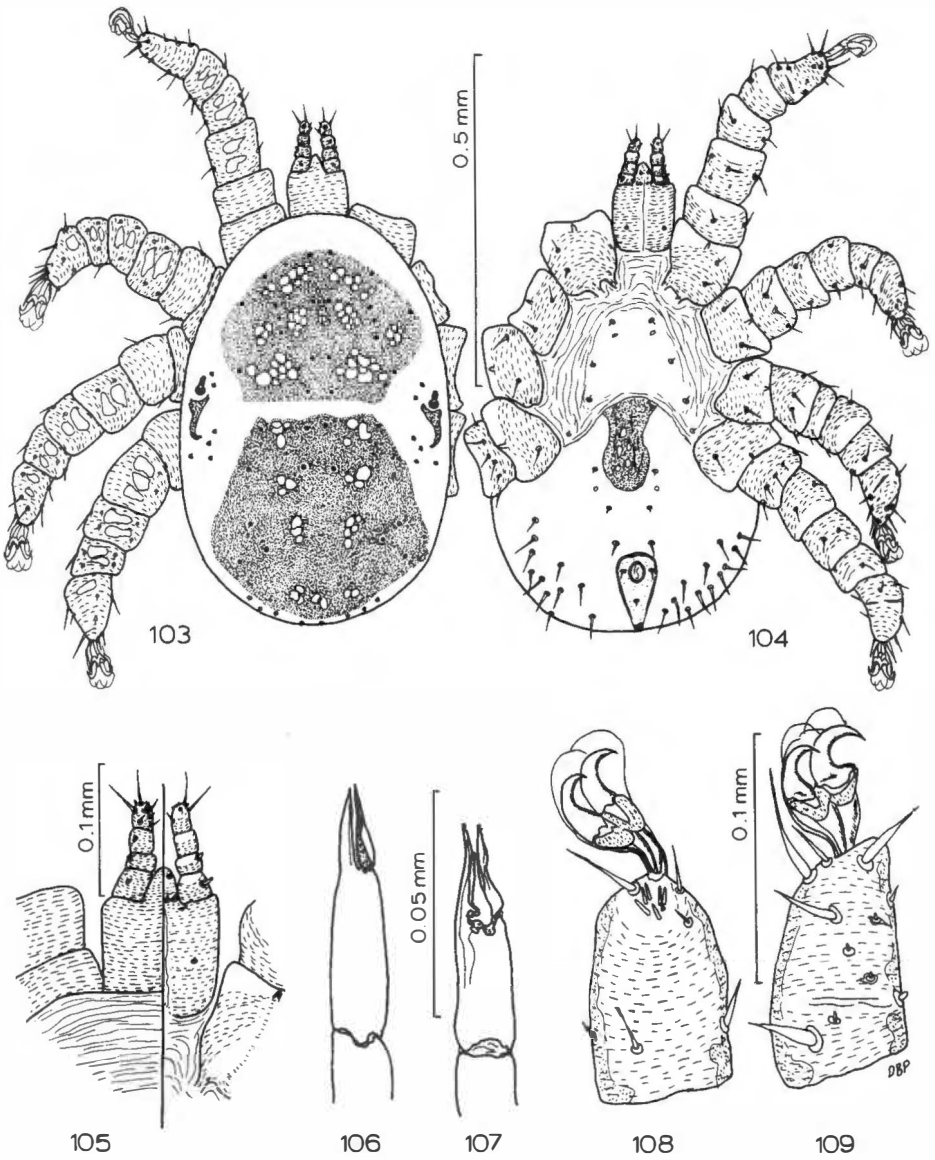
FIGS. 83-89.—*Larinyssus orbicularis* Strandtmann: 83, female dorsum; 84, female venter; 85, gnathosoma, dorsal and ventral views, respectively; 86, female chelicera; 87, male chelicera; 88, tarsus I, dorsal view; 89, tarsus IV, ventral view.



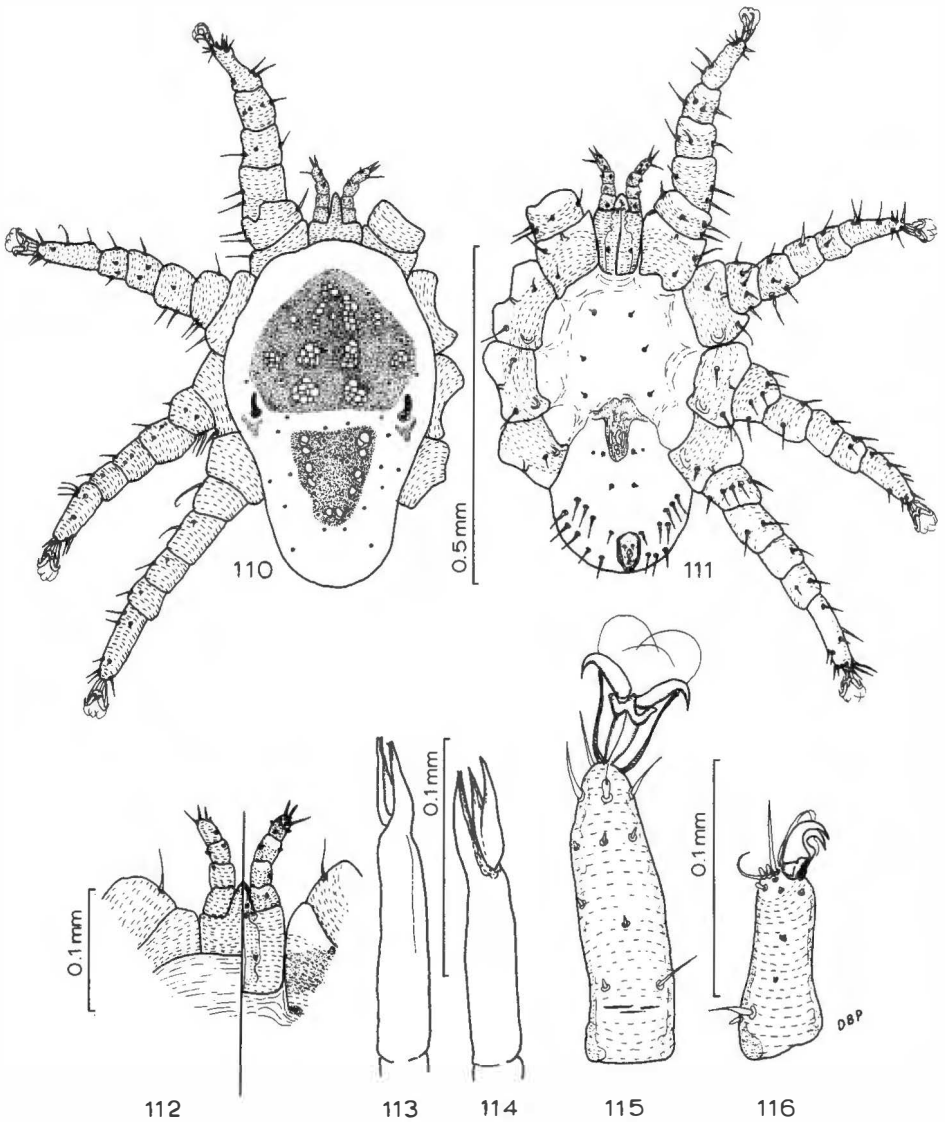
FIGS. 90-96.—*Tinaminyssus ixoreus* Strandmann and Clifford: 90, female dorsum; 91, female venter; 92, gnathosoma, dorsal and ventral views, respectively; 93, female chelicera; 94, male chelicera; 95, tarsus I, dorsal view; 96, tarsus IV, ventral view.



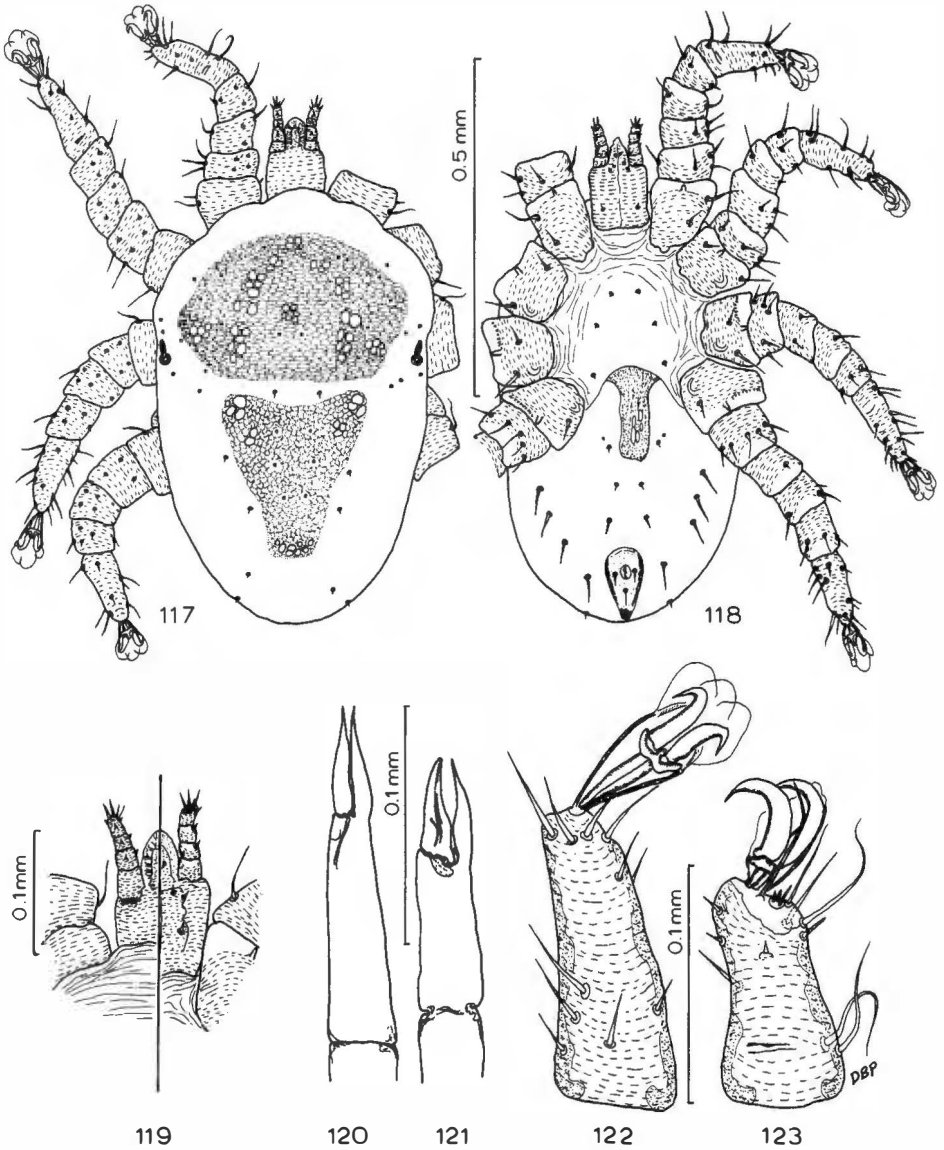
FIGS. 97-102.—*Tinaminyssus carapachibeyus* Dusbábek: 97, female dorsum; 98, female venter; 99, gnathosoma, dorsal and ventral views, respectively; 100, female chelicera; 101, tarsus I, dorsal view; 102, tarsus IV, ventral view.



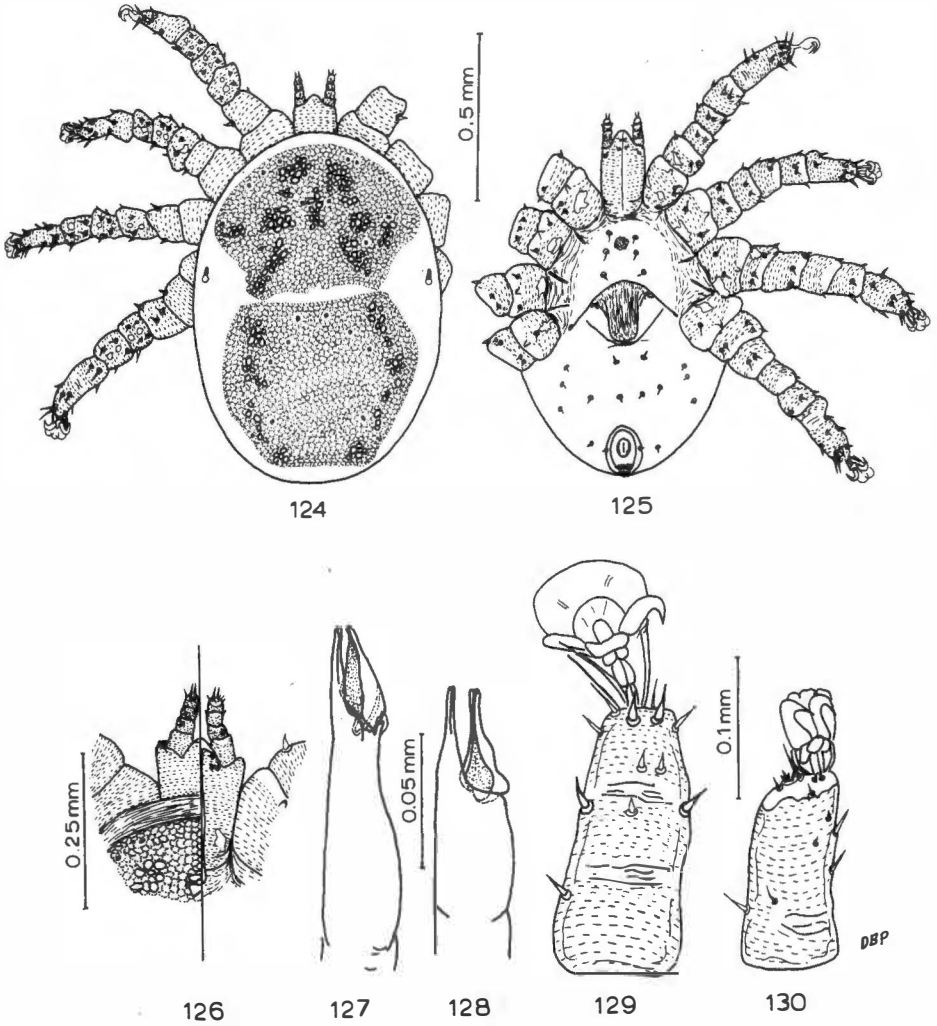
FIGS. 103-109.—*Tinaminyssus zenaidurae* Crossley: 103, female dorsum; 104, female venter; 105, gnathosoma, dorsal and ventral views, respectively; 106, female chelicera; 107, male chelicera; 108, tarsus I, dorsal view; 109, tarsus IV, ventral view.



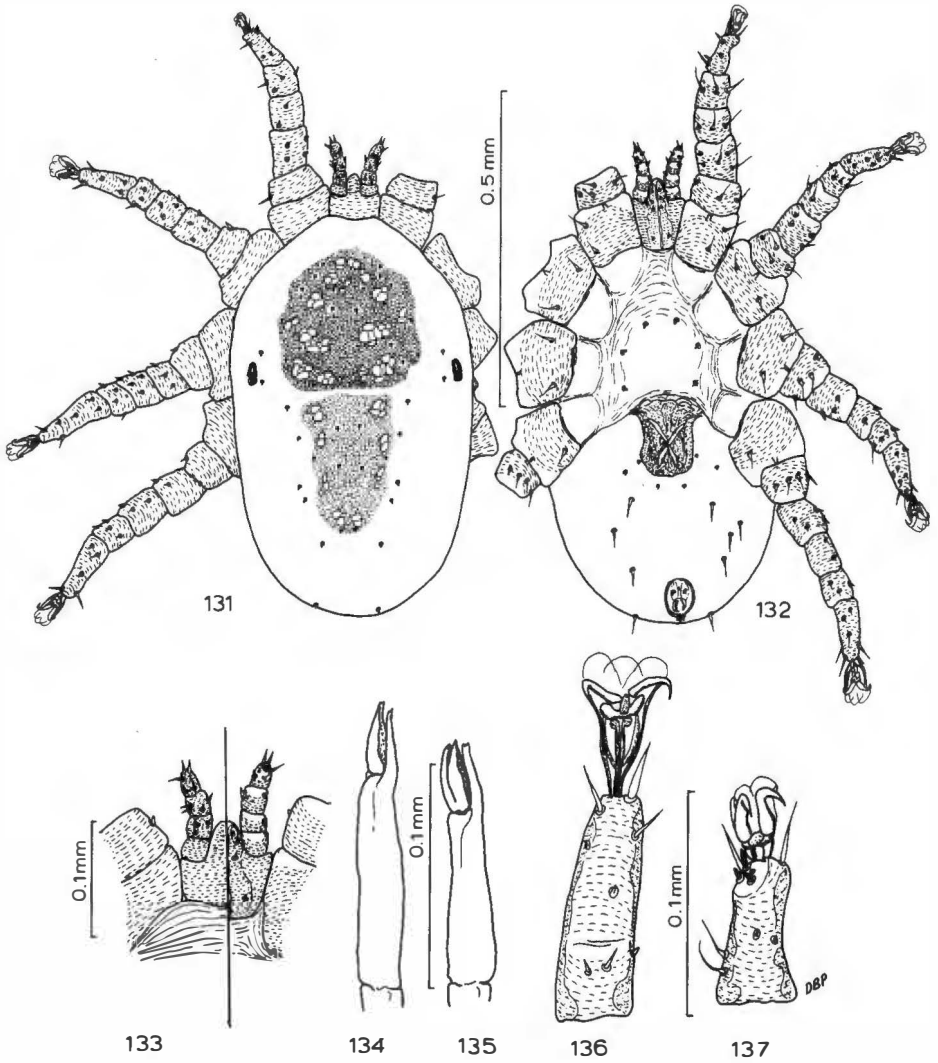
FIGS. 110-116.—*Tinaminyssus melloi* Castro: 110, female dorsum; 111, female venter; 112, gnathosoma, dorsal and ventral views, respectively; 113, female chelicera; 114, male chelicera; 115, tarsus I, dorsal view; 116, tarsus IV, ventral view.



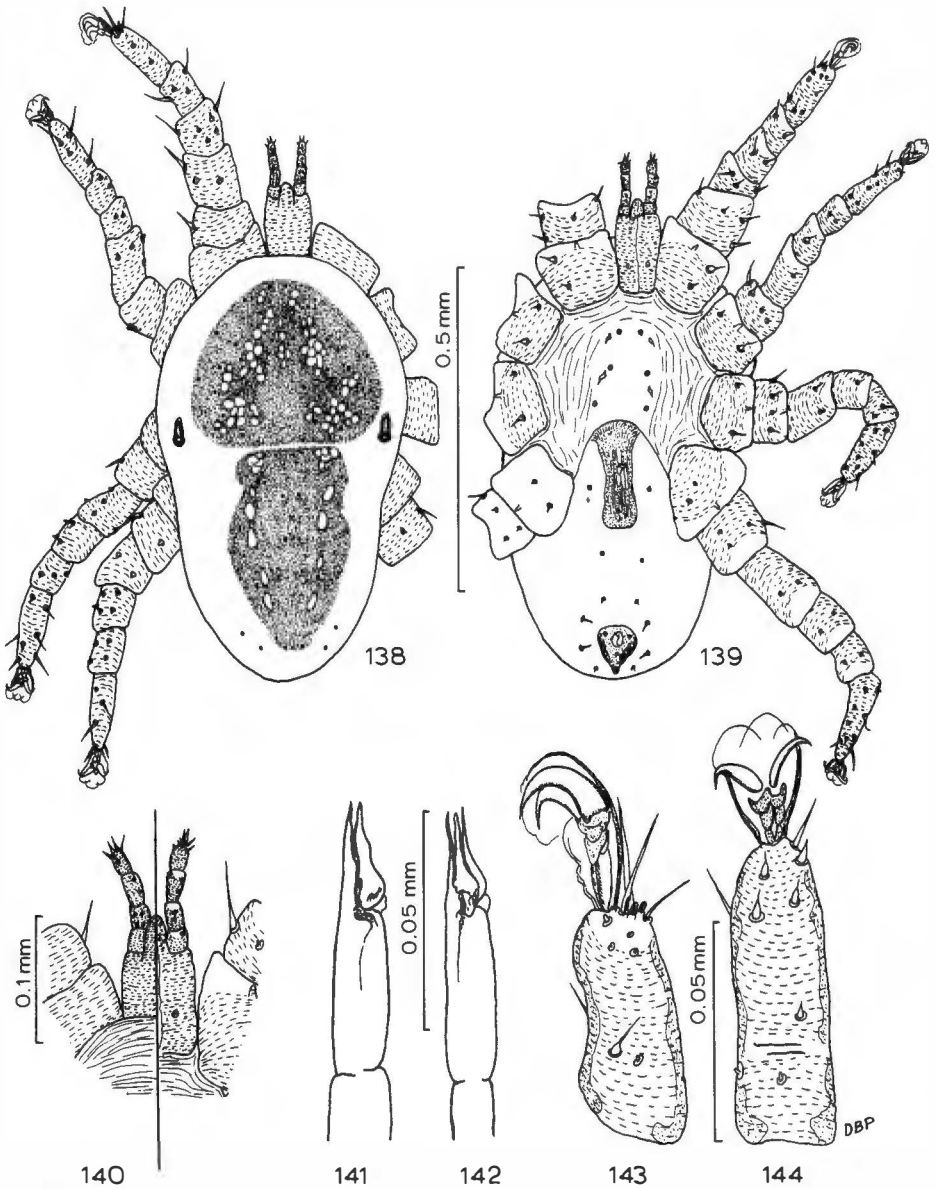
FIGS. 117-123.—*Tinaminysus triangulus* Strandmann: 117, female dorsum; 118, female venter; 119, gnathosoma, dorsal and ventral views, respectively; 120, female chelicera; 121, male chelicera; 122, tarsus IV, ventral view; 123, tarsus I, dorsal view.



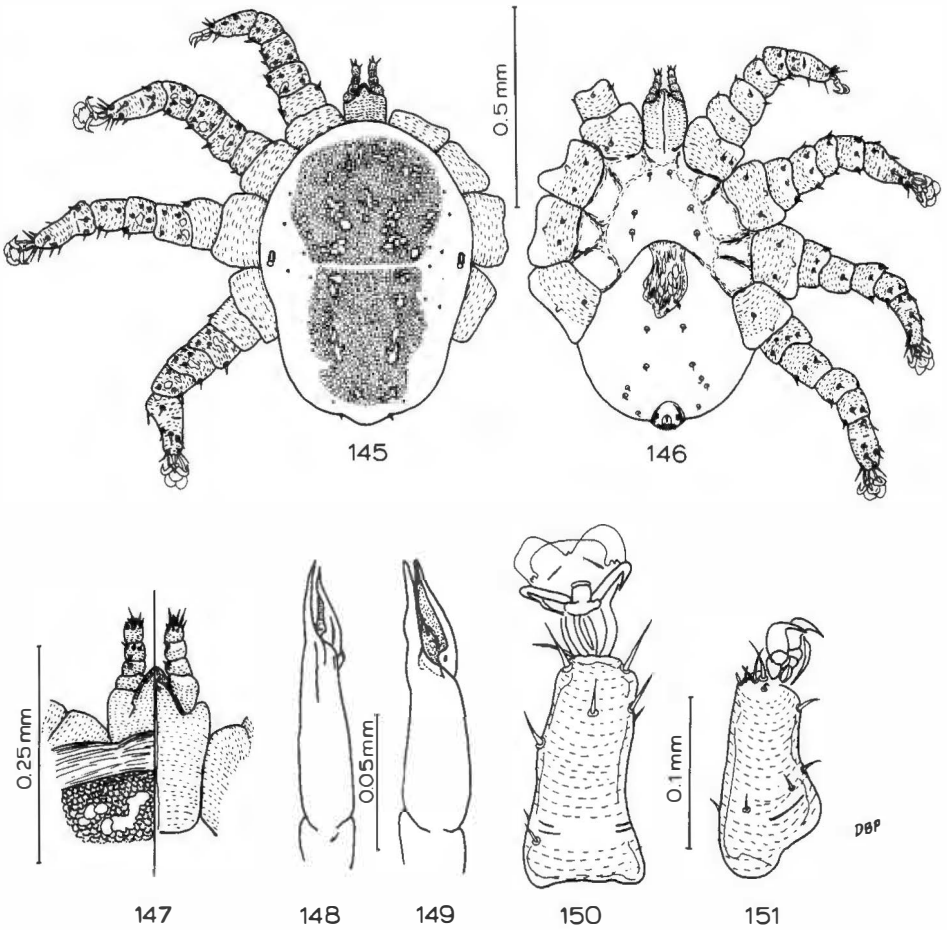
FIGS. 124-130.—*Tinaminyssus bubulci* Zumpt and Till: 124, female dorsum; 125, female venter; 126, gnathosoma, dorsal and ventral views, respectively; 127, female chelicera; 128, male chelicera; 129, tarsus IV, ventral view; 130, tarsus I, dorsal view.



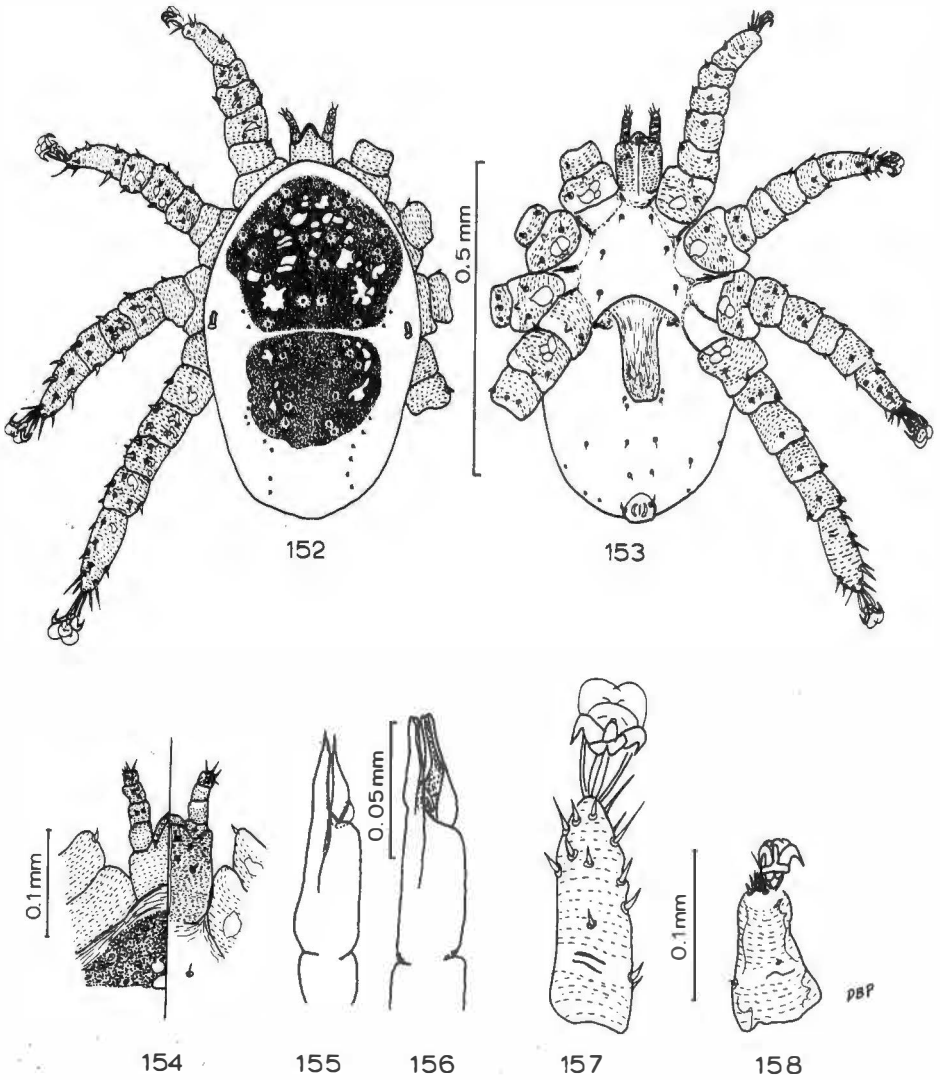
FIGS. 131-137.—*Tinaminyssus columbae* Crossley: 131, female dorsum; 132, female venter; 133, gnathosoma, dorsal and ventral views, respectively; 134, female chelicera; 135, male chelicera; 136, tarsus IV, ventral view; 137, tarsus I, dorsal view.



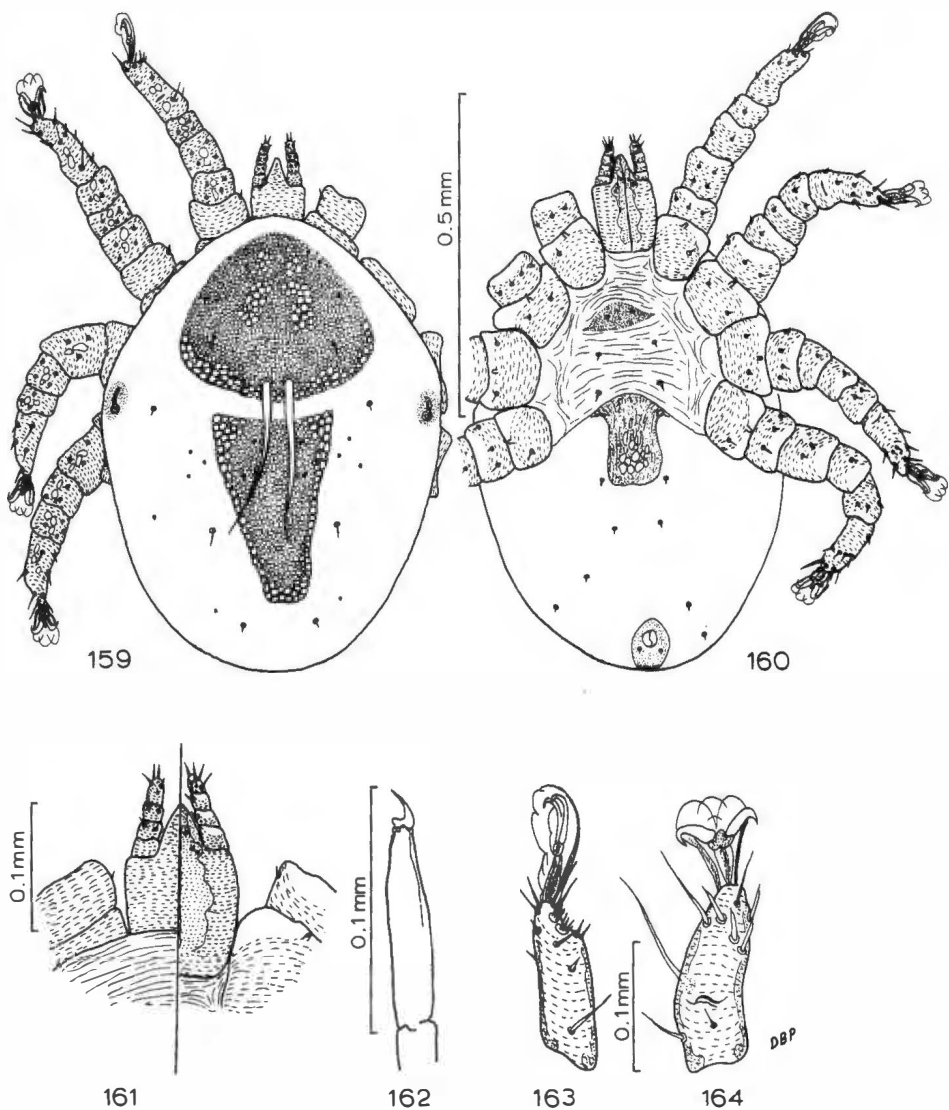
FIGS. 138-144.—*Tinaminyssus geotrygoni* Dusbábek: 138, female dorsum; 139, female venter; 140, gnathosoma, dorsal and ventral views, respectively; 141, female chelicera; 142, male chelicera; 143, tarsus I, dorsal view; 144, tarsus IV, ventral view.



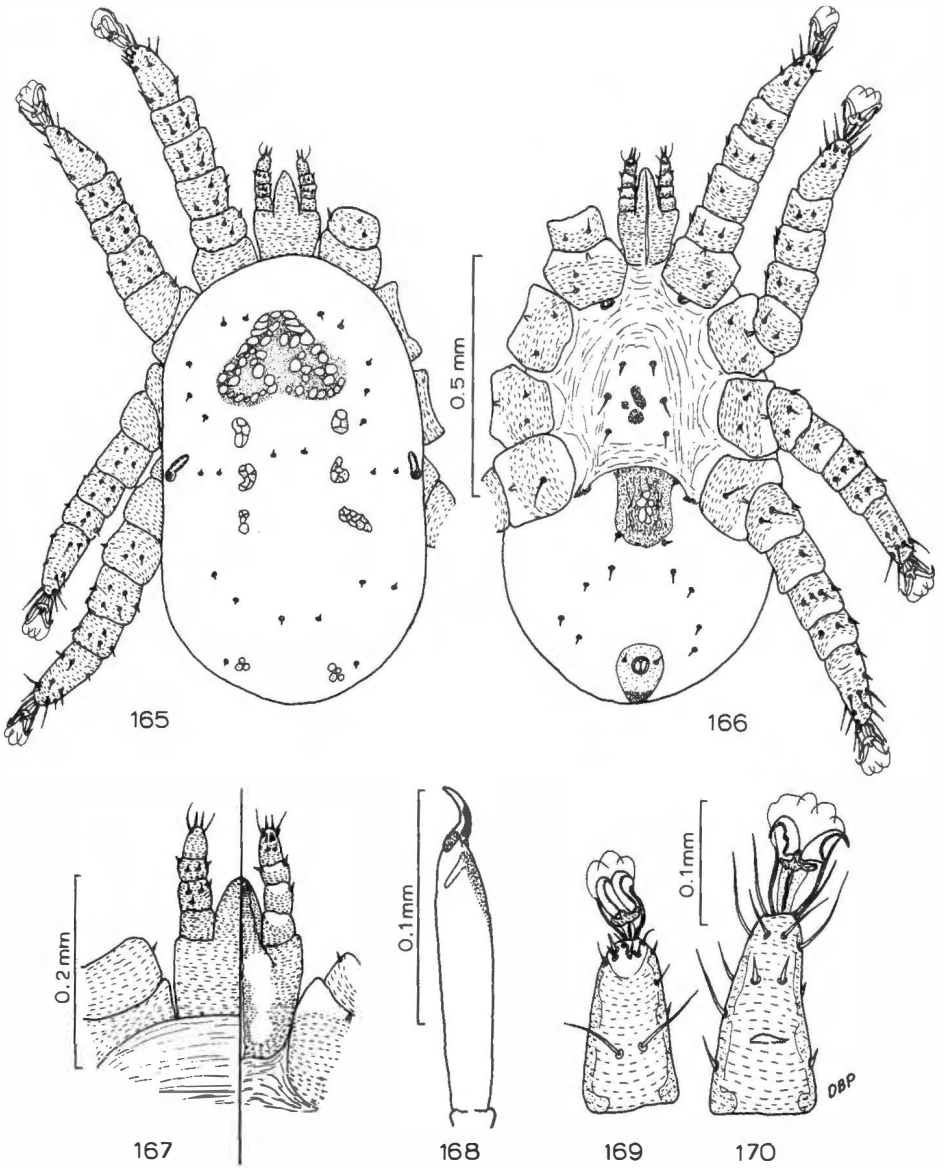
Figs. 145-151.—*Tinaminyssus belopolskii* Bregetova: 145, female dorsum; 146, female venter; 147, gnathosoma, dorsal and ventral views, respectively; 148, female chelicera; 149, male chelicera; 150, tarsus IV, ventral view; 151, tarsus I, dorsal view.



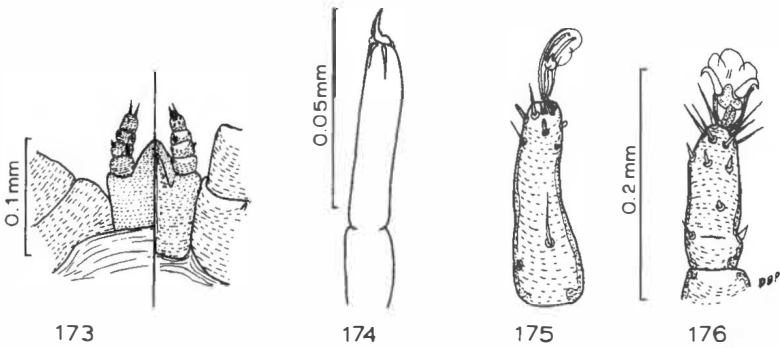
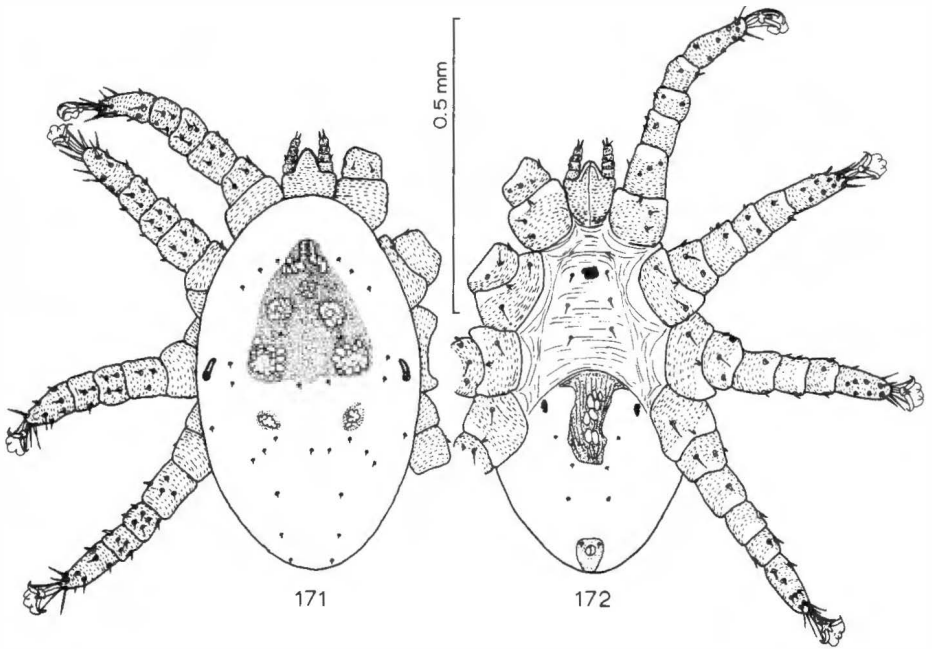
FIGS. 152-158.—*Tinaminyssus neoixobrychi* Pence: 152, female dorsum; 153, female venter; 154, gnathosoma, dorsal and ventral views, respectively; 155, female chelicera; 156, male chelicera; 157, tarsus IV, ventral view; 158, tarsus I, dorsal view.



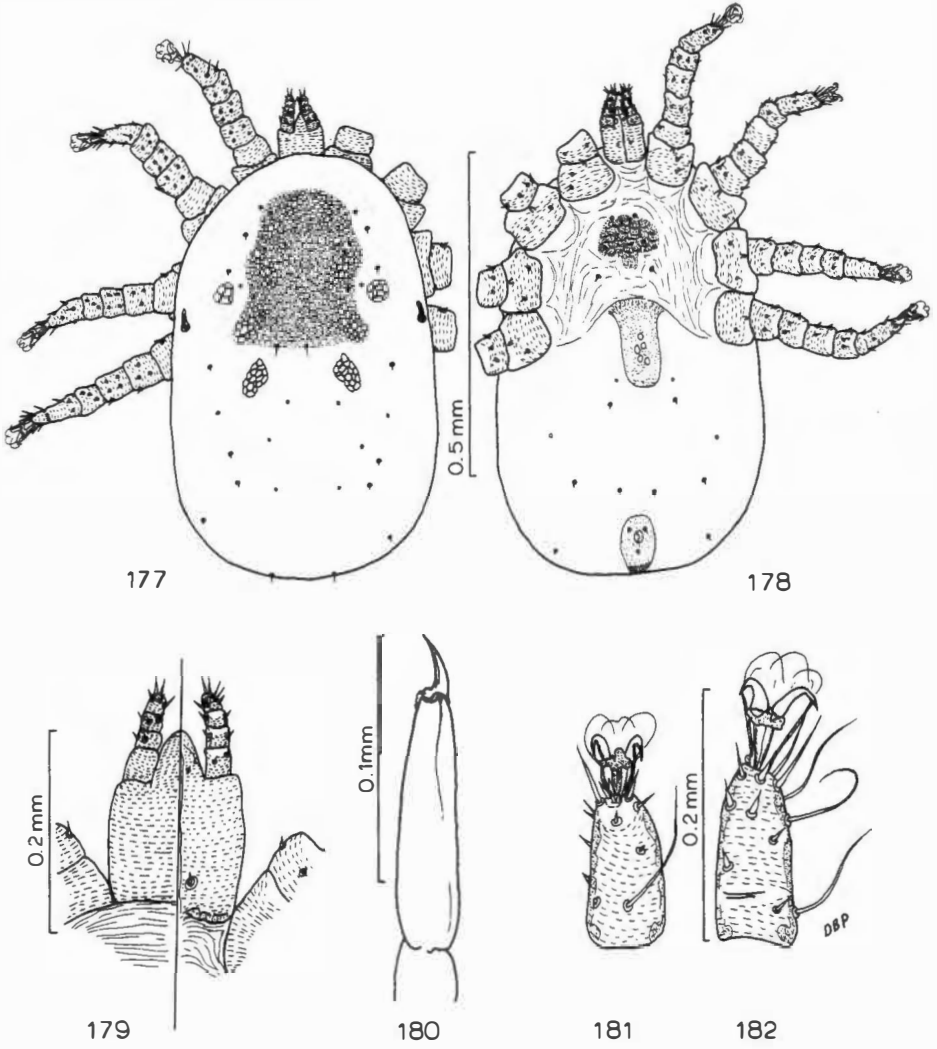
FIGS. 159-164.—*Rhinoecius bisetosus* Strandmann: 159, female dorsum; 160, female venter; 161, gnathosoma, dorsal and ventral views, respectively; 162, female chelicera; 163, tarsus I, dorsum; 164, tarsus IV, venter.



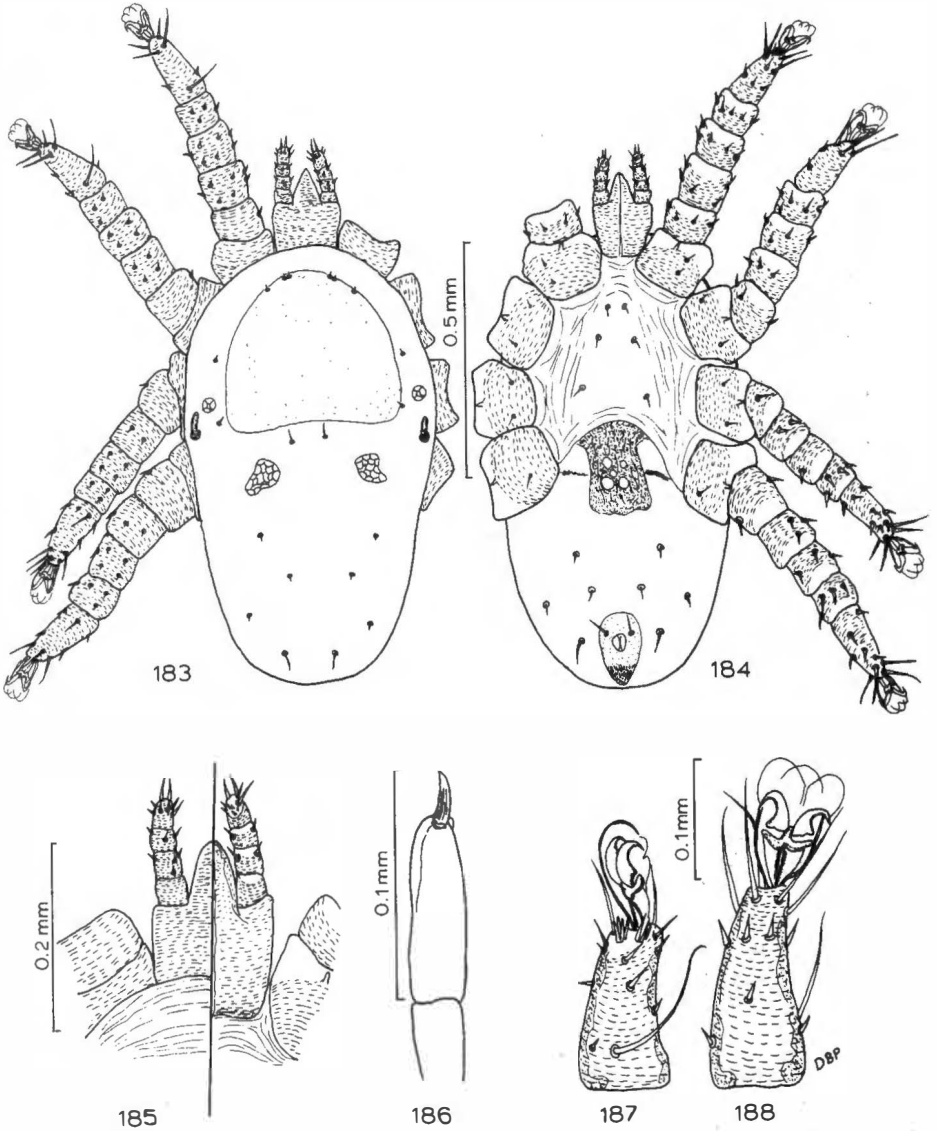
FIGS. 165-170.—*Rhinoecius tytonis* Fain: 165, female dorsum; 166, female venter; 167, gnathosoma, dorsal and ventral views, respectively; 168, female chelicera; 169, tarsus I, dorsal view; 170, tarsus IV, ventral view.



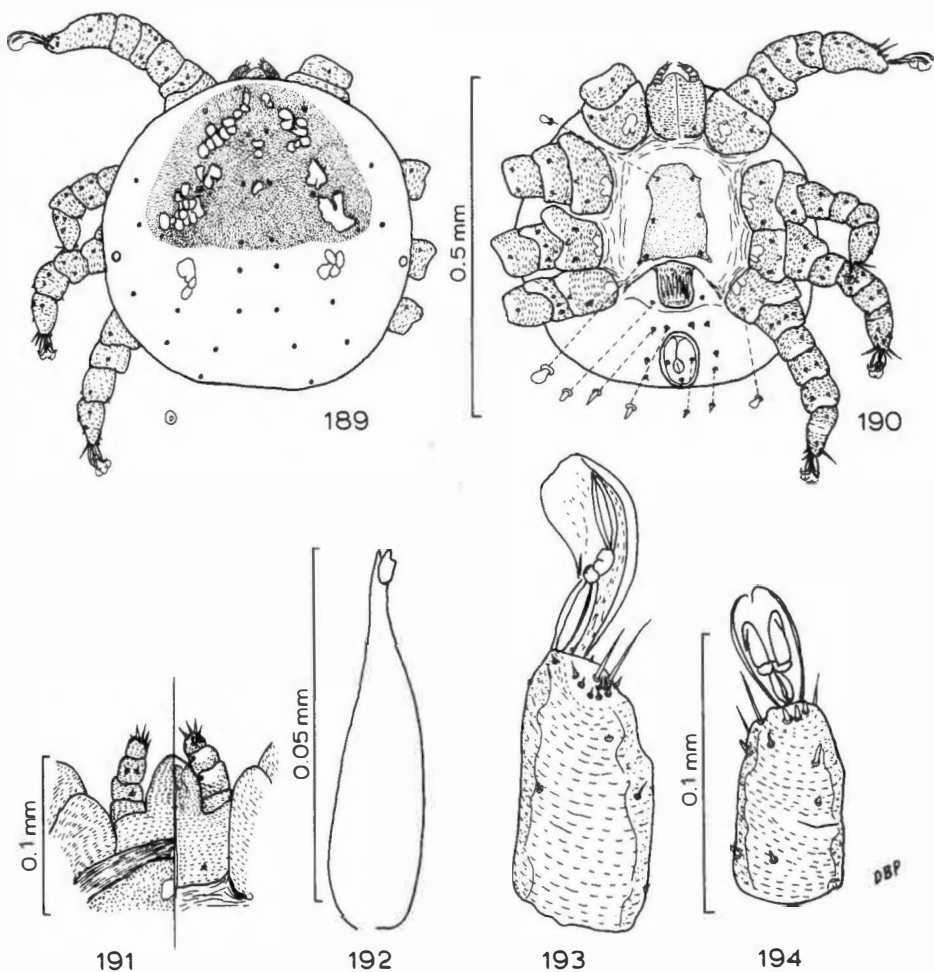
FIGS. 171-176.—*Rhinoecius cooremani* Strandmann: 171, female dorsum; 172, female venter; 173, gnathosoma, dorsal and ventral views, respectively; 174, female chelicera; 175, tarsus I, dorsal view; 176, tarsus IV, ventral view.



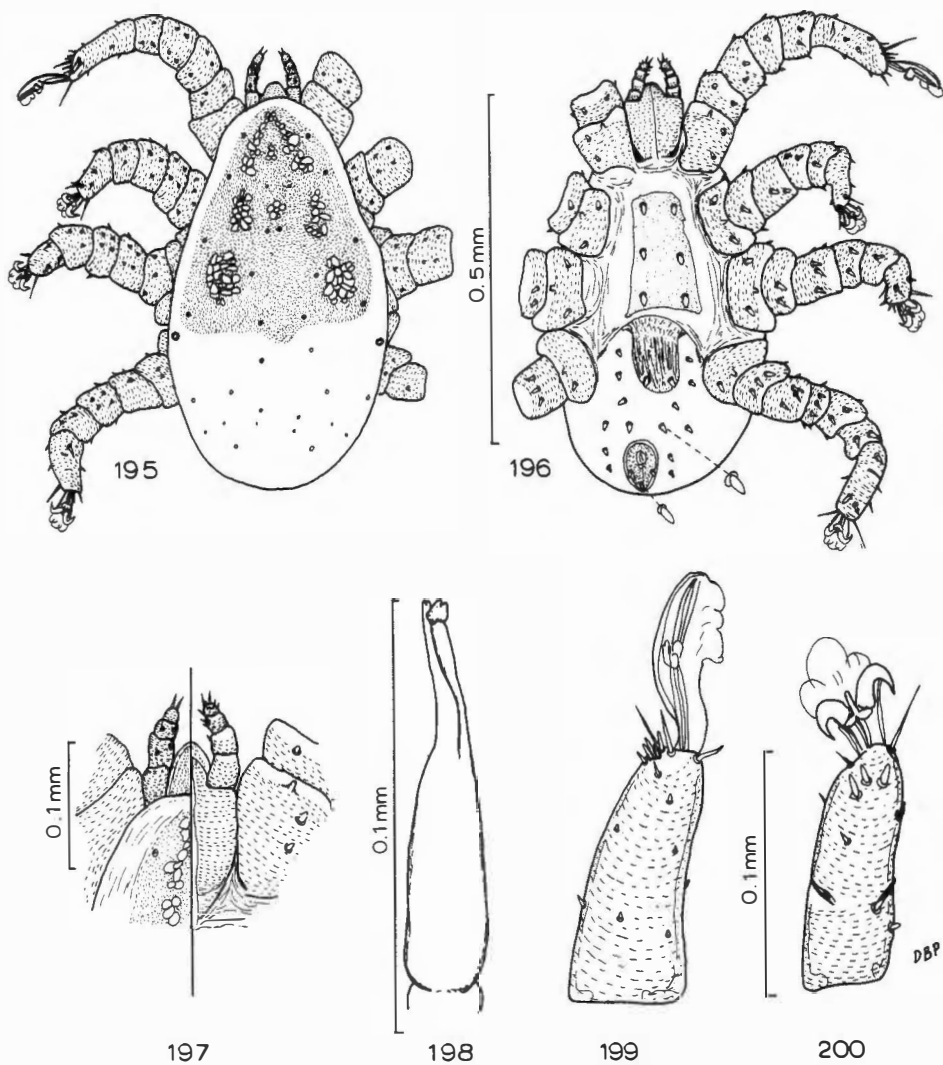
FIGS. 177-182.—*Rhinoecius grandis* Strandmann: 177, female dorsum; 178, female venter; 179, gnathosoma, dorsal and ventral views, respectively; 180, female chelicera; 181, tarsus I, dorsal view; 182, tarsus IV, ventral view.



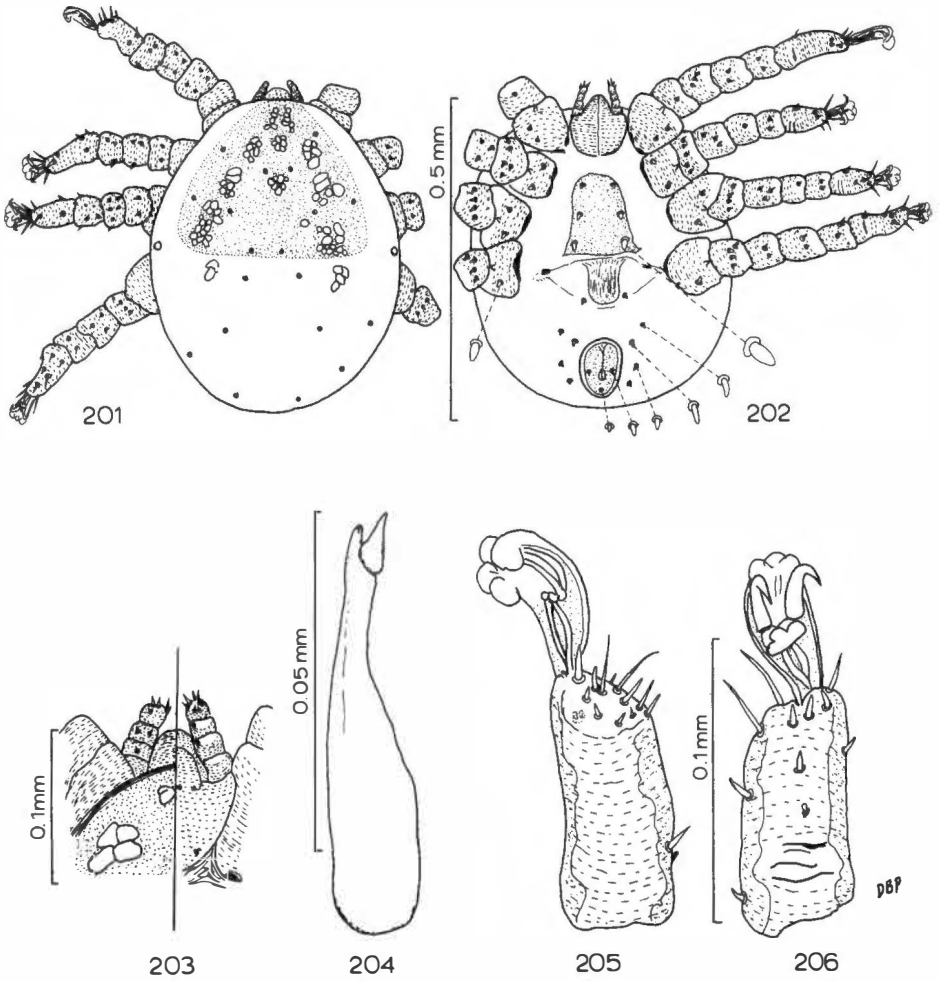
FIGS. 183-188.—*Rhinocelius oti* Cooreman: 183, female dorsum; 184, female venter; 185, gnathosoma, dorsal and ventral views, respectively; 186, female chelicera; 187, tarsus I, dorsal view; 188, tarsus IV, ventral view.



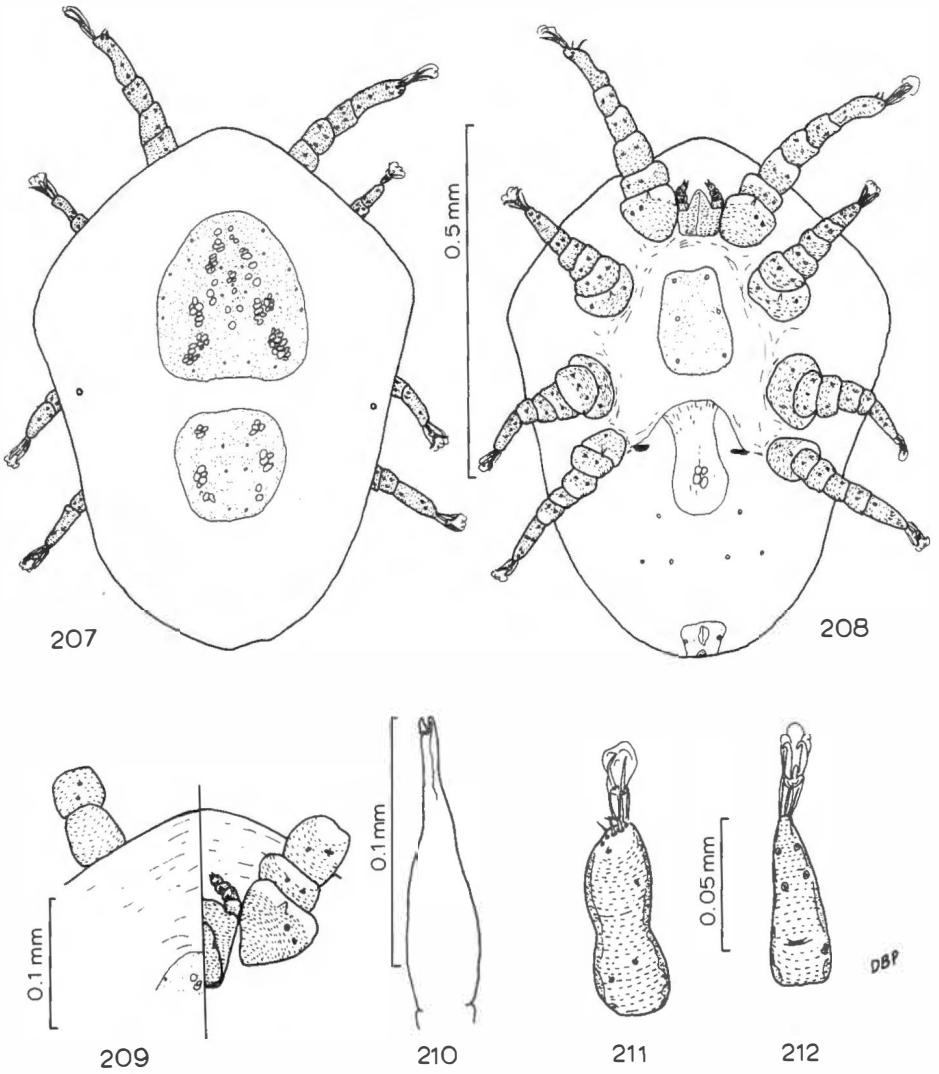
FIGS. 189-194.—*Sternostoma dumetellae* Pence: 189, female dorsum; 190, female venter; 191, gnathosoma, dorsal and ventral views, respectively; 192, female chelicera; 193, tarsus I, dorsal view; 194, tarsus IV, ventral view.



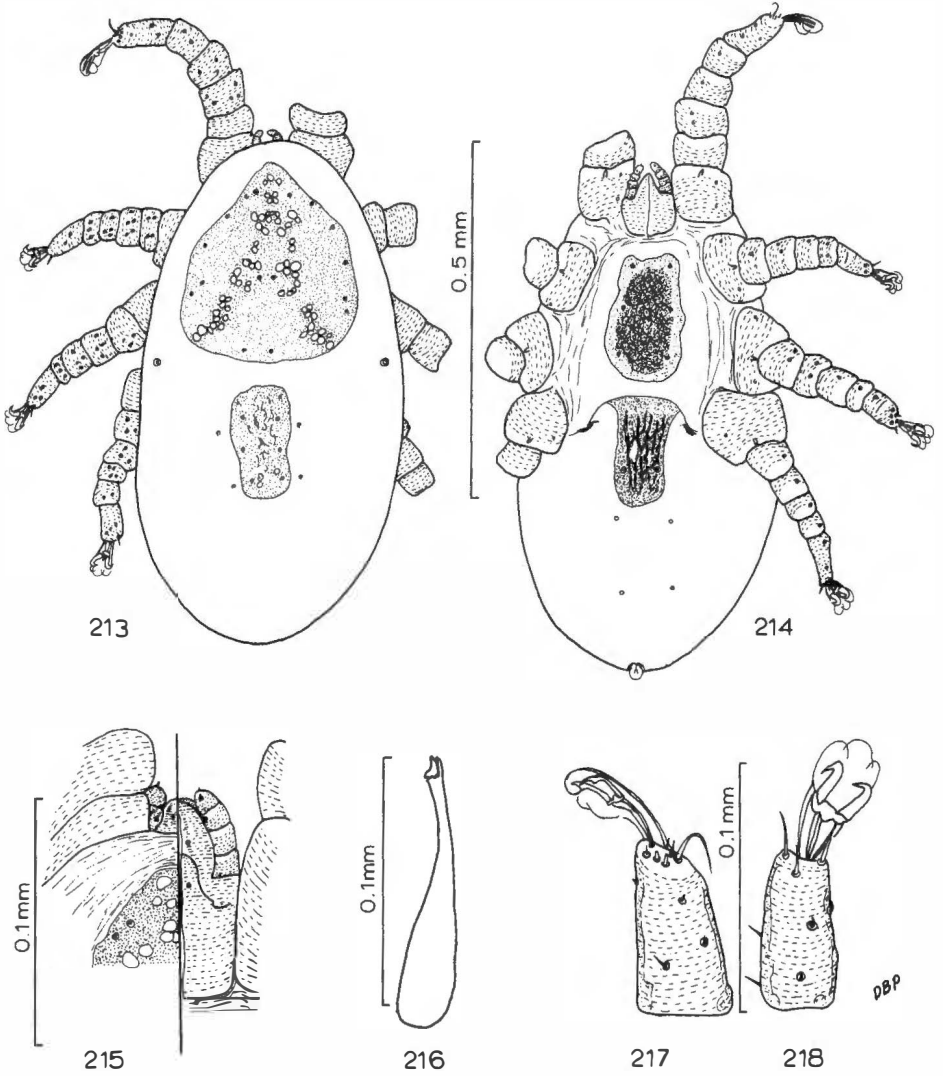
FIGS. 195-200.—*Sternostoma technau* Vitzthum. 195, female dorsum; 196, female venter; 197, gnathosoma, dorsal and ventral views, respectively; 198, female chelicera; 199, tarsus I, dorsal view; 200, tarsus IV, ventral view.



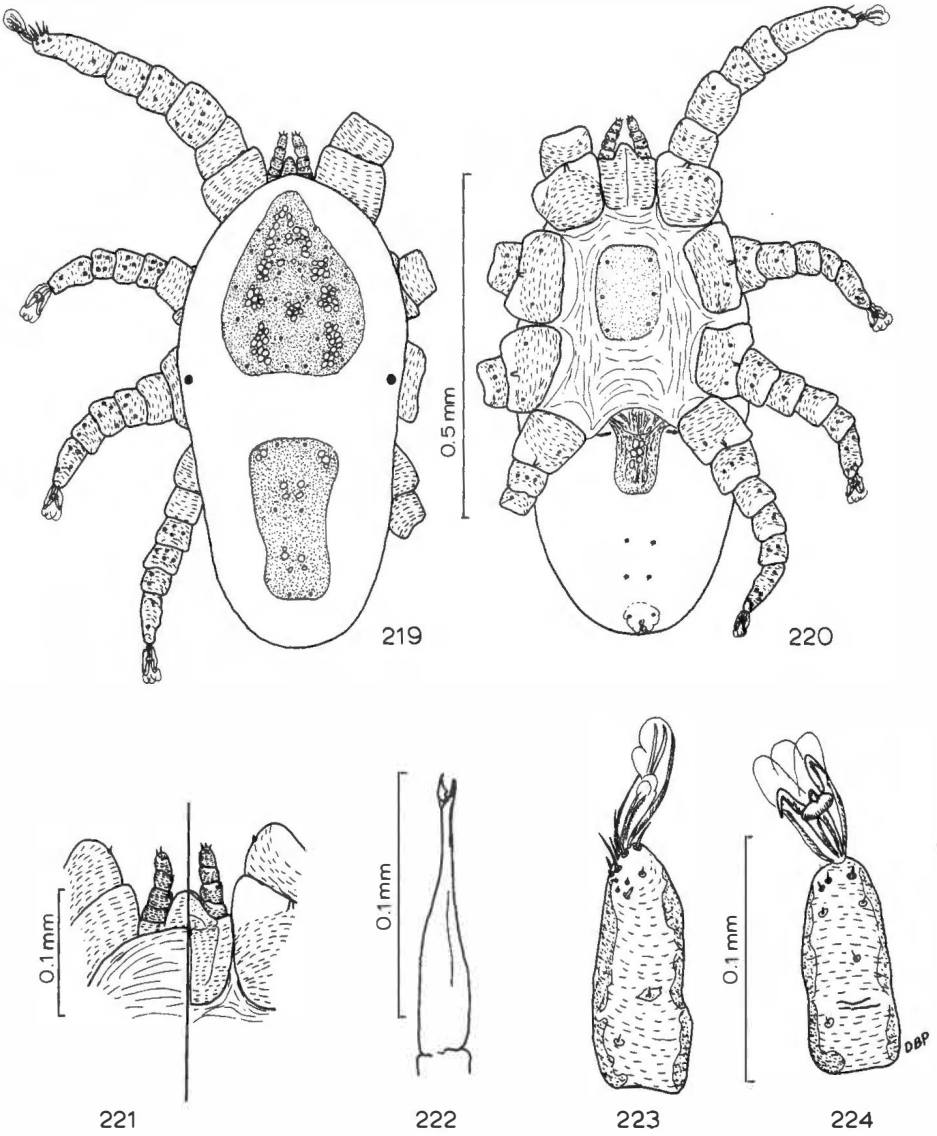
FIGS. 201-206.—*Sternostoma spatulatum* Furman: 201, female dorsum; 202, female venter; 203, gnathosoma, dorsal and ventral views, respectively; 204, female chelicera; 205, tarsus I, dorsal view; 206, tarsus IV, ventral view.



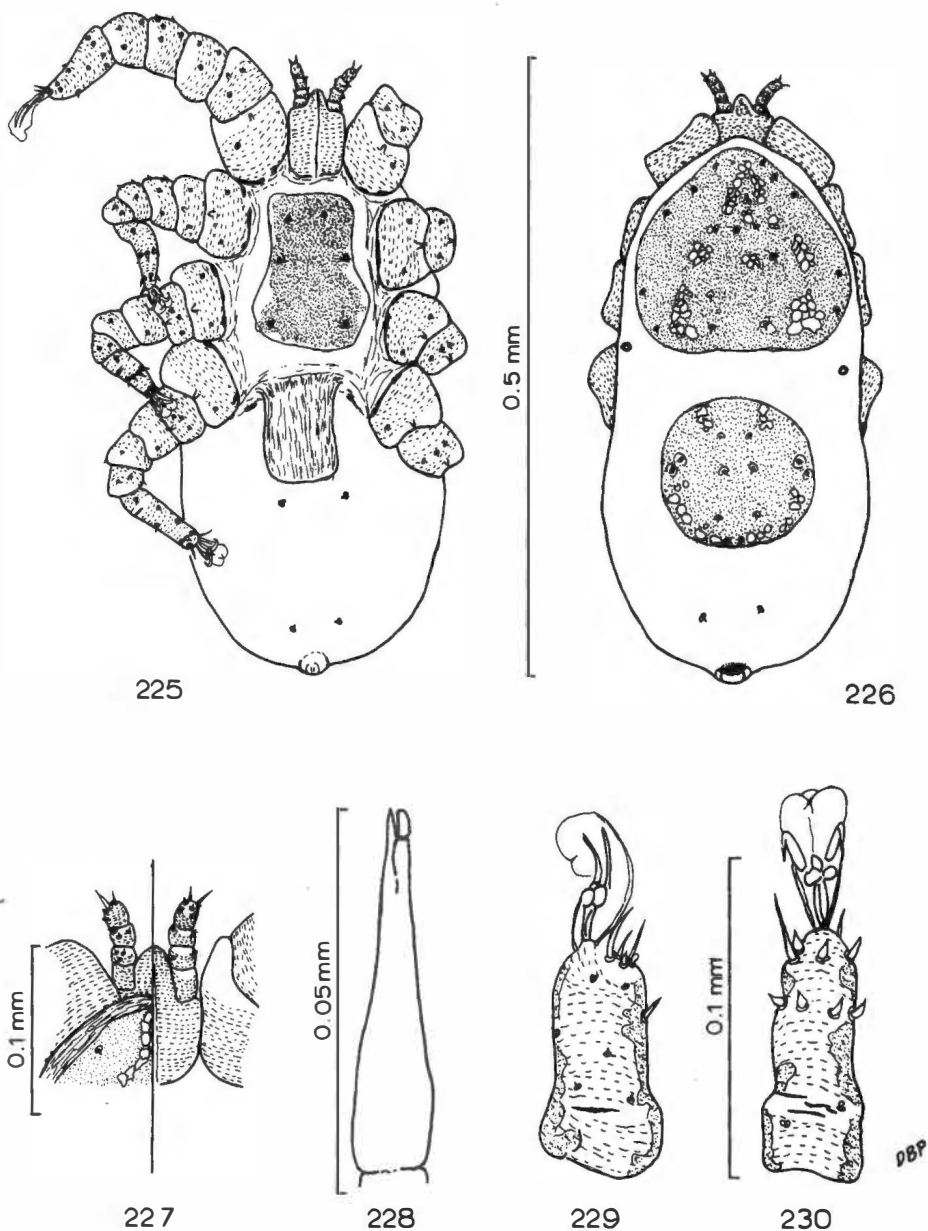
Figs. 207-212.—*Sternostoma strandtmanni* Furman: 207, female dorsum; 208, female venter; 209, gnathosoma, dorsal and ventral views, respectively; 210, female chelicera; 211, tarsus I, dorsal view; 212, tarsus IV, ventral view.



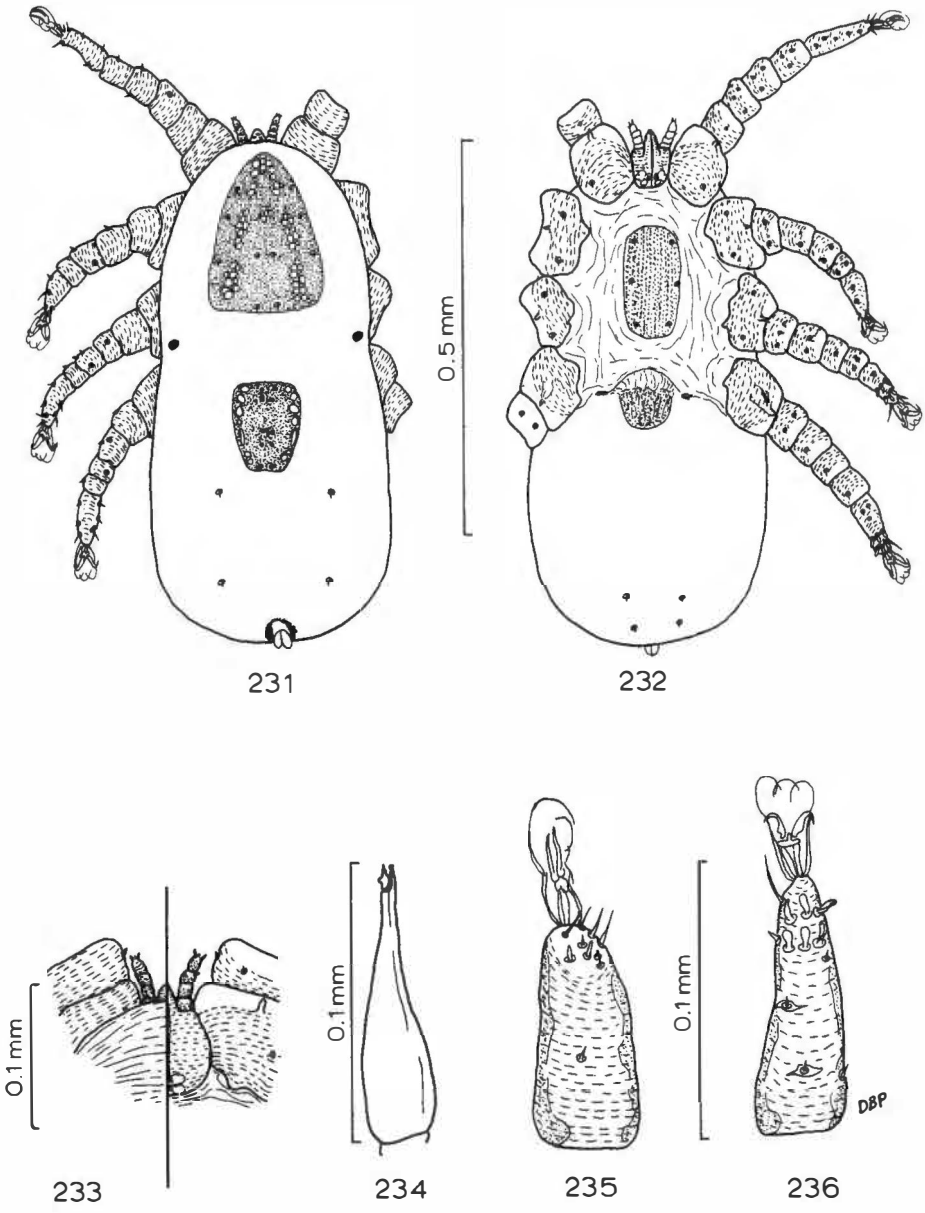
FIGS. 213-218.—*Sternostoma tracheacolum* Lawrence: 213, female dorsum; 214, female venter; 215, gnathosoma, dorsal and ventral views, respectively; 216, female chelicera; 217, tarsus I, dorsal view; 218, tarsus IV, ventral view.



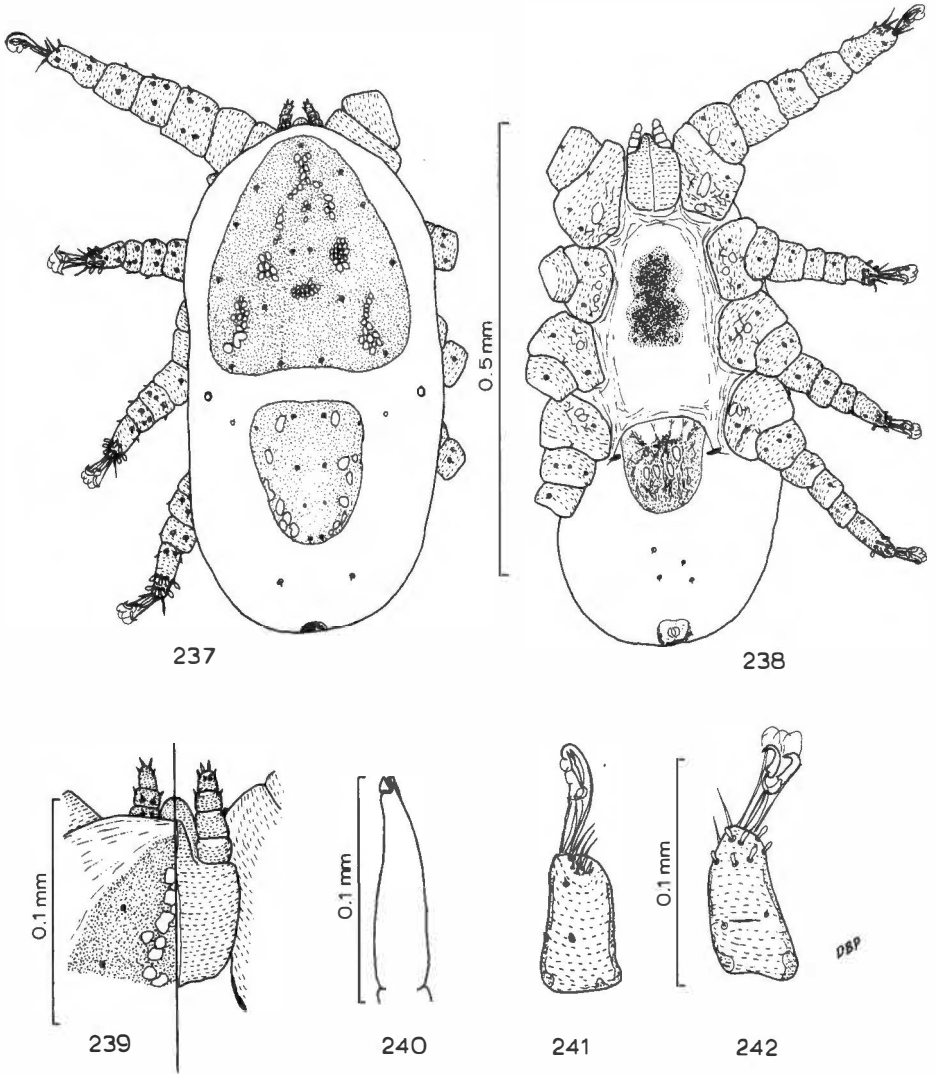
FIGS. 219-224.—*Sternostoma hutsoni* Furman: 219, female dorsum; 220, female venter; 221, gnathosoma, dorsal and ventral views, respectively; 222, female chelicera; 223, tarsus I, dorsal view; 224, tarsus IV, ventral view.



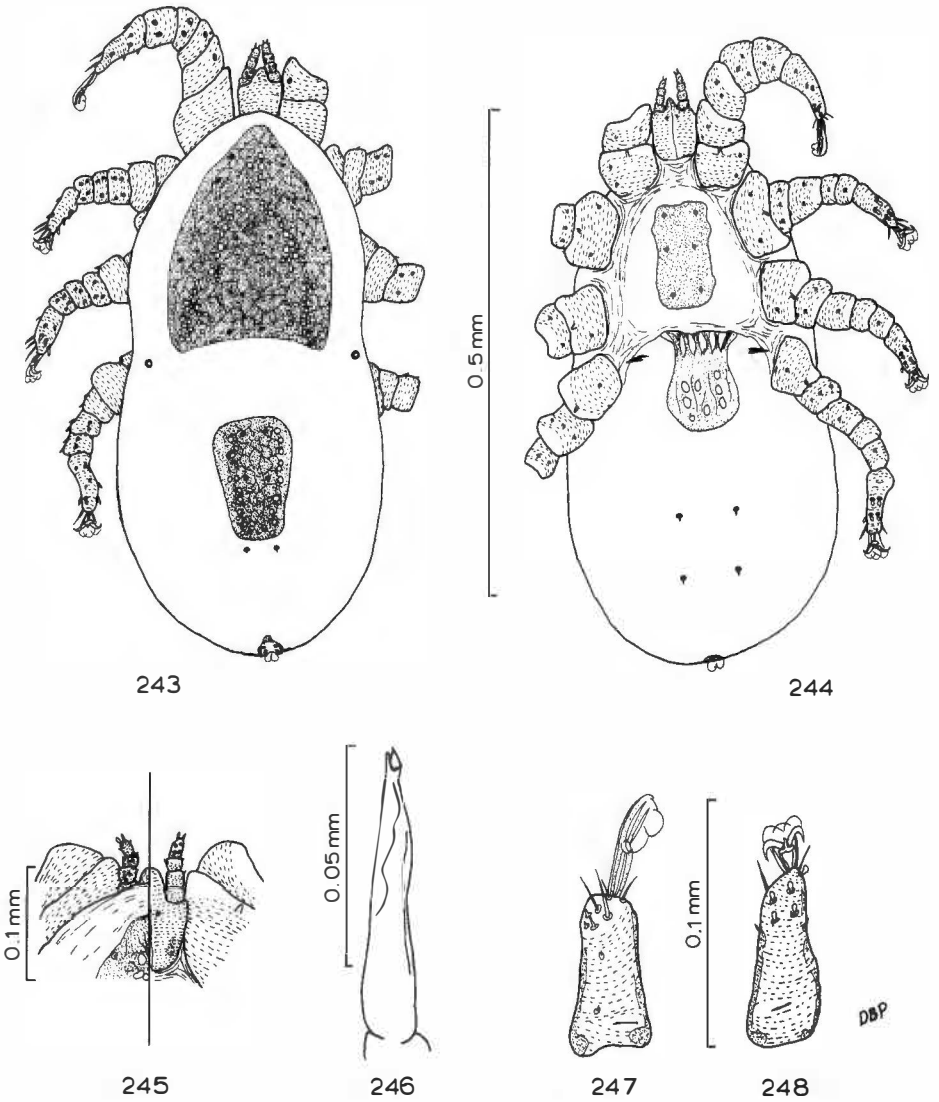
FIGS. 225-230.—*Sternostoma motacillae* Pence: 225, female venter; 226, female dorsum; 227, gnathosoma, dorsal and ventral views, respectively; 228, female chelicera; 229, tarsus I, dorsal view; 230, tarsus IV, ventral view.



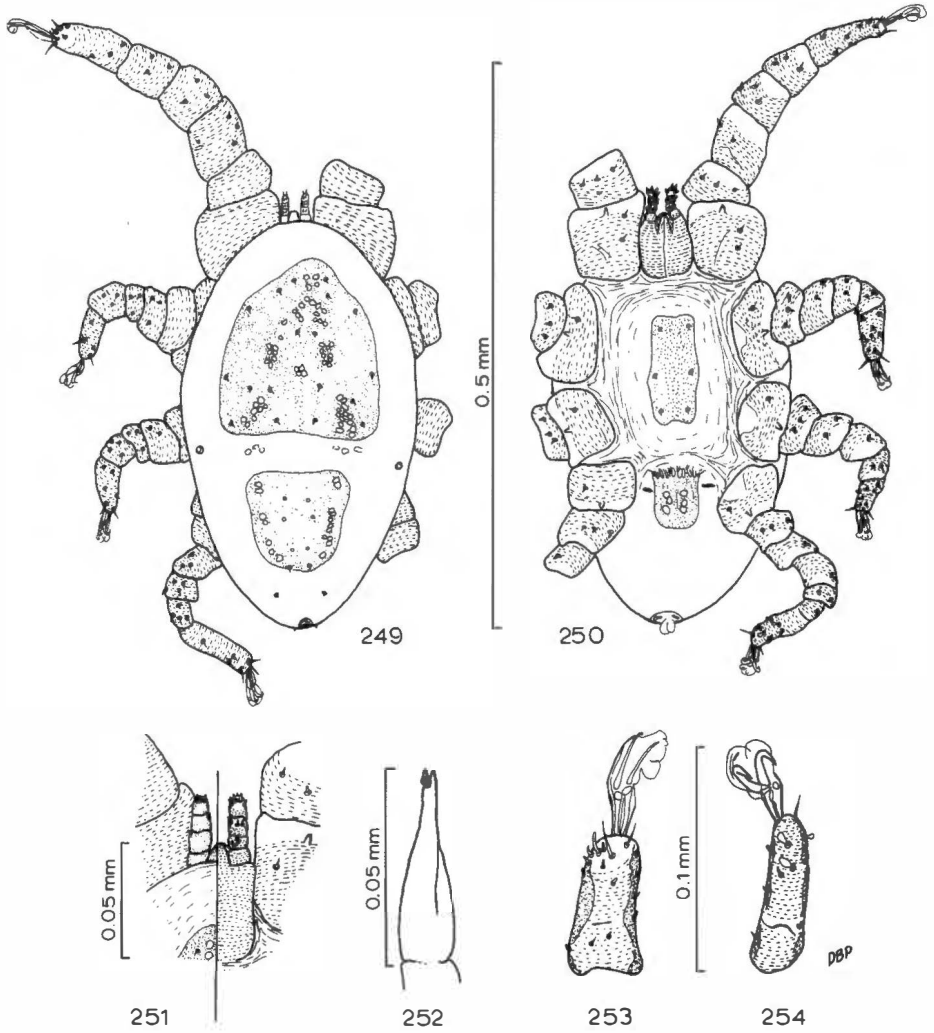
Figs. 231-236.—*Sternostoma cryptorhynchum* Berlese and Trouessart: 231, female dorsum; 232, female venter; 233, gnathosoma, dorsal and ventral views, respectively; 234, female chelicera; 235, tarsus I, dorsal view; 236, tarsus IV, ventral view.



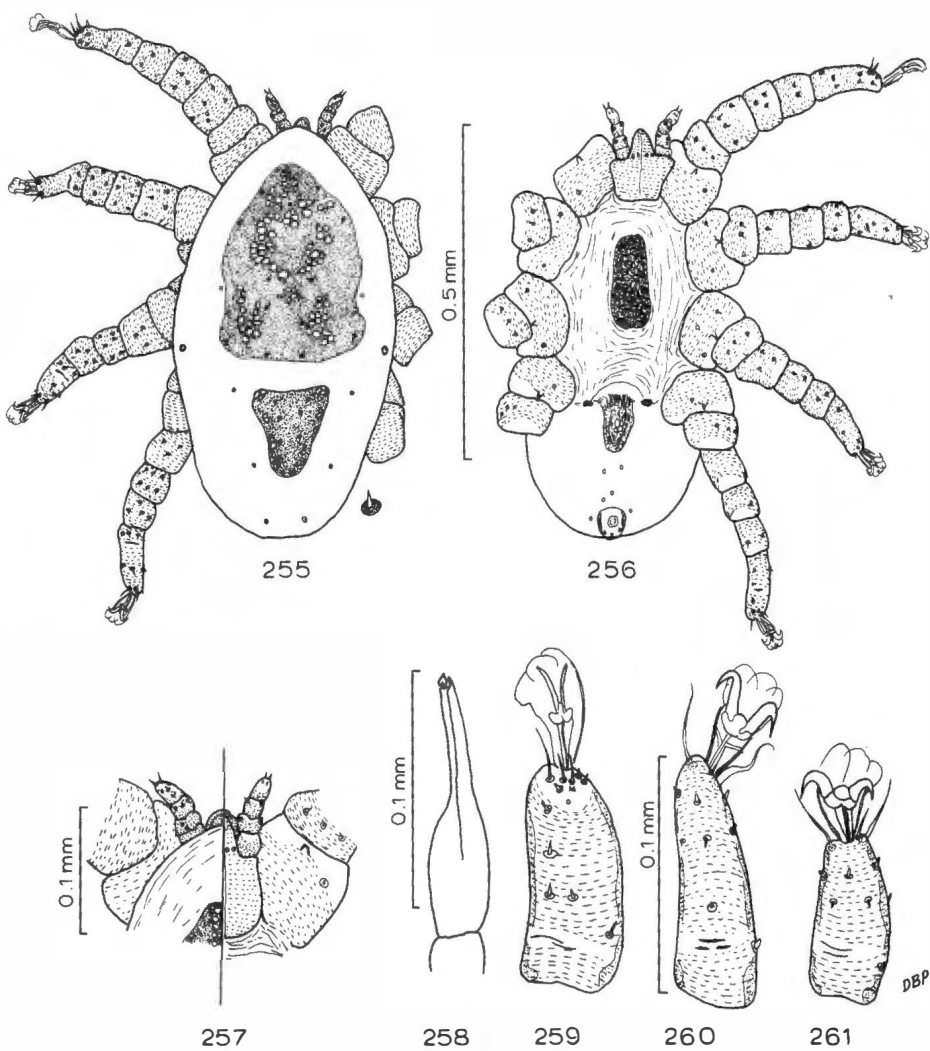
FIGS. 237-242.—*Sternostoma loxiae* Fain: 237, female dorsum; 238, female venter; 239, gnathosoma, dorsal and ventral views, respectively; 240, female chelicera; 241, tarsus I, dorsal view; 242, tarsus IV, ventral view.



FIGS. 243-248.—*Sternostoma hirundinis* Fain: 243, female dorsum; 244, female venter; 245, gnathosoma, dorsal and ventral views, respectively; 246, female chelicera; 247, tarsus I, dorsal view; 248, tarsus IV, ventral view.

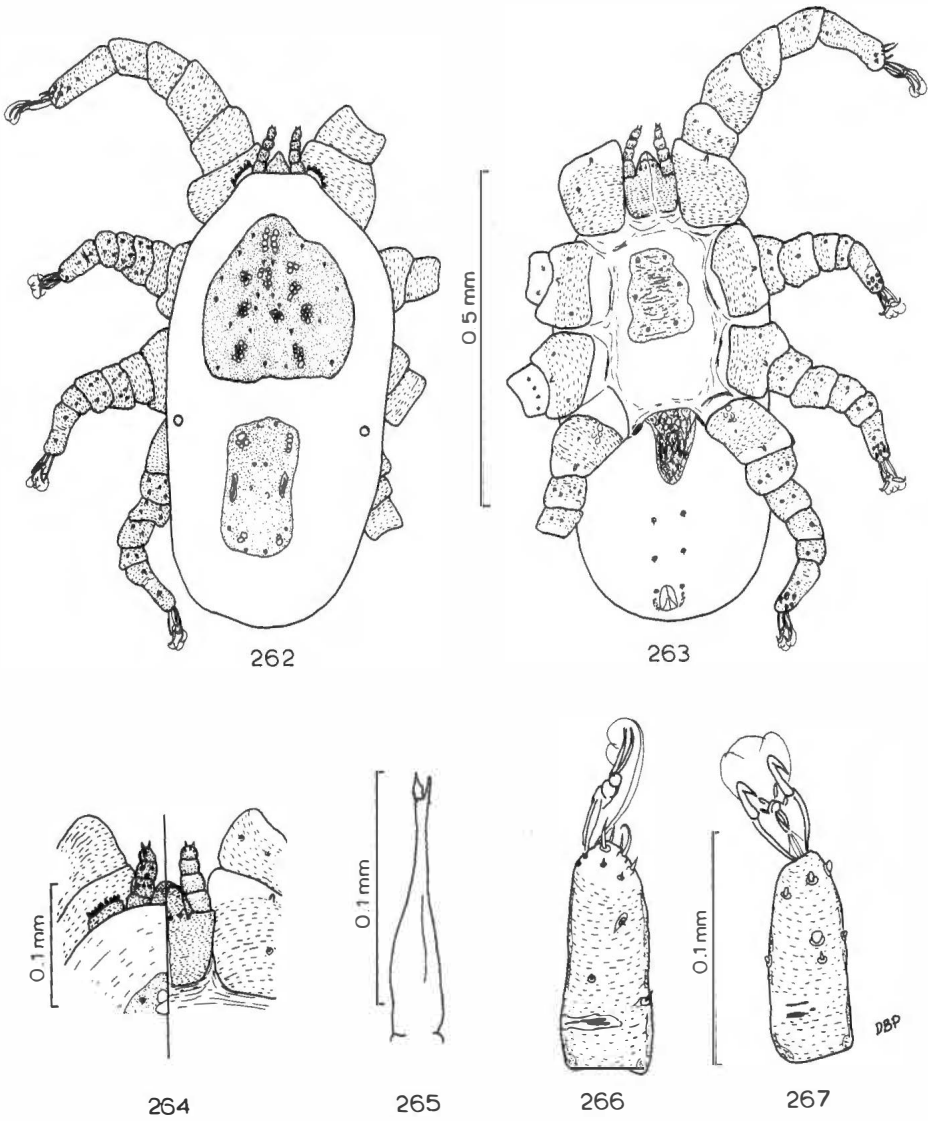


FIGS. 249-254.—*Sternostoma sialiphilus* Hyland: 249, female dorsum; 250, female venter; 251, gnathosoma, dorsal and ventral views, respectively; 252, female chelicera; 253, tarsus I, dorsal view; 254, tarsus IV, ventral view.

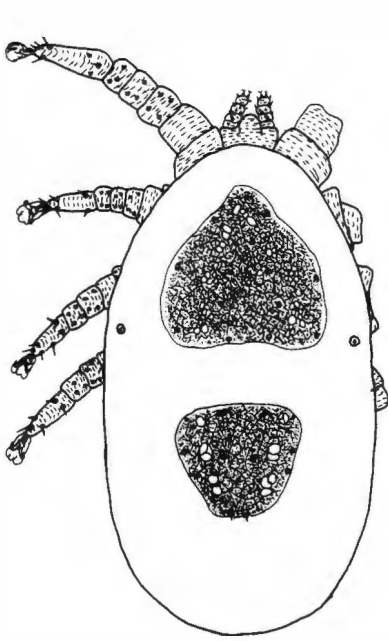


FIGS. 255-260.—*Sternostoma porteri* Hyland: 255, female dorsum; 256, female venter; 257, gnathosoma, dorsal and ventral views, respectively; 258, female chelicera; 259, tarsus I, dorsal view; 260, tarsus IV, ventral view.

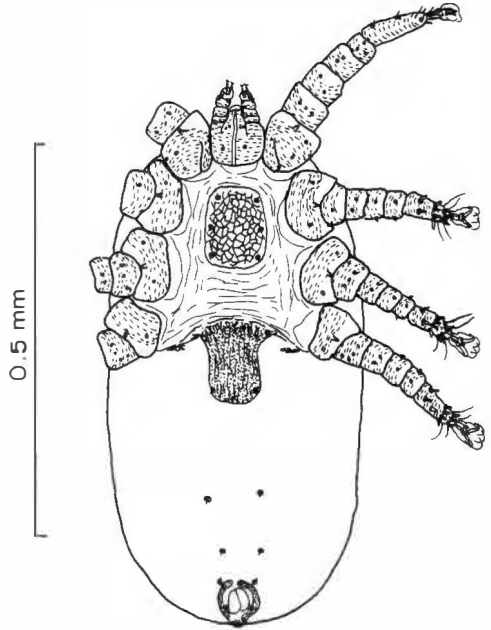
FIG. 261.—*Sternostoma hylandi* Fain and Johnston, tarsus IV.



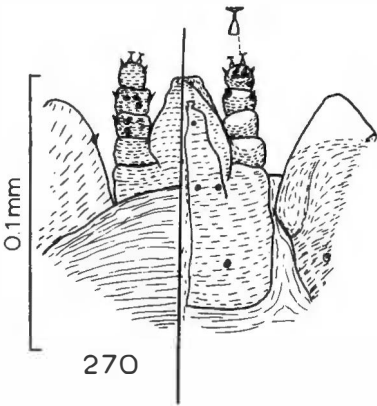
FIGS. 262-267.—*Sternostoma kelloggi* Hyland: 262, female dorsum; 263, female venter; 264, gnathosoma, dorsal and ventral views, respectively; 265, female chelicera; 266, tarsus I, dorsal view; 267, tarsus IV, ventral view.



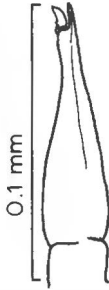
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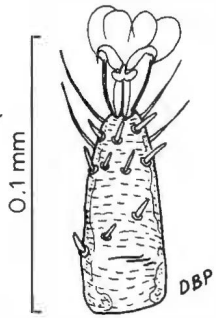
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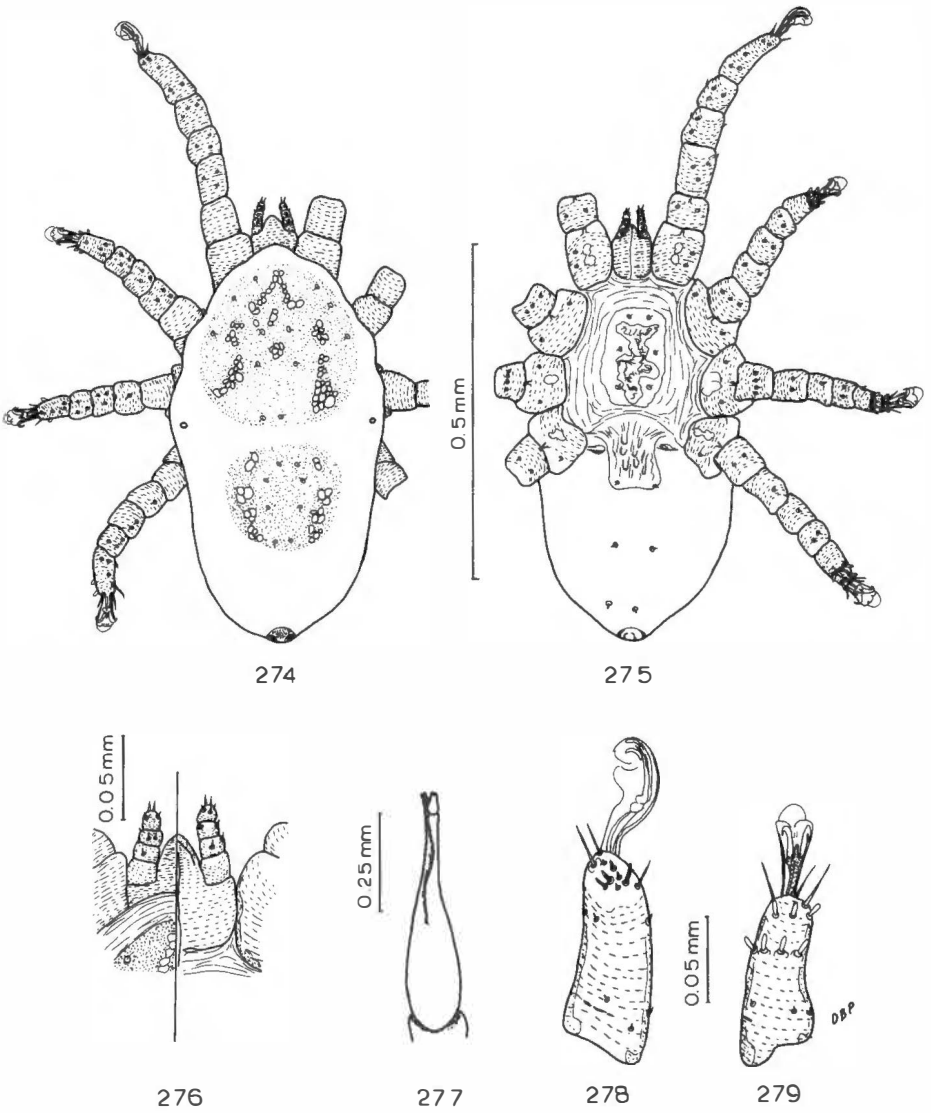


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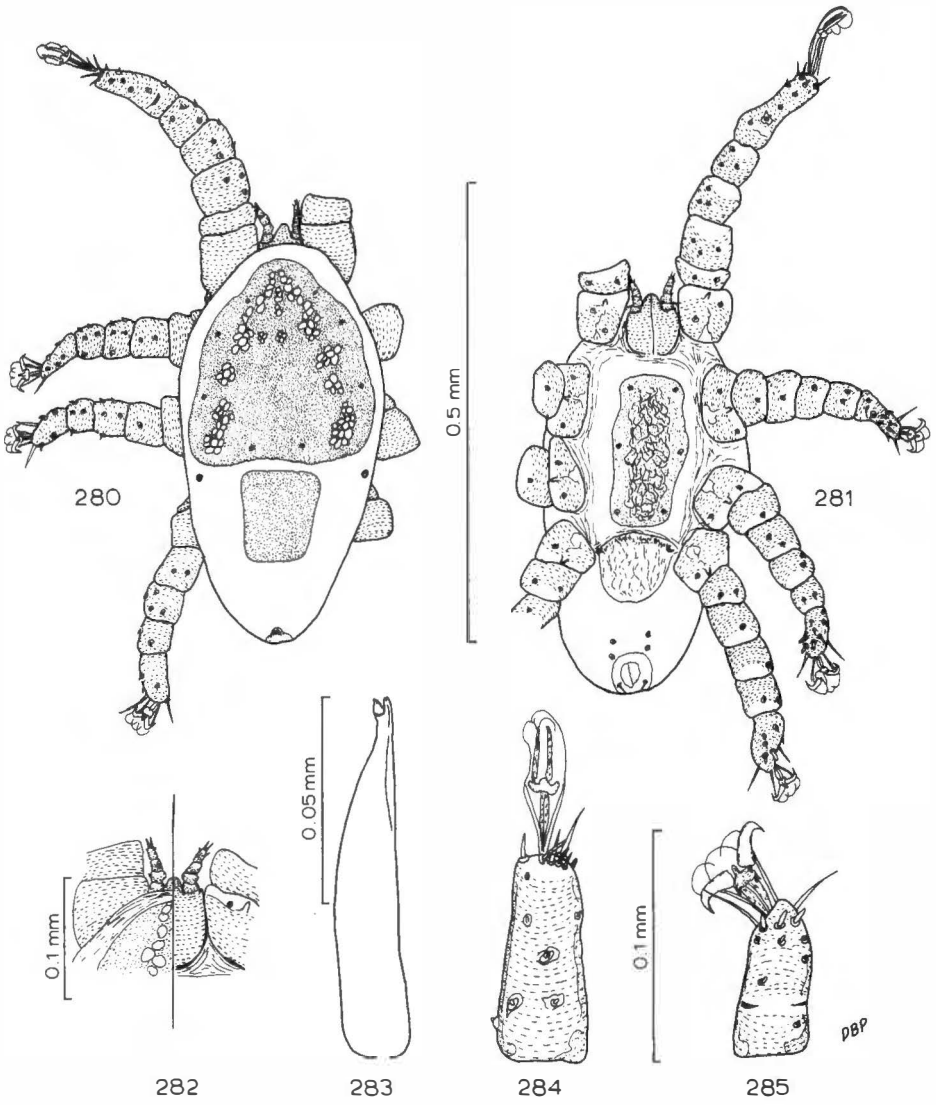


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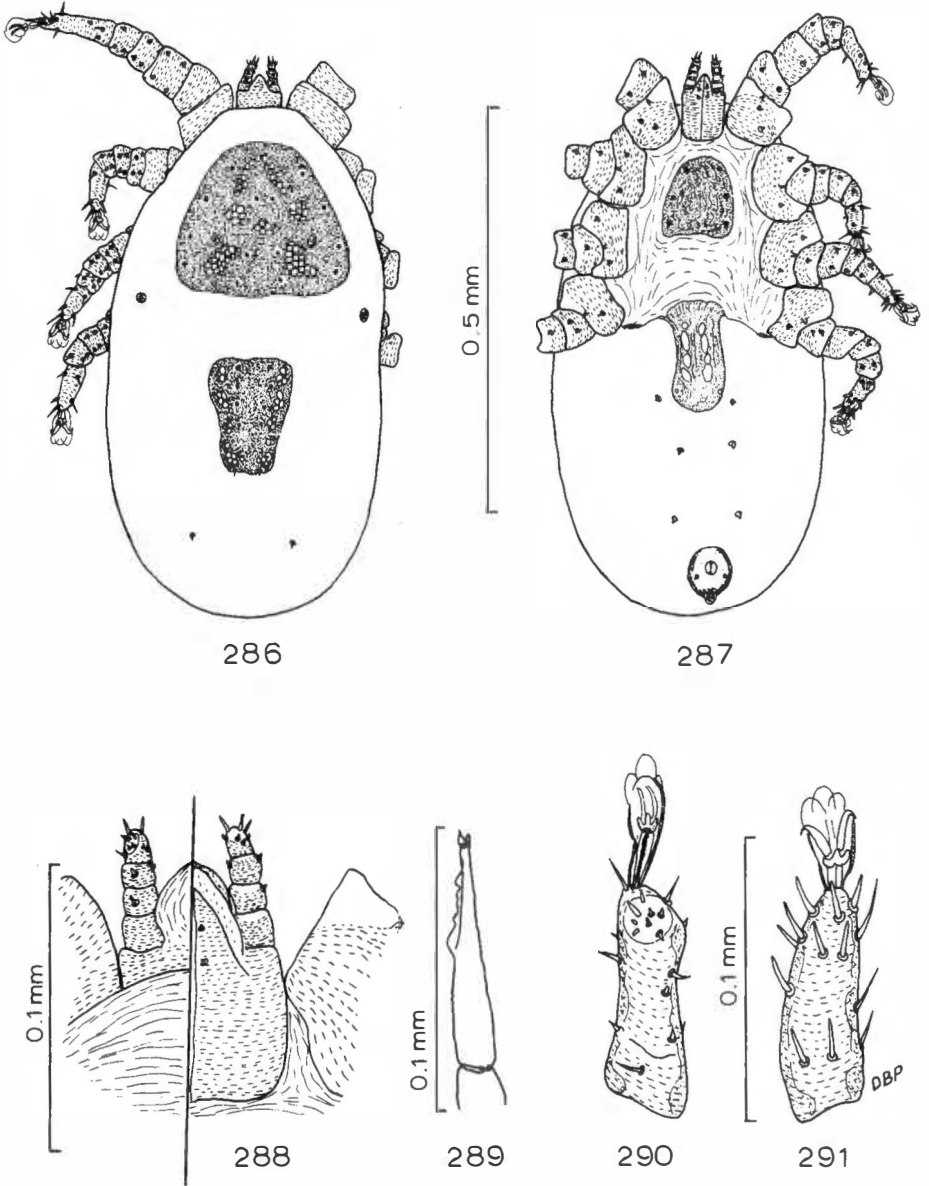
FIGS. 268-273.—*Sternostoma longisetosae* Hyland: 268, female dorsum; 269, female venter; 270, gnathosoma, dorsal and ventral views, respectively; 271, female chelicera; 272, tarsus I, dorsal view; 273, tarsus IV, ventral view.



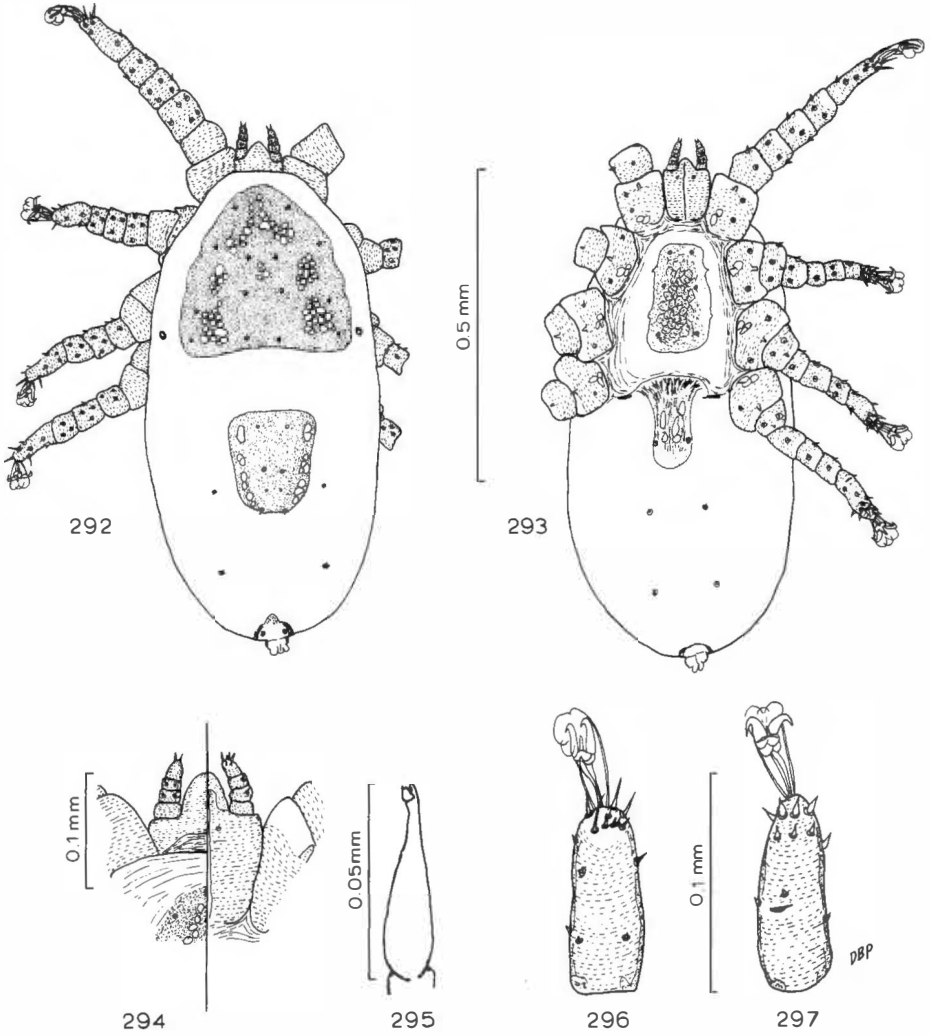
FIGS. 274-279.—*Sternostoma pirangae* Pence: 274, female dorsum; 275, female venter; 276, gnathosoma, dorsal and ventral views, respectively; 277, female chelicera; 278, tarsus I, dorsal view; 279, tarsus IV, ventral view.



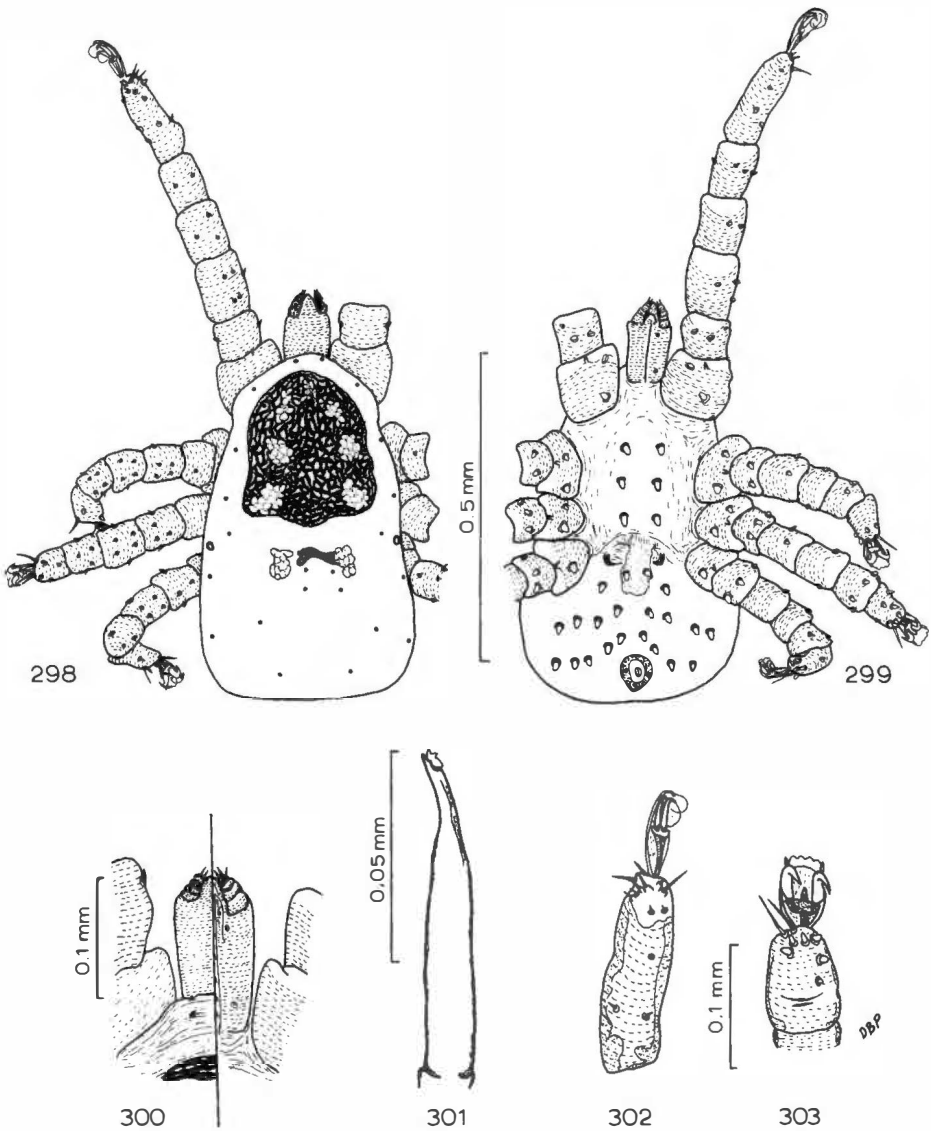
FIGS. 280-285.—*Sternostoma boydi* Strandmann: 280, female dorsum; 281, female venter; 282, gnathosoma, dorsal and ventral views, respectively; 283, female chelicera; 284, tarsus I, dorsal view; 285, tarsus IV, ventral view.



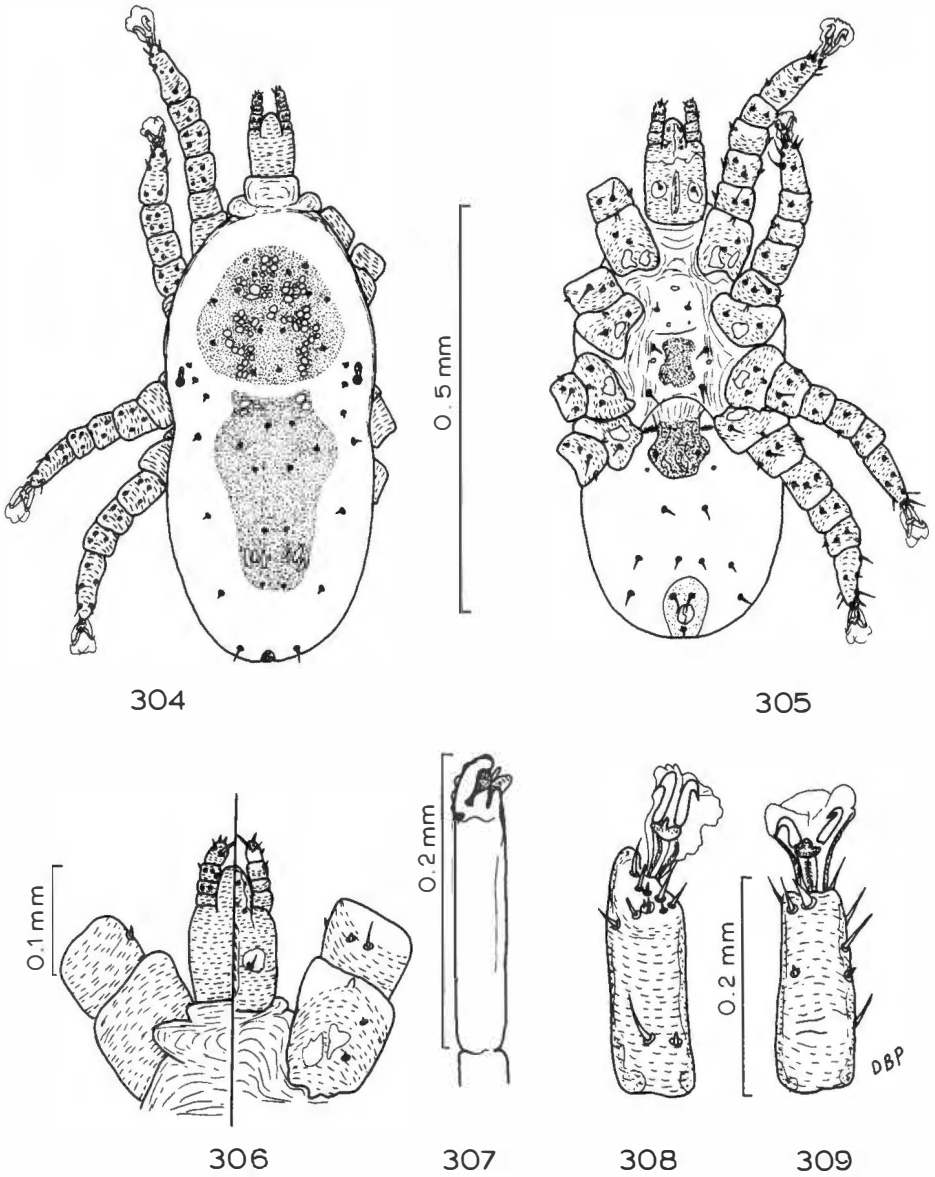
FIGS. 286-291.—*Sternostoma tyrannus* Brooks and Strandtmann: 286, female dorsum; 287, female venter; 288, gnathosoma, dorsal and ventral views, respectively; 289, female chelicera; 290, tarsus I, dorsal view; 291, tarsus IV, ventral view.



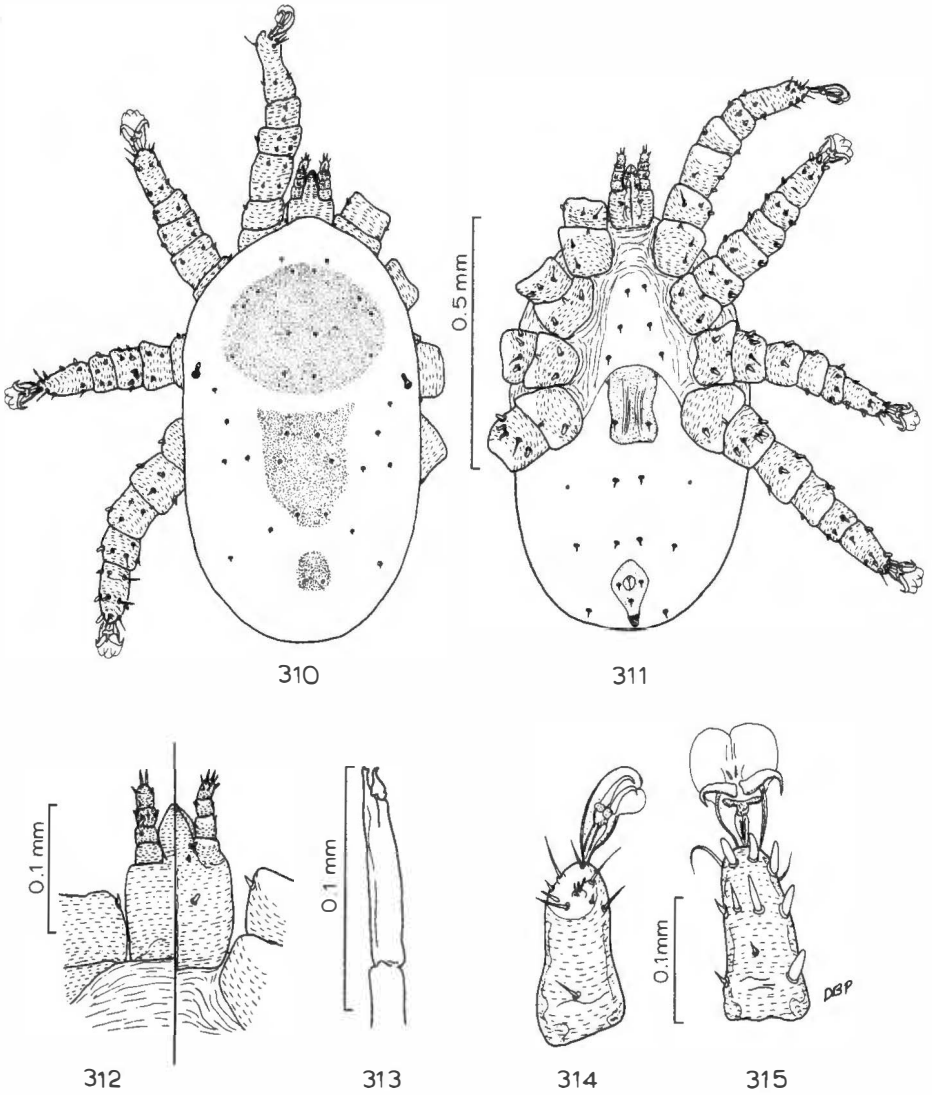
FIGS. 292-297.—*Sternostoma lanorium* Fain: 292, female dorsum; 293, female venter; 294, gnathosoma, dorsal and ventral views, respectively; 295, female chelicera; 296, tarsus I, dorsal view; 297, tarsus IV, ventral view.



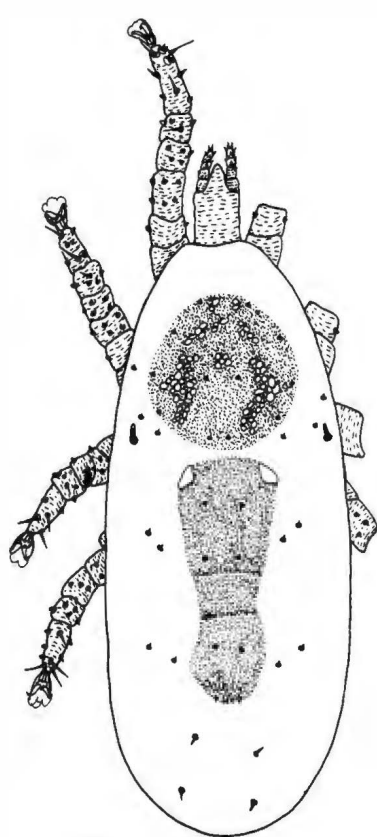
FIGS. 298-303.—*Ptilonyssus angrensis* Castro: 298, female dorsum; 299, female venter; 300, gnathosoma, dorsal and ventral views, respectively; 301, female chelicera; 302, tarsus I, dorsal view; 303, tarsus IV, ventral view.



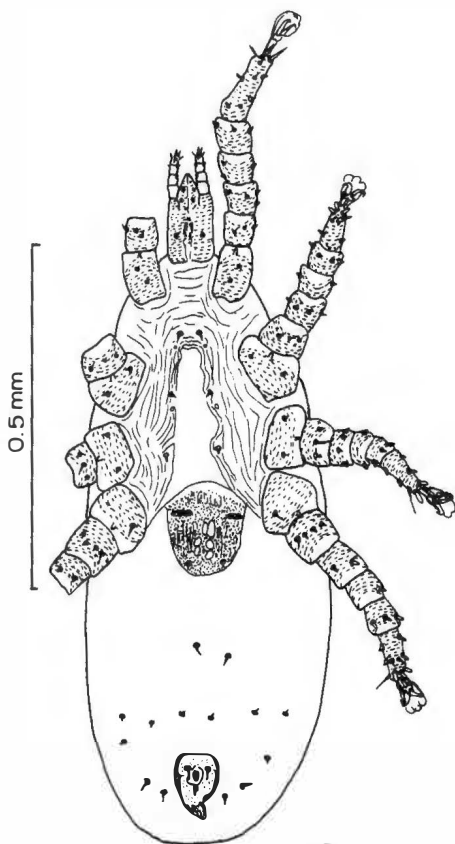
FIGS. 304-309.—*Ptilonyssus fluvicolae* Hyland and Moorehouse: 304, female dorsum; 305, female venter; 306, gnathosoma, dorsal and ventral views, respectively; 307, female chelicera; 308, tarsus I, dorsal view; 309, tarsus IV, ventral view.



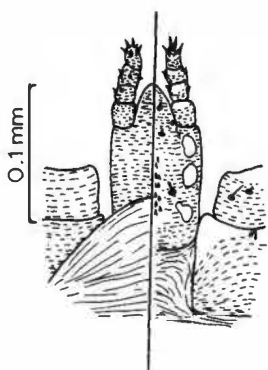
FIGS. 310-315.—*Ptilonyssus spinosus* Brooks and Strandtmann: 310, female dorsum; 311, female venter; 312, gnathosoma, dorsal and ventral views, respectively; 313, female chelicera; 314, tarsus I, dorsal view; 315, tarsus IV, ventral view.



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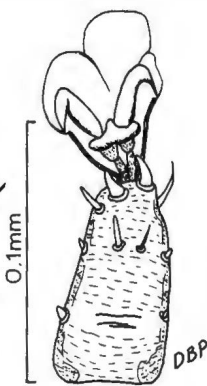
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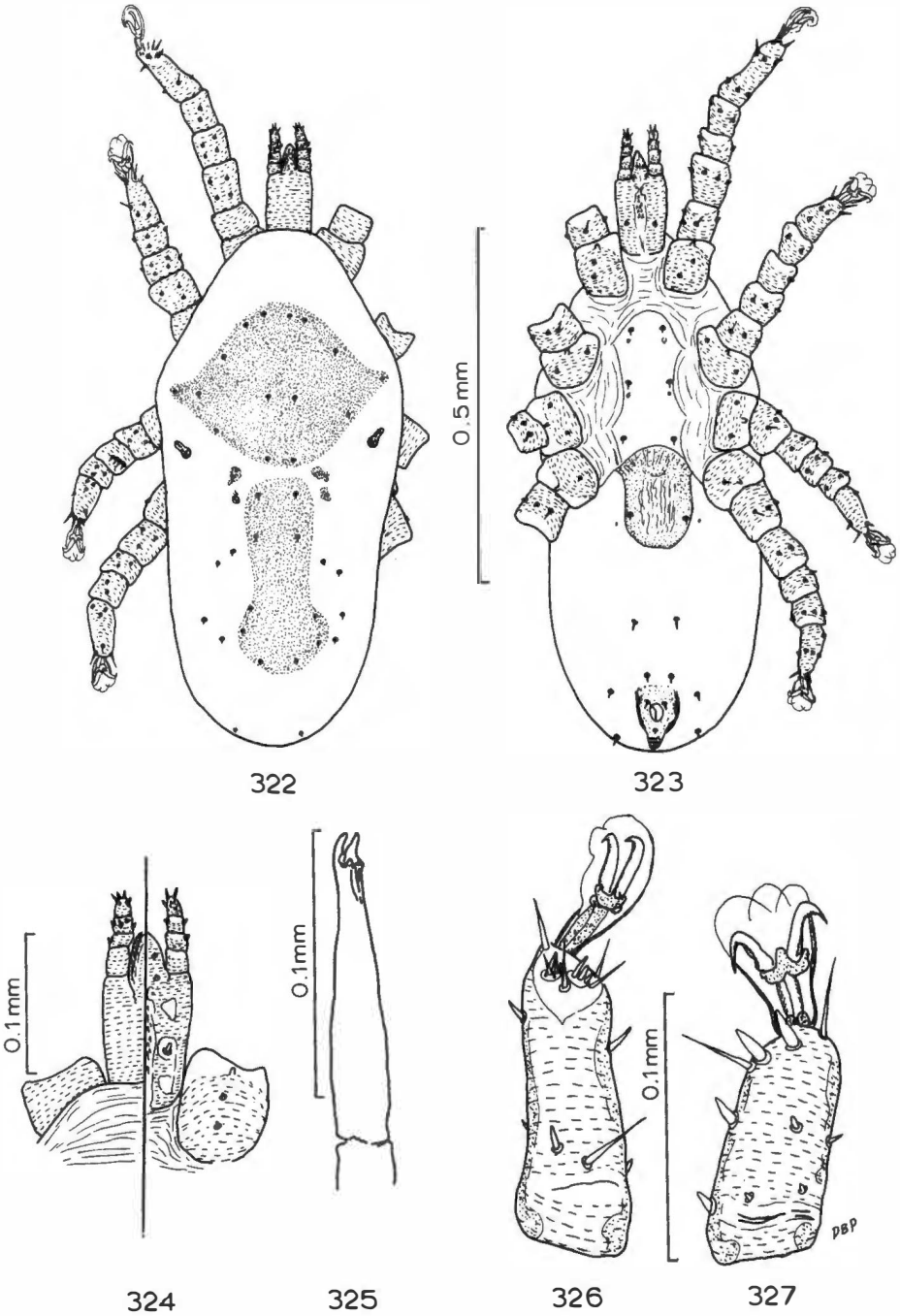


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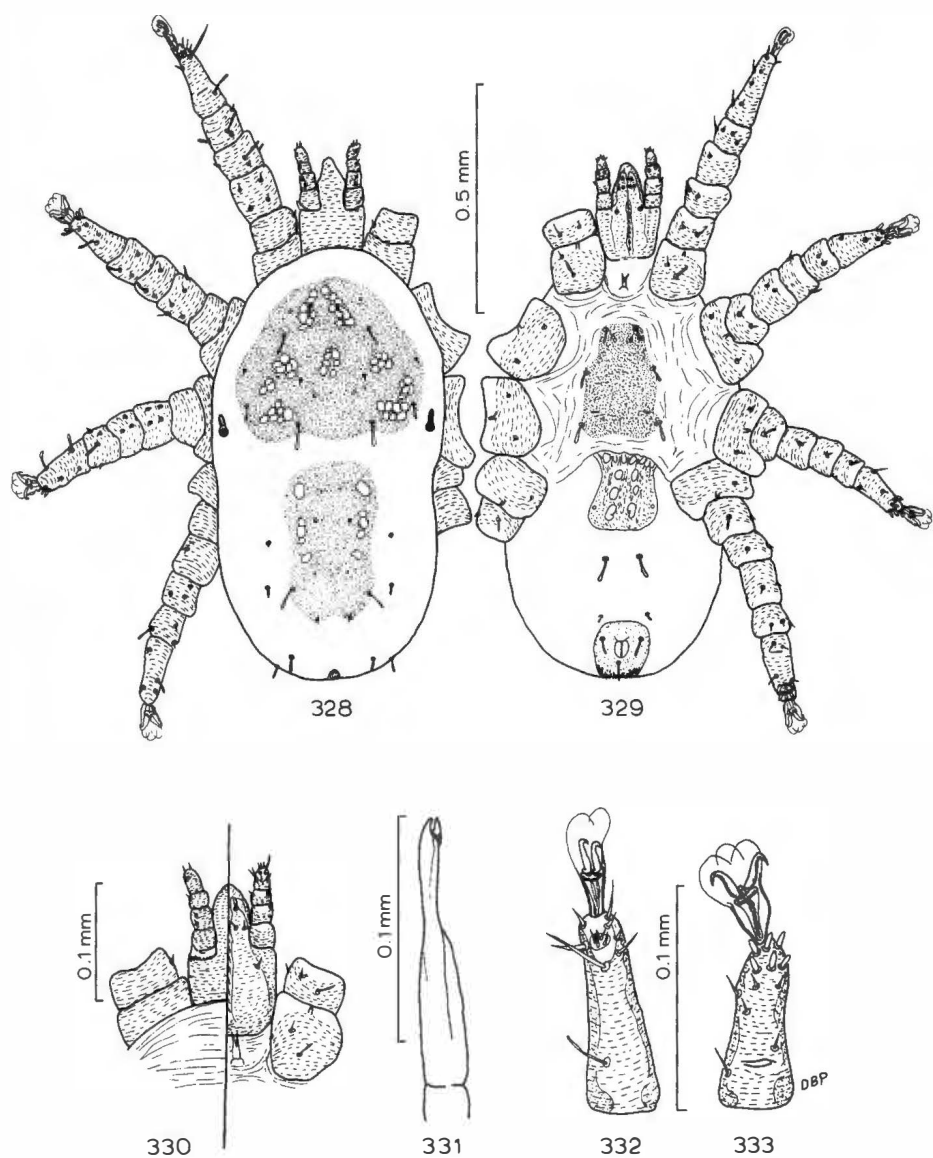


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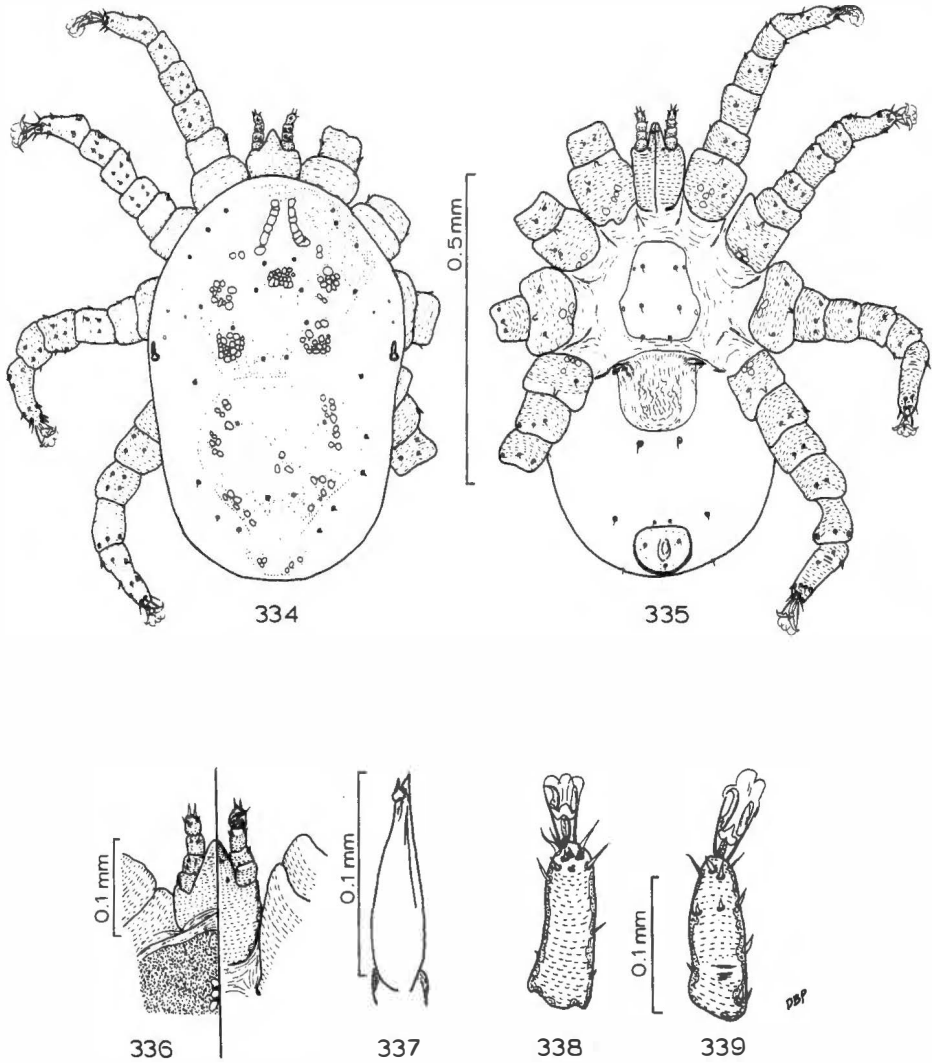
FIGS. 316-321.—*Ptilonyssus tyrannus* Brooks and Strandtmann: 316, female dorsum; 317, female venter; 318, gnathosoma, dorsal and ventral views, respectively; 319, female chelicera; 320, tarsus I, dorsal view; 321, tarsus IV, ventral view.



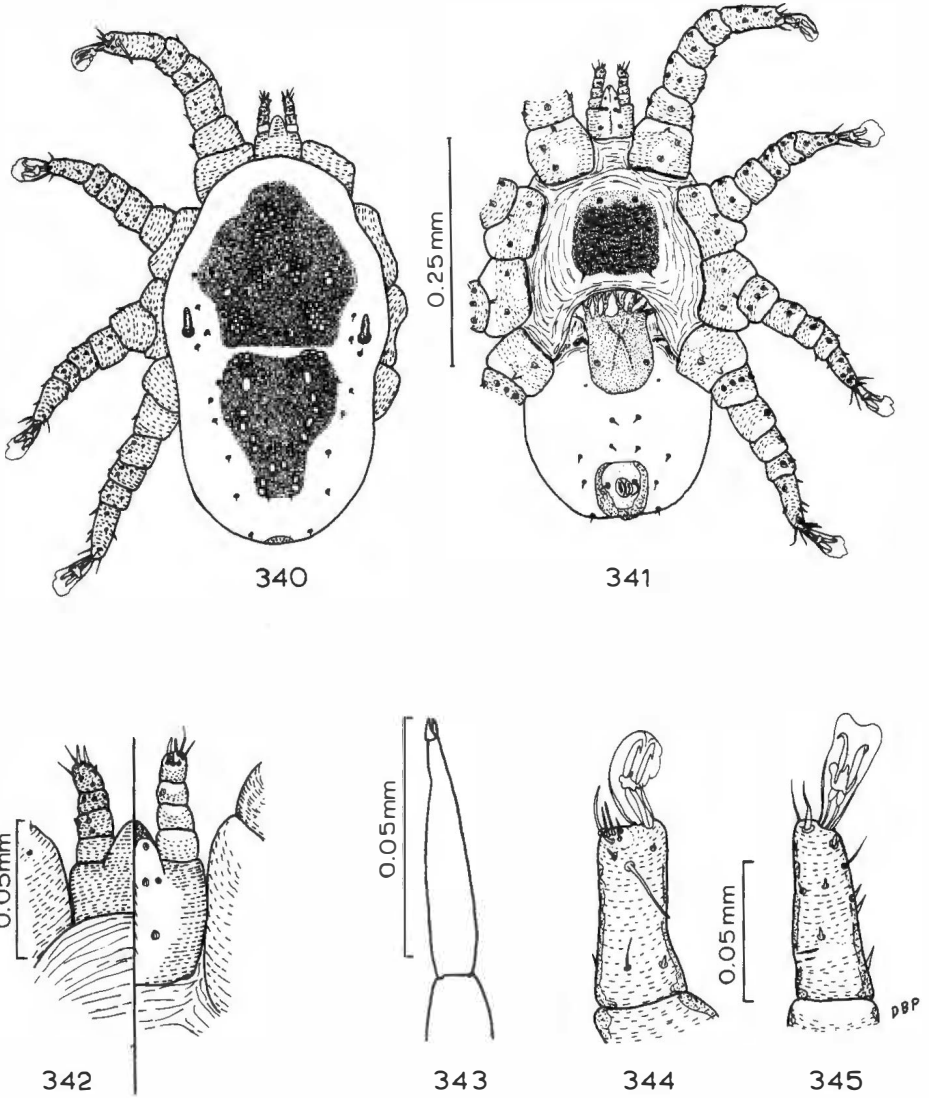
FIGS. 322-327.—*Ptilonyssus callinectoides* Brooks and Strandtmann: 322, female dorsum; 323, female venter; 324, gnathosoma, dorsal and ventral views, respectively; 325, female chelicera; 326, tarsus I, dorsal view; 327, tarsus IV, ventral view.



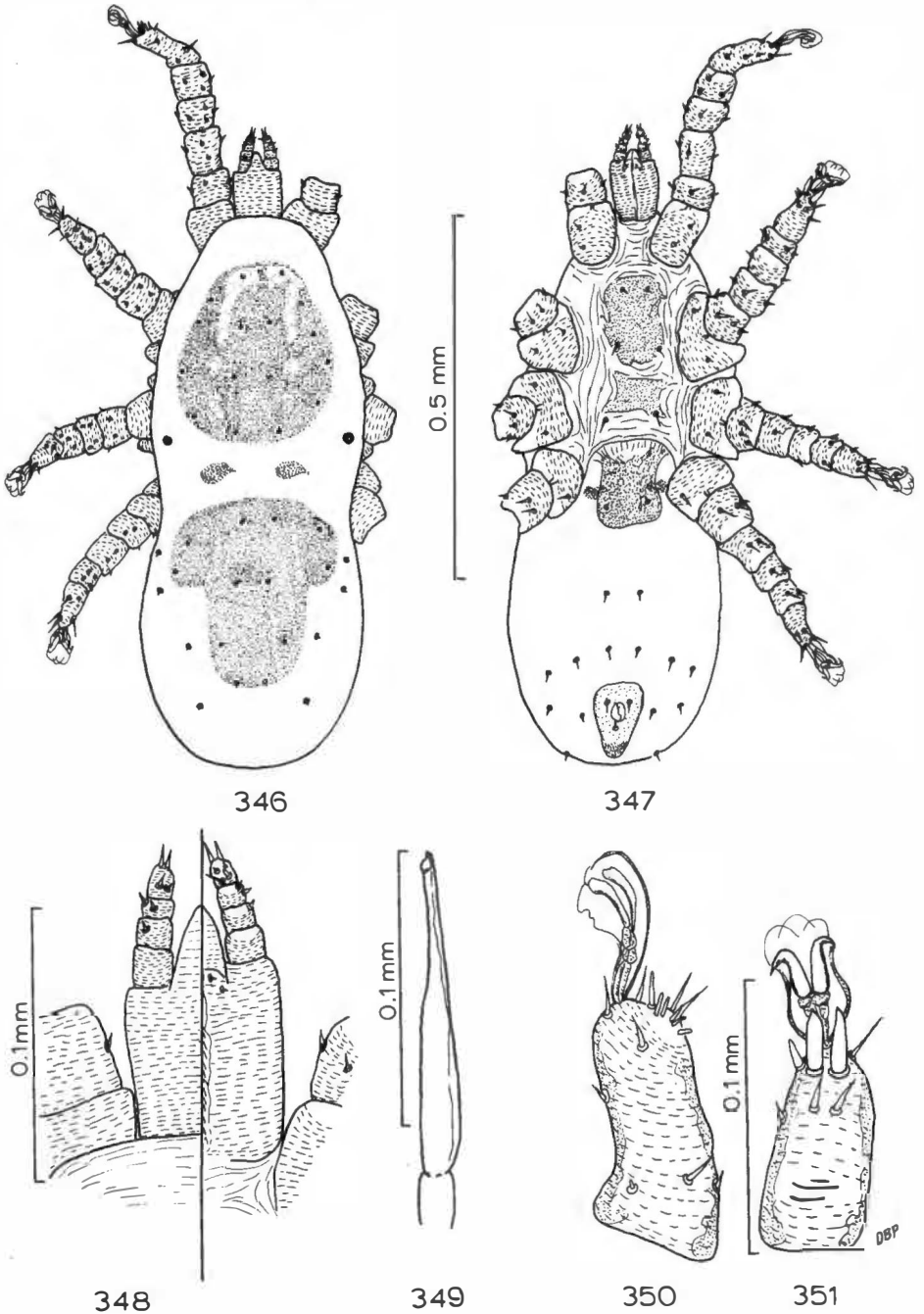
FIGS. 328-333.—*Ptilonyssus capitatus* Strandmann: 328, female dorsum; 329, female venter; 330, gnathosoma, dorsal and ventral views, respectively; 331, female chelicera; 332, tarsus I, dorsal view; 333, tarsus IV, ventral view.



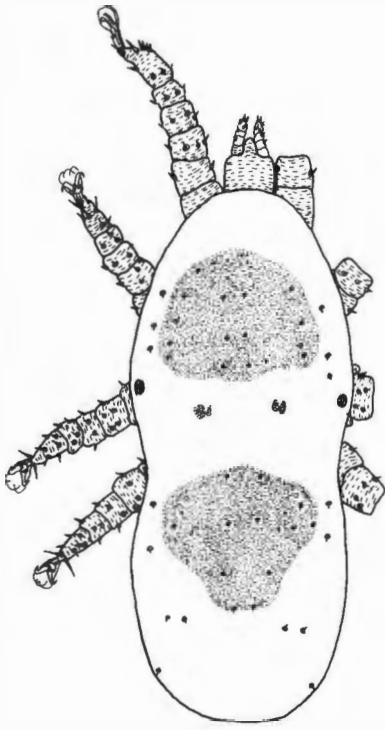
FIGS. 334-339.—*Prilonyssus corvi* Pence: 334, female dorsum; 335, female venter; 336, gnathosoma, dorsal and ventral views, respectively; 337, female chelicera; 338, tarsus I, dorsal view; 339, tarsus IV, ventral view.



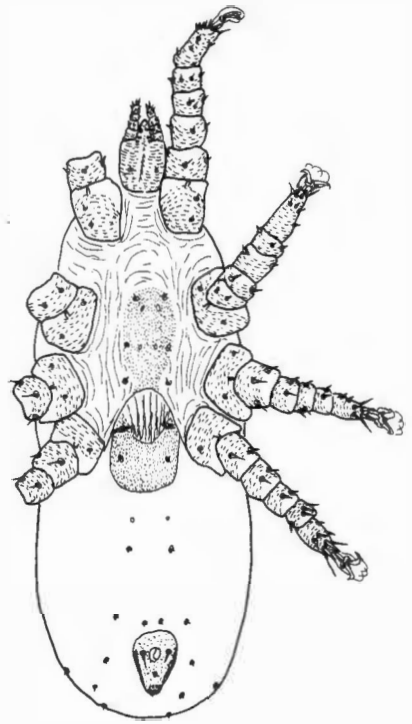
FIGS. 340-345.—*Ptilonyssus morofskyi* Hyland: 340, female dorsum; 341, female venter; 342, gnathosoma, dorsal and ventral views, respectively; 343, female chelicera; 344, tarsus I, dorsal view; 345, tarsus IV, ventral view.



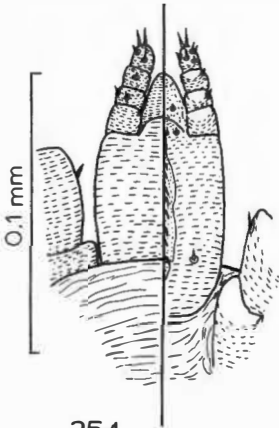
FIGS. 346-351.—*Ptilonyssus vireonis* Dusbábek: 346, female dorsum; 347, female venter; 348, gnathosoma, dorsal and ventral views, respectively; 349, female chelicera; 350, tarsus I, dorsal view; 351, tarsus IV, ventral view.



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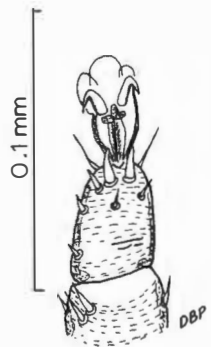
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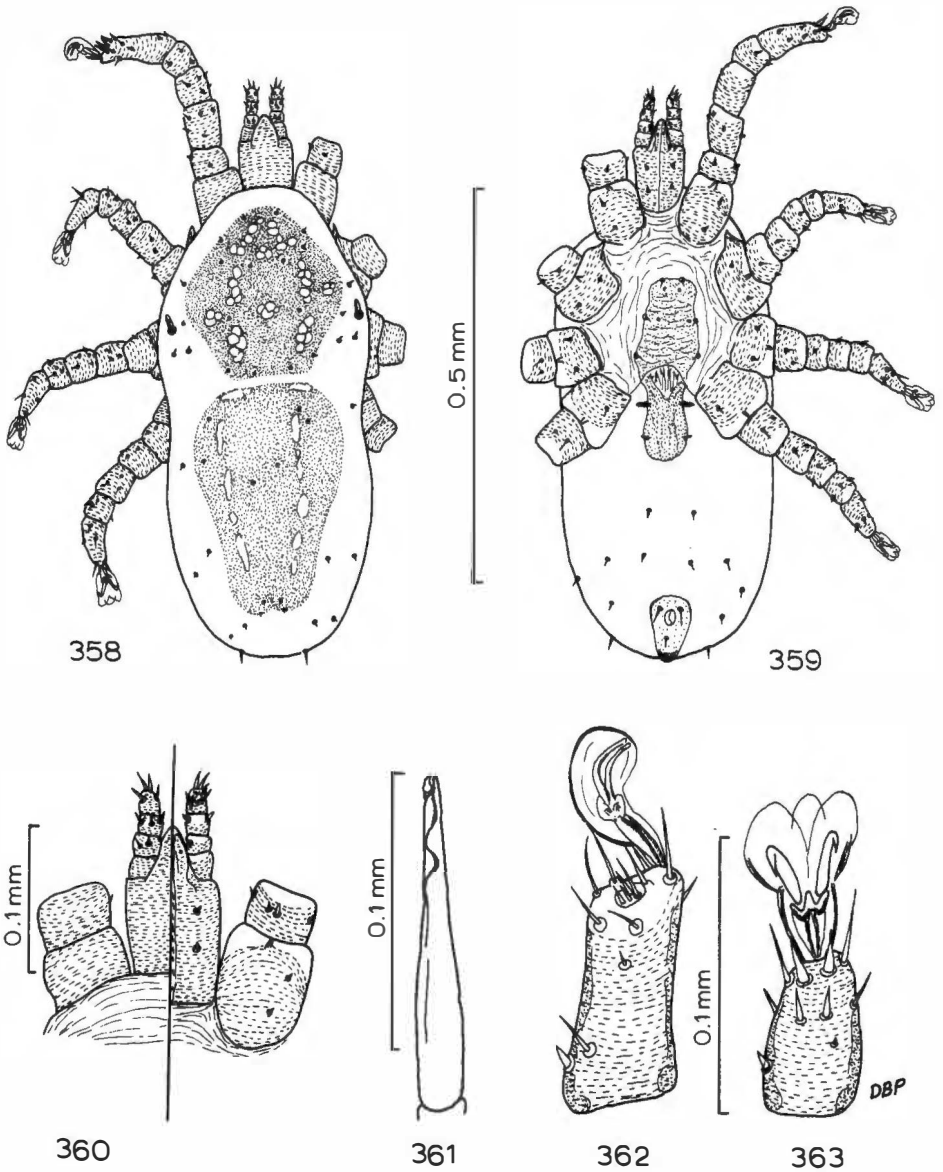


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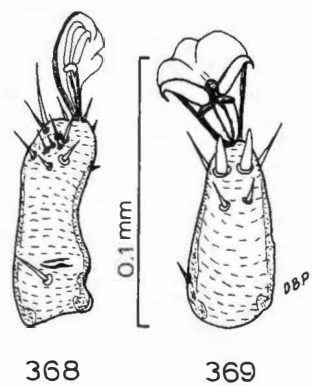
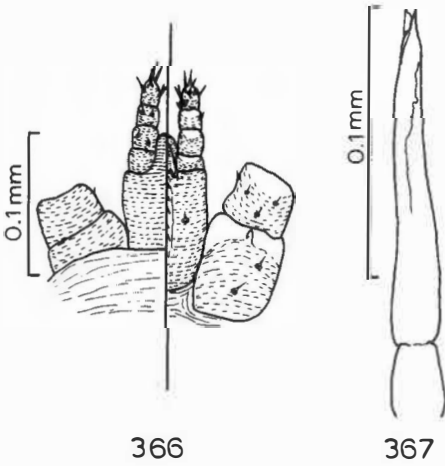
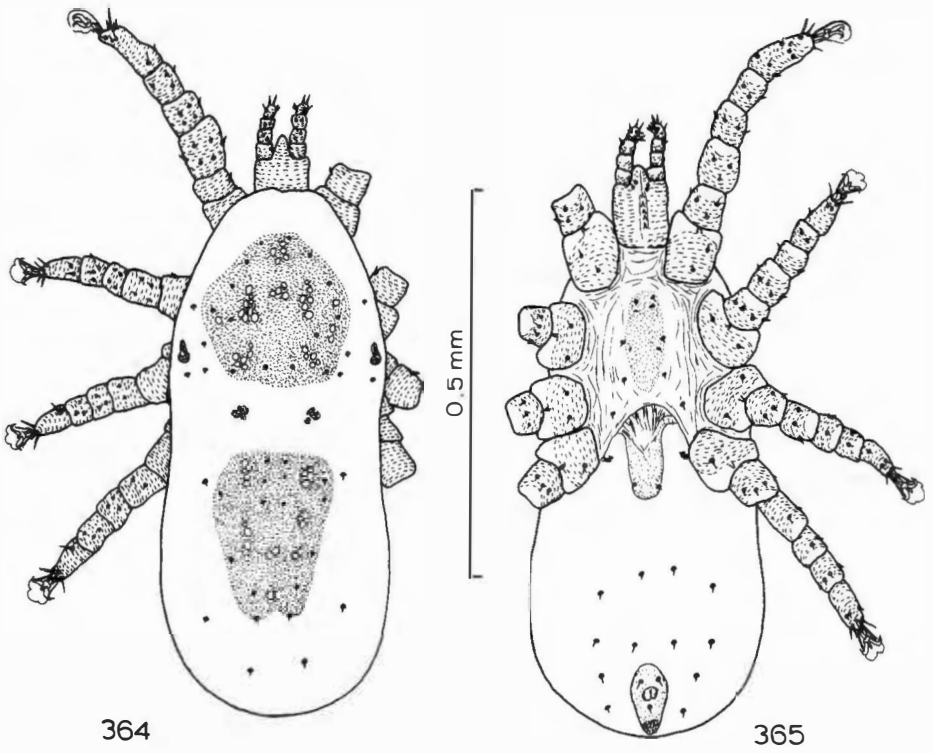


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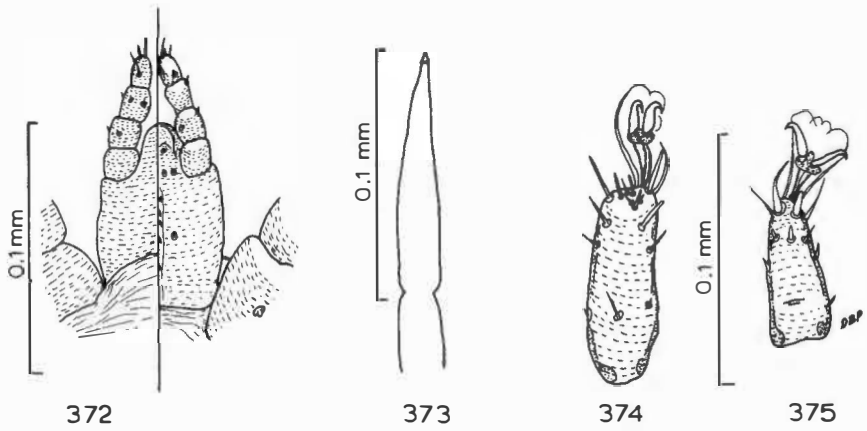
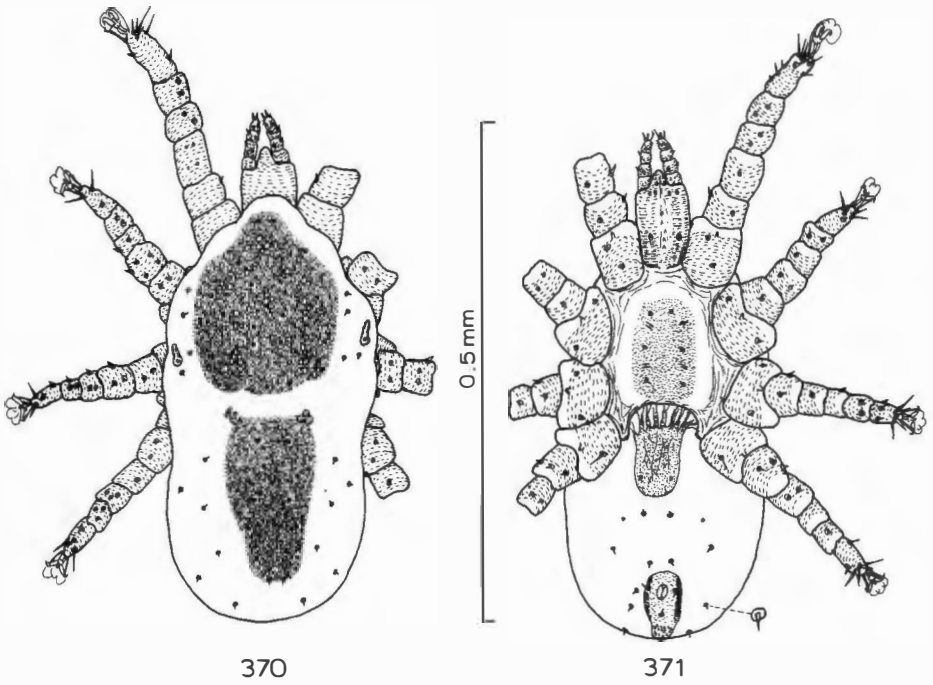
FIGS. 352-357.—*Ptilonyssus hoseini* Fain and Aitken: 352, female dorsum; 353, female venter; 354, gnathosoma, dorsal and ventral views, respectively; 355, female chelicera; 356, tarsus I, dorsal view; 357, tarsus IV, ventral view.



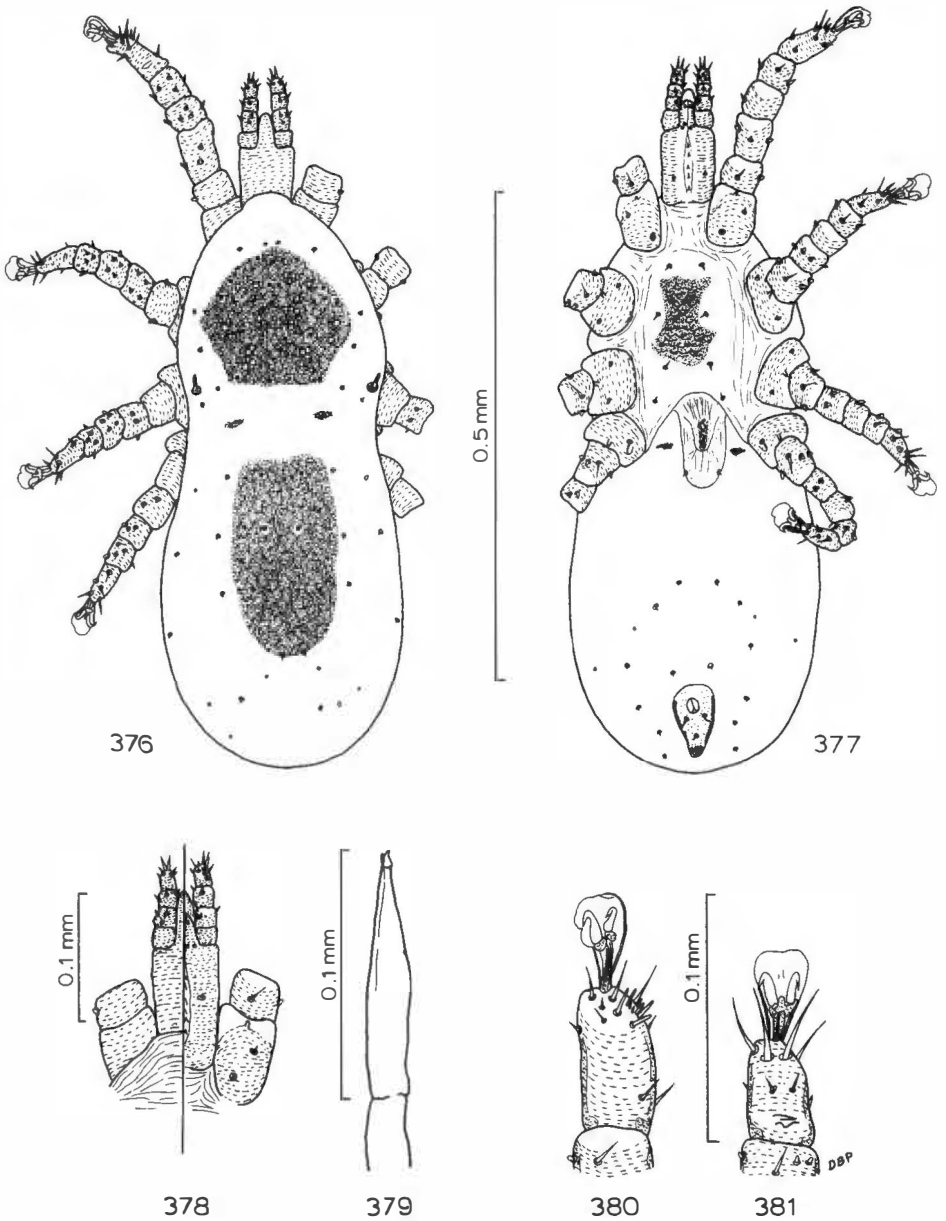
FIGS. 358-363.—*Ptilonyssus pirangae* Dusbábek: 358, female dorsum; 359, female venter; 360, gnathosoma, dorsal and ventral views, respectively; 361, female chelicera; 362, tarsus I, dorsal view; 363, tarsus IV, ventral view.



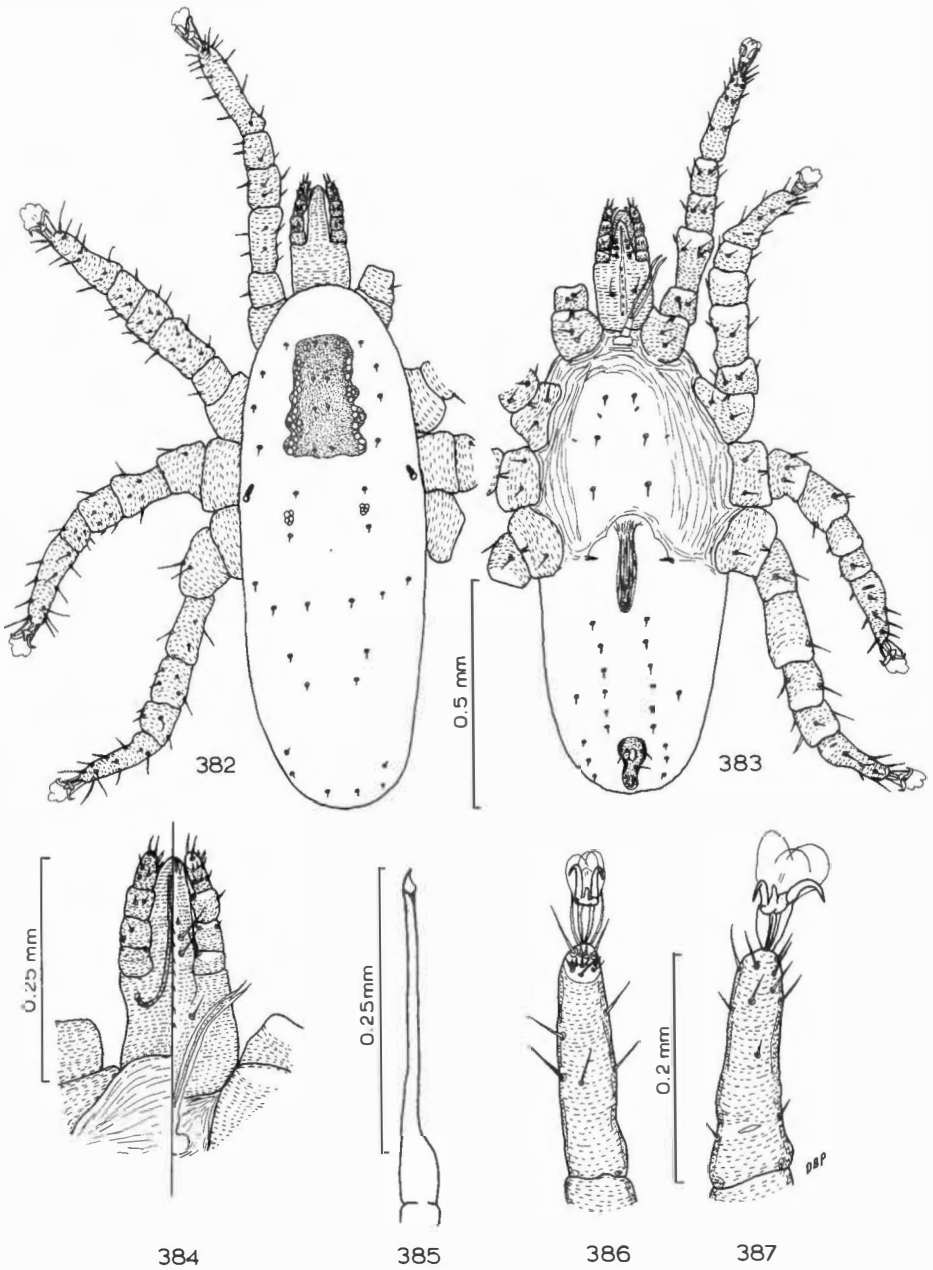
FIGS. 364-369.—*Ptilonyssus icteridius* Strandmann: 364, female dorsum; 365, female venter; 366, gnathosoma, dorsal and ventral views, respectively; 367, female chelicera; 368, tarsus I, dorsal view; 369, tarsus IV, ventral view.



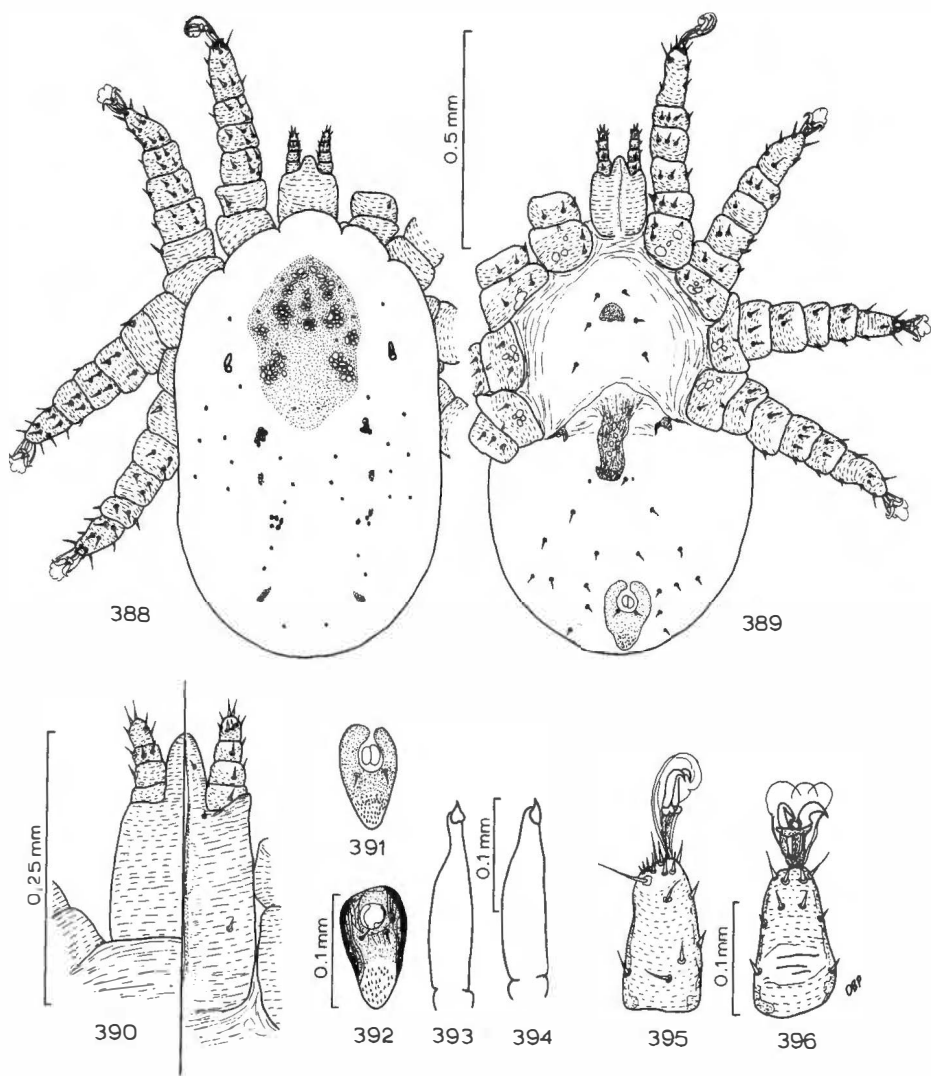
FIGS. 370-375.—*Ptilonyssus pari* Fain and Hyland: 370, female dorsum; 371, female venter; 372, gnathosoma, dorsal and ventral views, respectively; 373, female chelicera; 374, tarsus I, dorsal view; 375, tarsus IV, ventral view.



FIGS. 376-381.—*Ptilonyssus hirsti* Castro: 376, female dorsum; 377, female venter; 378, gnathosoma, dorsal and ventral views, respectively; 379, female chelicera; 380, tarsus I, dorsal view; 381, tarsus IV, ventral view.

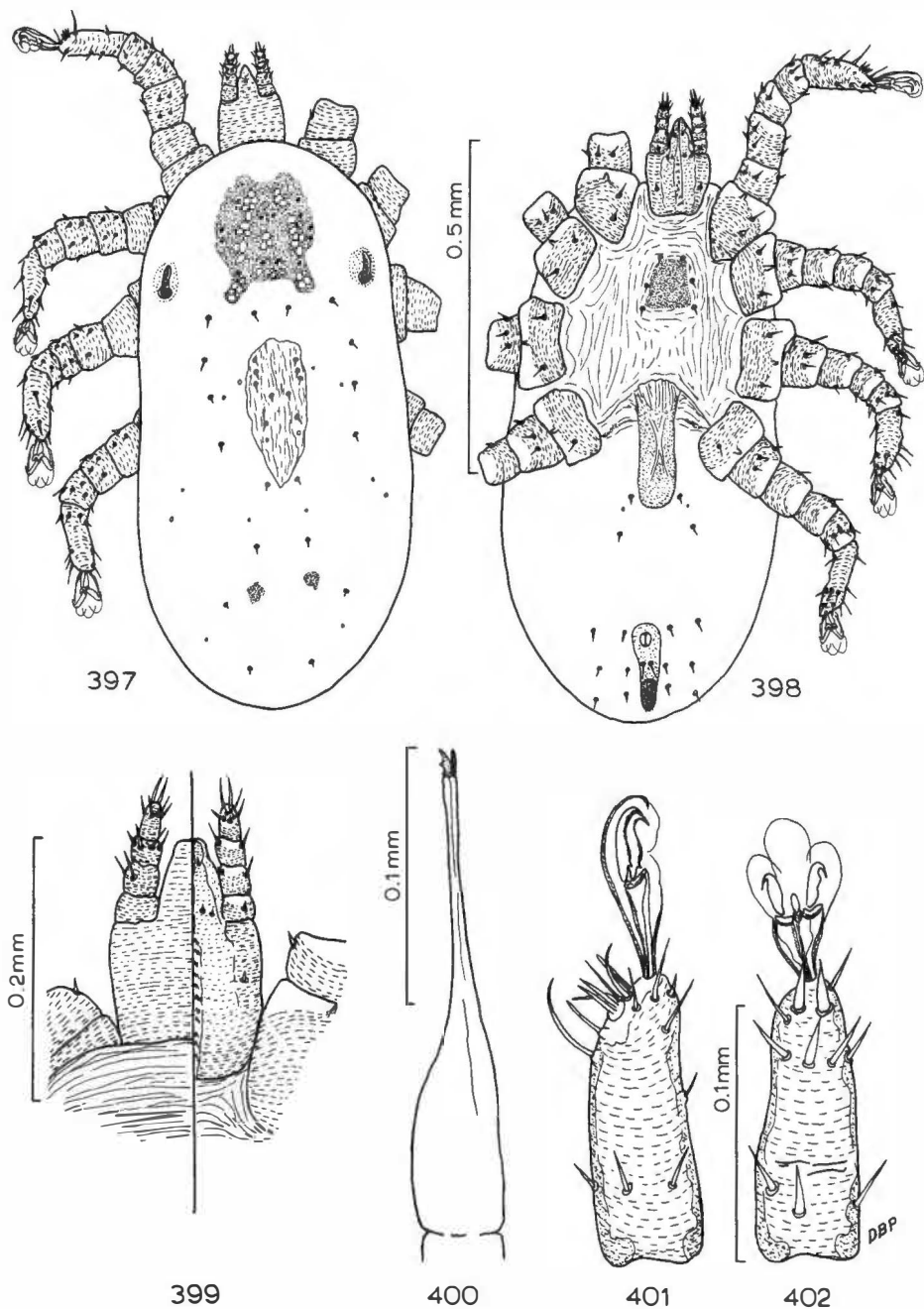


FIGS. 382-387.—*Ptilonyssus nitzschi* Giebel: 382, female dorsum; 383, female venter; 384, gnathosoma, dorsal and ventral views, respectively; 385, female chelicera; 386, tarsus I, dorsal view; 387, tarsus IV, ventral view.

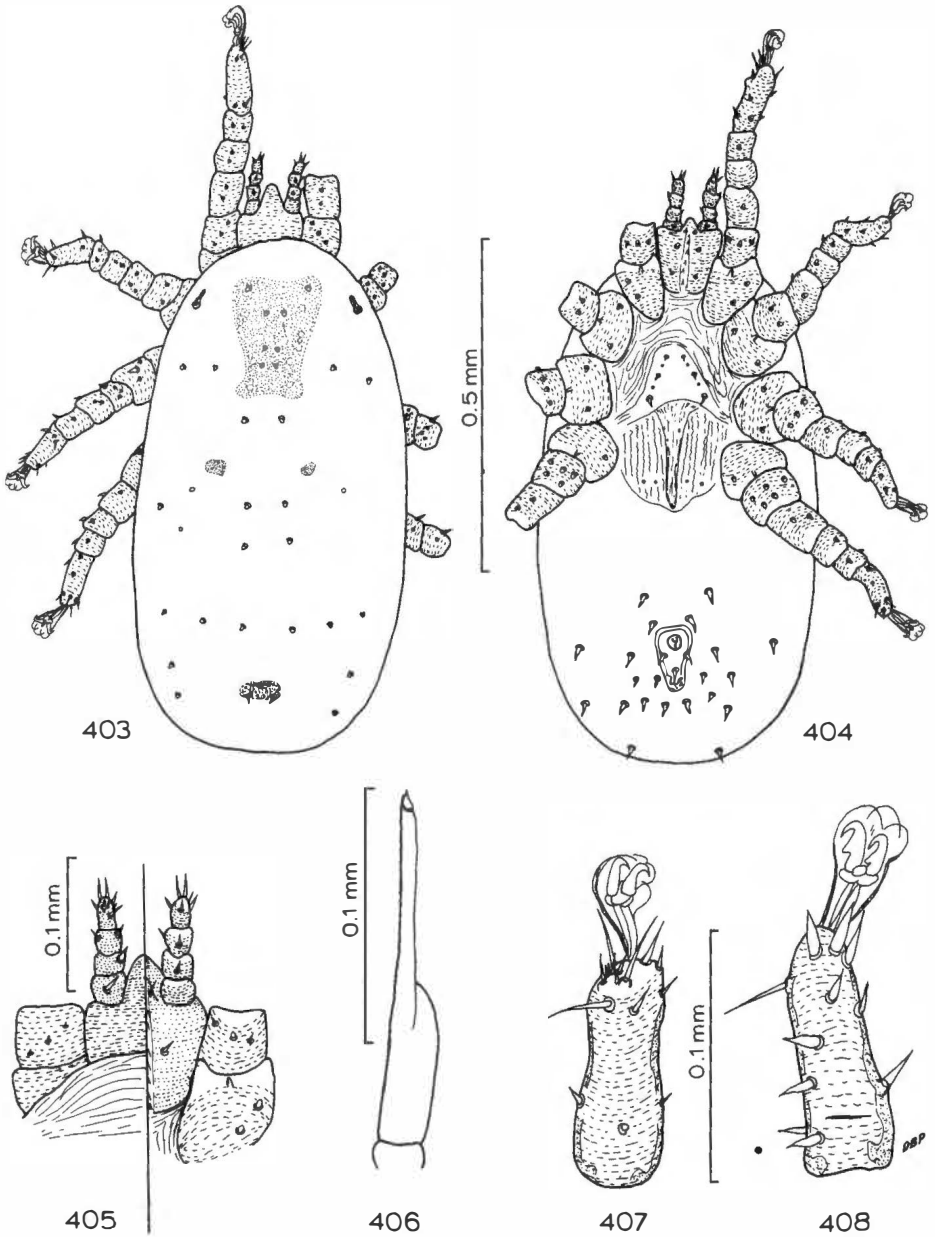


FIGS. 388-391, 393, 395, 396.—*Ptilonyssus ohioensis* Fain and Johnston: 388, female dorsum; 389, female venter; 390, gnathosoma, dorsal and ventral views, respectively; 391, female anal plate; 393, female chelicera; 395, tarsus I, dorsal view; 396, tarsus IV, ventral view.

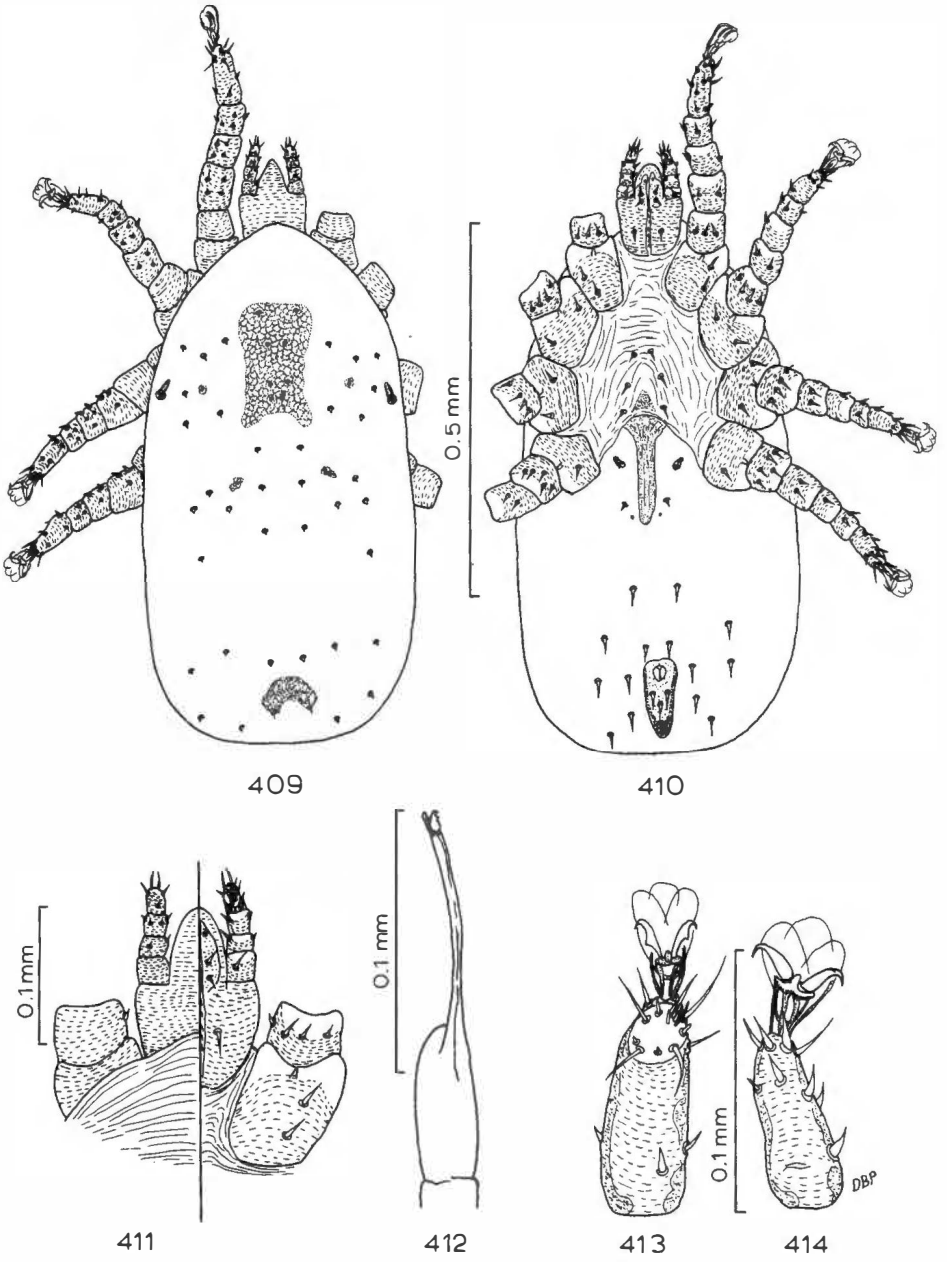
FIGS. 392, 394.—*Ptilonyssus donatoi* Castro: 392, female anal plate; 394, female chelicera.



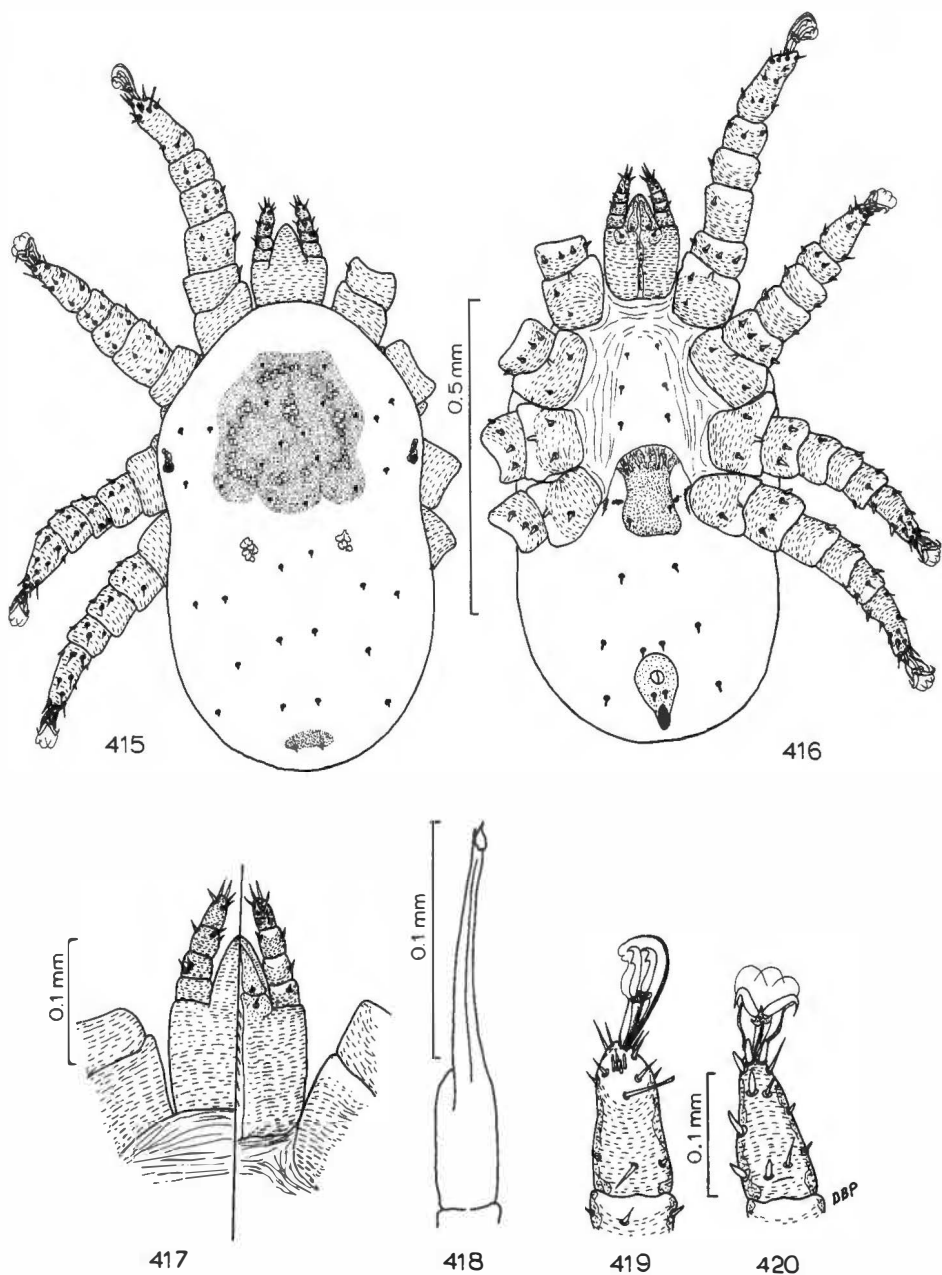
FIGS. 397-402.—*Ptilonyssus cerchneis* Fain: 397, female dorsum; 398, female venter; 399, gnathosoma, dorsal and ventral views, respectively; 400, female chelicera; 401, tarsus I, dorsal view; 402, tarsus IV, ventral view.



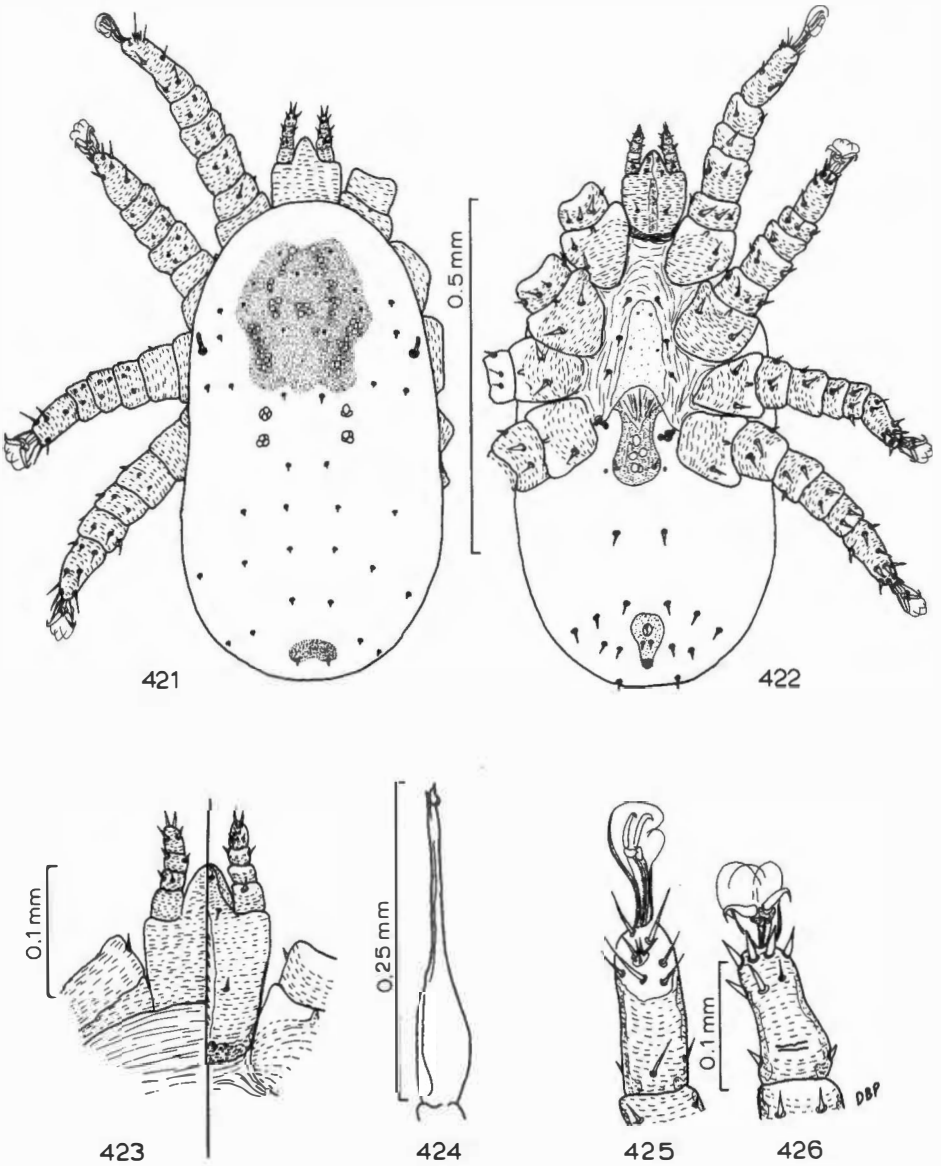
FIGS. 403-408.—*Ptilonyssus echinatus* Berlese and Trouessart: 403, female dorsum; 404, female venter; 405, gnathosoma, dorsal and ventral views, respectively; 406, female chelicera; 407, tarsus I, dorsal view; 408, tarsus IV, ventral view.



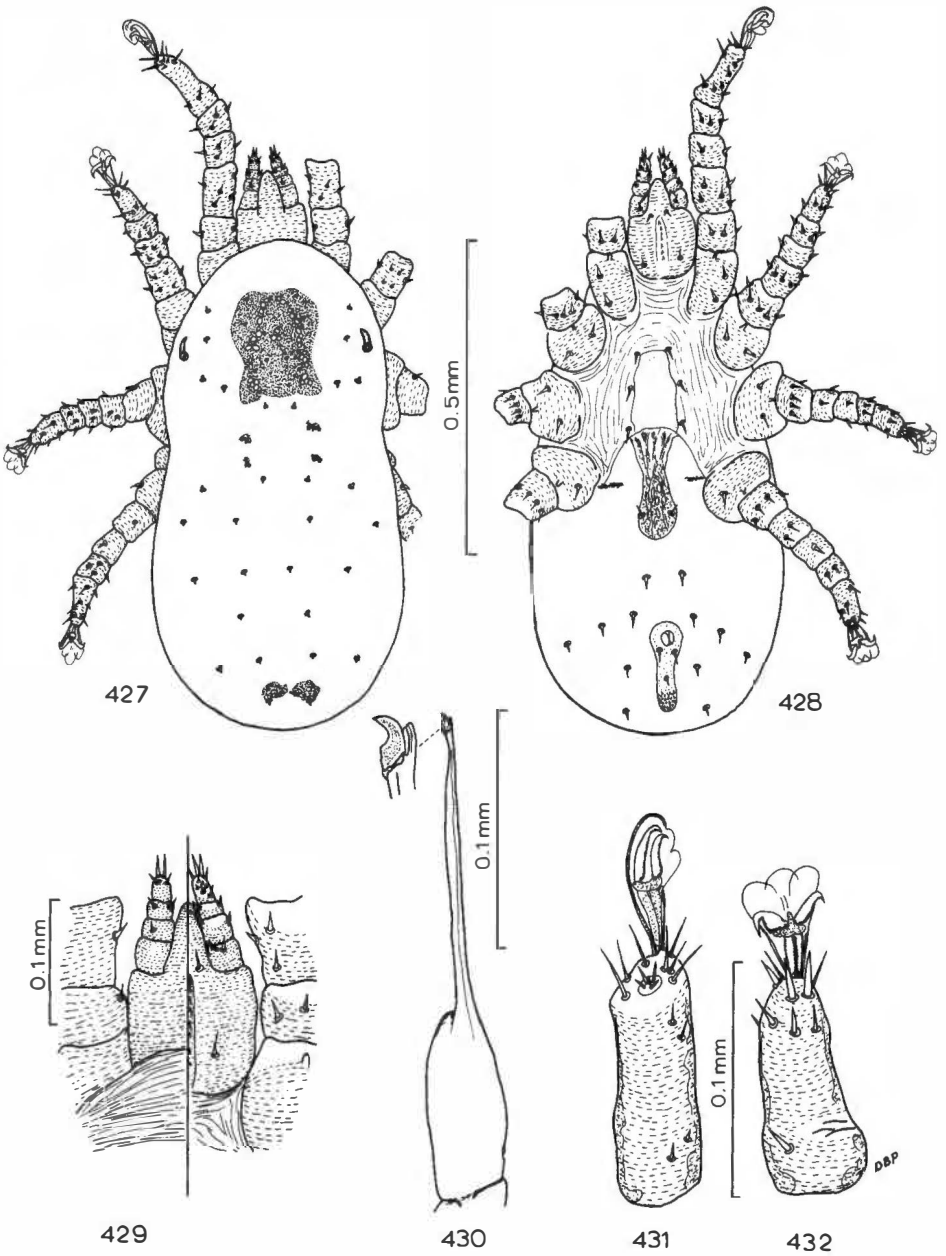
FIGS. 409-414.—*Ptilonyssus tachycinetae* George: 409, female dorsum; 410, female venter; 411, gnathosoma, dorsal and ventral views, respectively; 412, female chelicera; 413, tarsus I, dorsal view; 414, tarsus IV, ventral view.



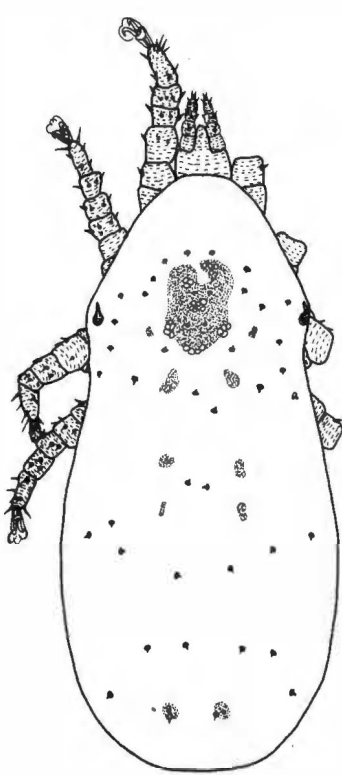
FIGS. 415-420.—*Ptilonyssus perisorei* George: 415, female dorsum; 416, female venter; 417, gnathosoma, dorsal and ventral views, respectively; 418, female chelicera; 419, tarsus I, dorsal view; 420, tarsus IV, ventral view.



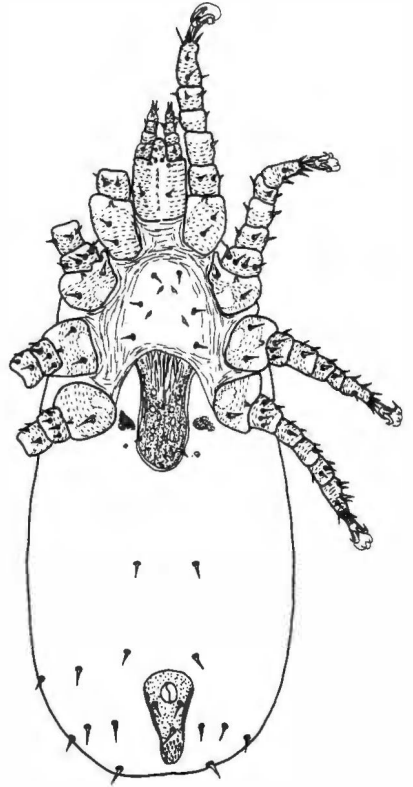
FIGS. 421-426.—*Ptilonyssus lanii* Fain: 421, female dorsum; 422, female venter; 423, gnathosoma, dorsal and ventral views, respectively; 424, female chelicera; 425, tarsus I, dorsal view; 426, tarsus IV, ventral view.



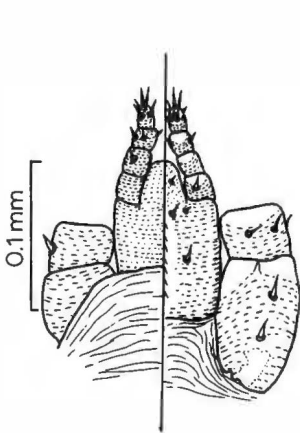
FIGS. 427-432.—*Ptilonyssus motacillae* Fain: 427, female dorsum; 428, female venter; 429, gnathosoma, dorsal and ventral views, respectively; 430, female chelicera; 431, tarsus I, dorsal view; 432, tarsus IV, ventral view.



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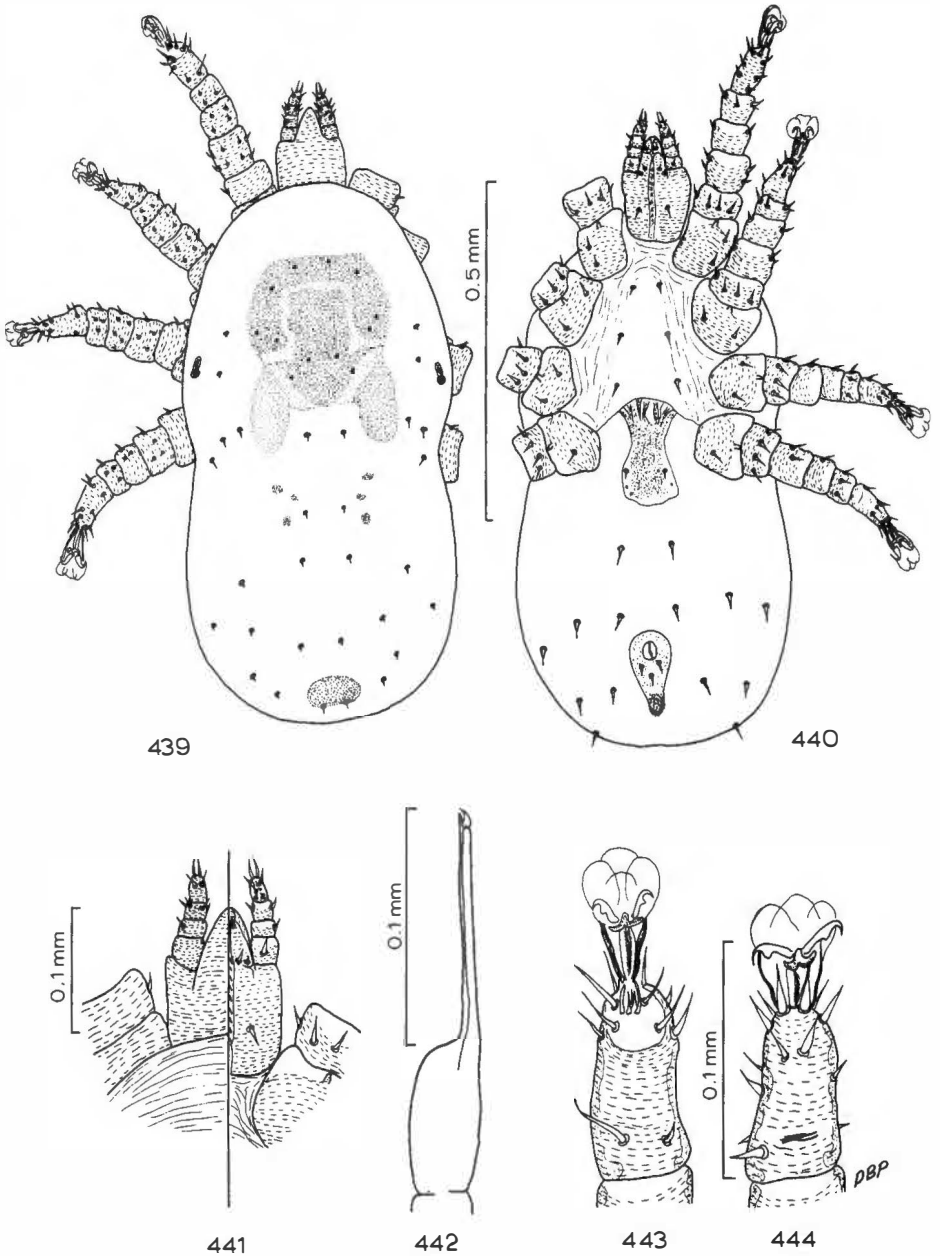


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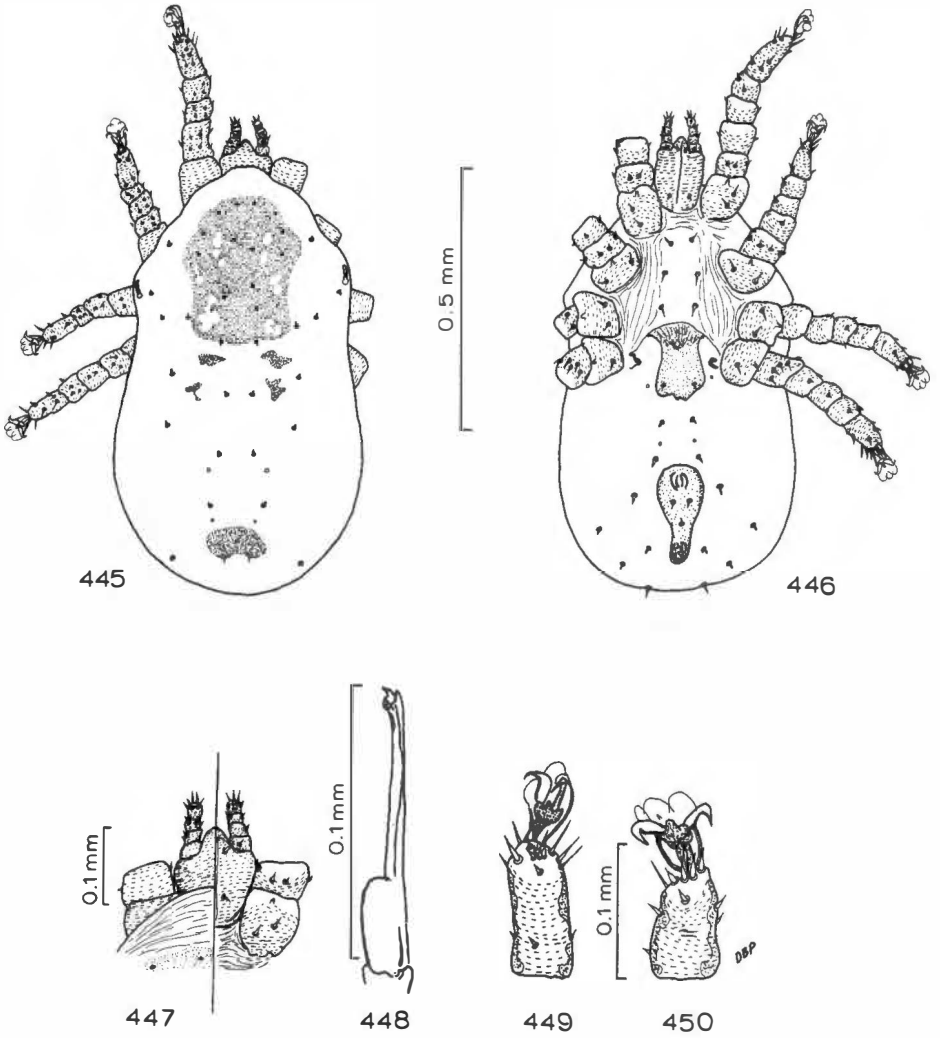


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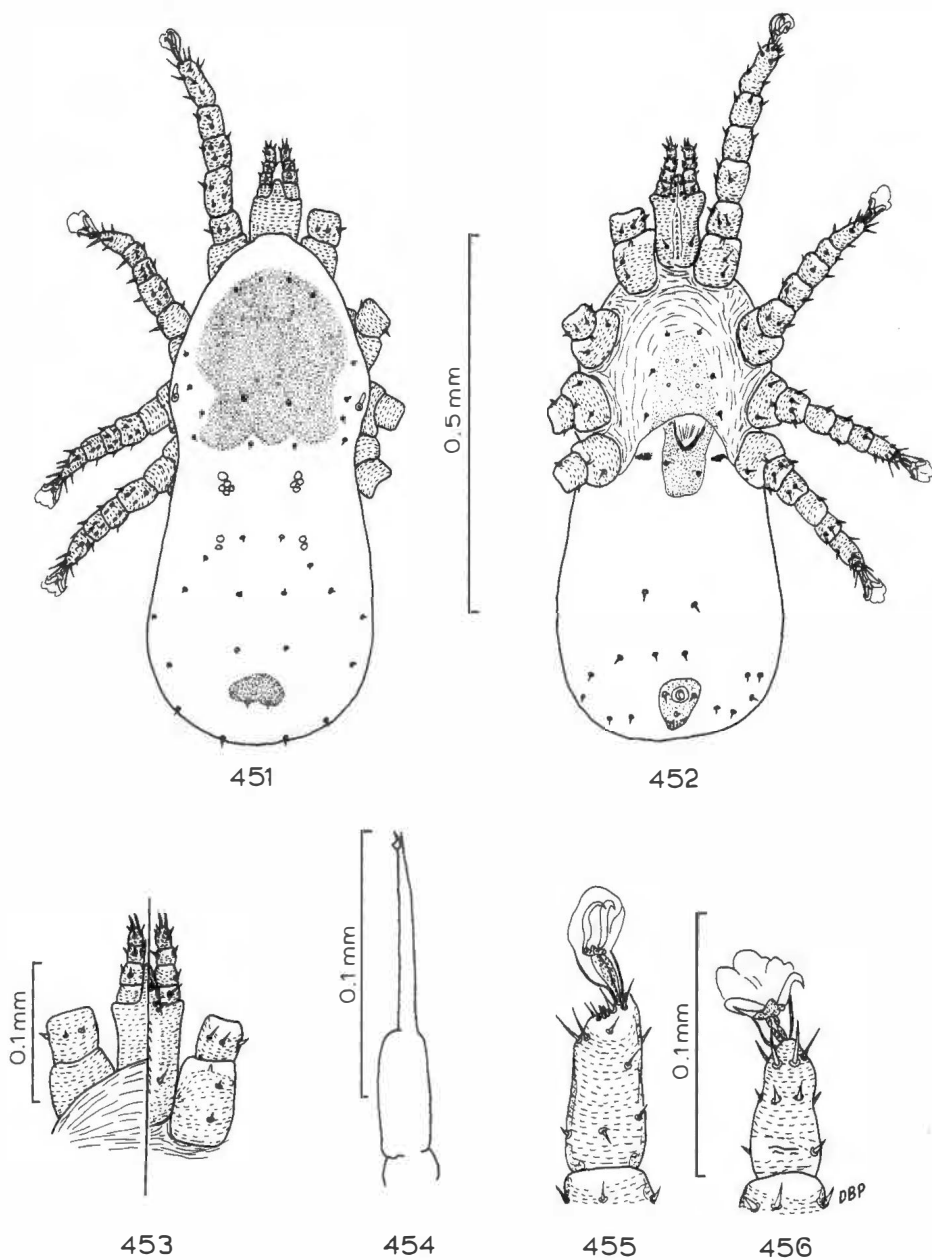
FIGS. 433-438.—*Ptilonyssus troglodytis* Fain: 433, female dorsum; 434, female venter; 435, gnathosoma, dorsal and ventral views, respectively; 436, female chelicera; 437, tarsus I, dorsal view; 438, tarsus IV, ventral view.



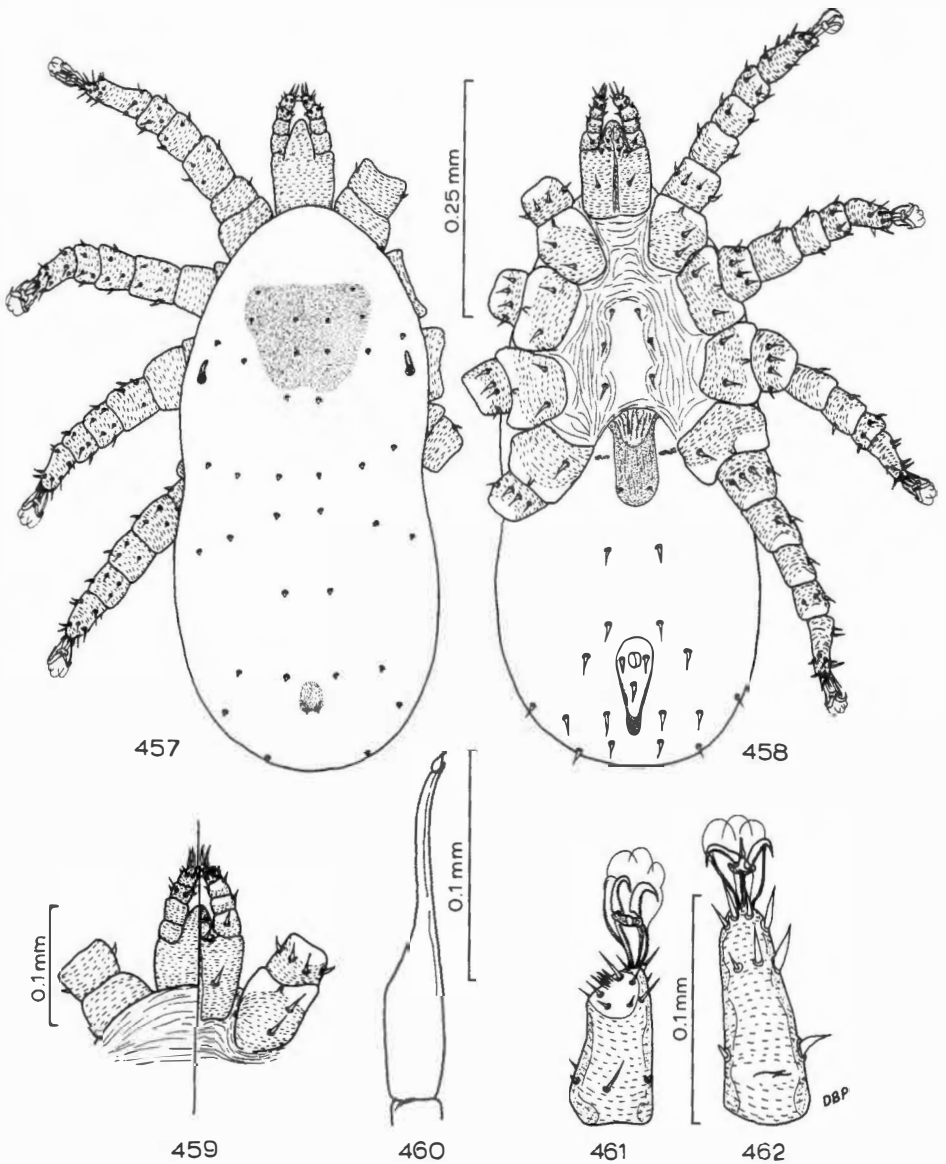
FIGS. 439-444.—*Ptilonyssus sialiae* George: 439, female dorsum; 440, female venter; 441, gnathosoma, dorsal and ventral views, respectively; 442, female chelicera; 443, tarsus I, dorsal view; 444, tarsus IV, ventral view.



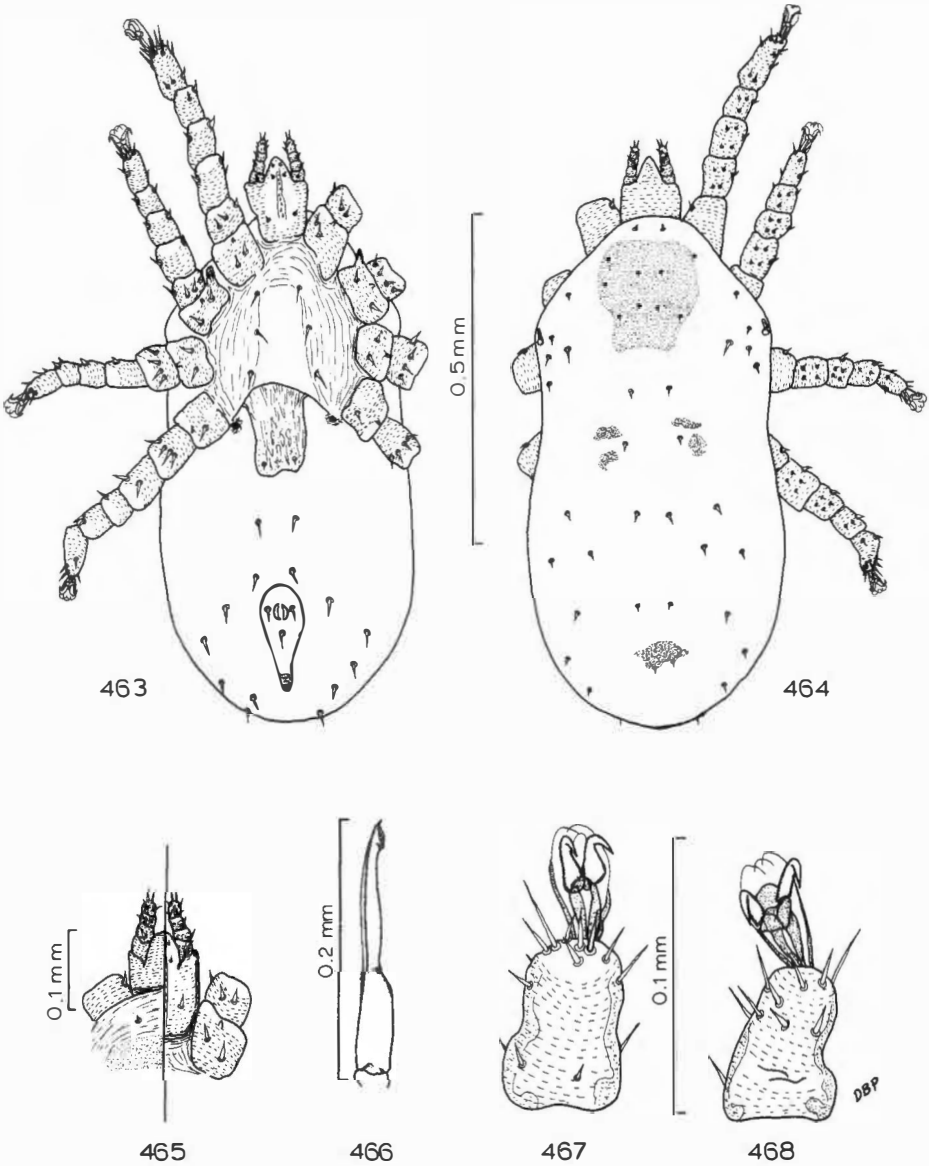
FIGS. 445-450.—*Ptilonyssus bombycillae* Pence: 445, female dorsum; 446, female venter; 447, gnathosoma, dorsal and ventral views, respectively; 448, female chelicera; 449, tarsus I, dorsal view; 450, tarsus IV, ventral view.



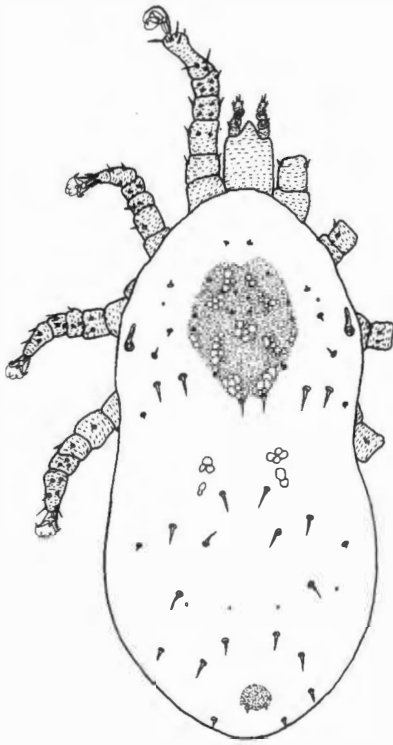
FIGS. 451-456.—*Ptilonyssus agelaii* Fain and Aitken: 451, female dorsum; 452, female venter; 453, gnathosoma, dorsal and ventral views, respectively; 454, female chelicera; 455, tarsus I, dorsal view; 456, tarsus IV, ventral view.



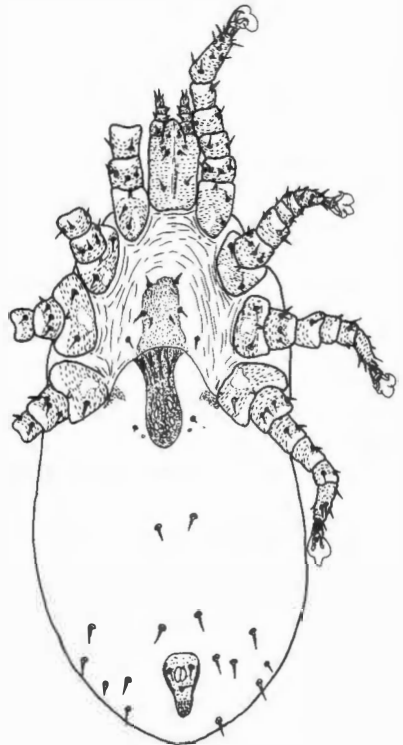
FIGS. 457-462.—*Ptilonyssus salpinctis* George: 457, female dorsum; 458, female venter; 459, gnathosoma, dorsal and ventral views, respectively; 460, female chelicera; 461, tarsus I, dorsal view; 462, tarsus IV, ventral view.



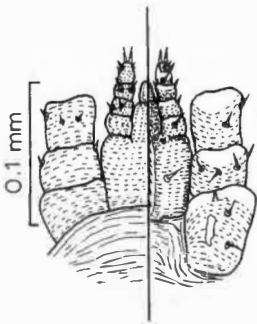
FIGS. 463-468.—*Ptilonyssus thryothori* Pence: 463, female venter; 464, female dorsum; 465, gnathosoma, dorsal and ventral views, respectively; 466, female chelicera; 467, tarsus I, dorsal view; 468, tarsus IV, ventral view.



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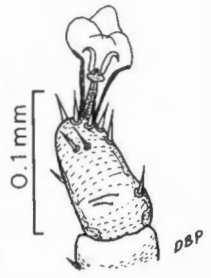
471



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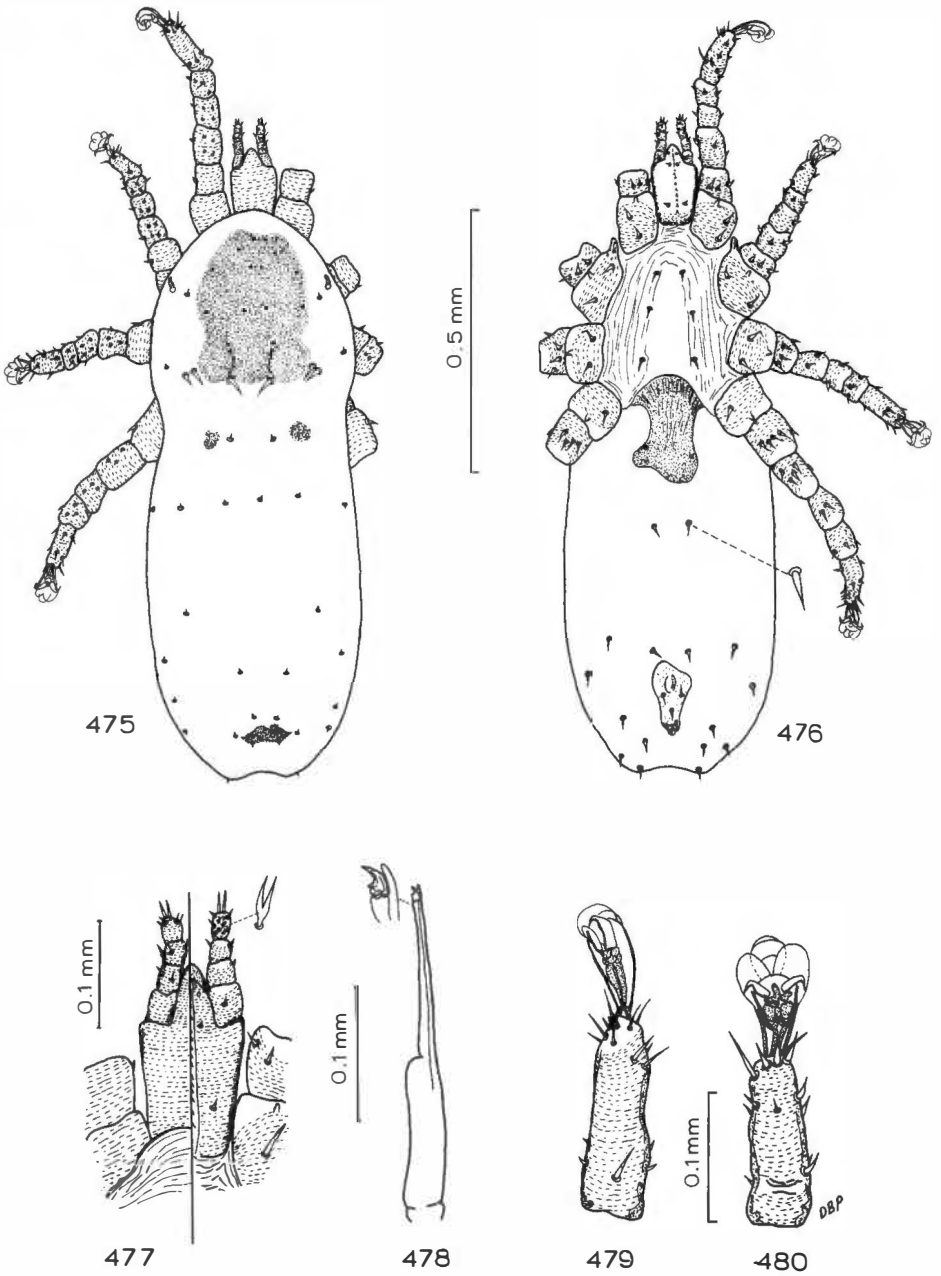


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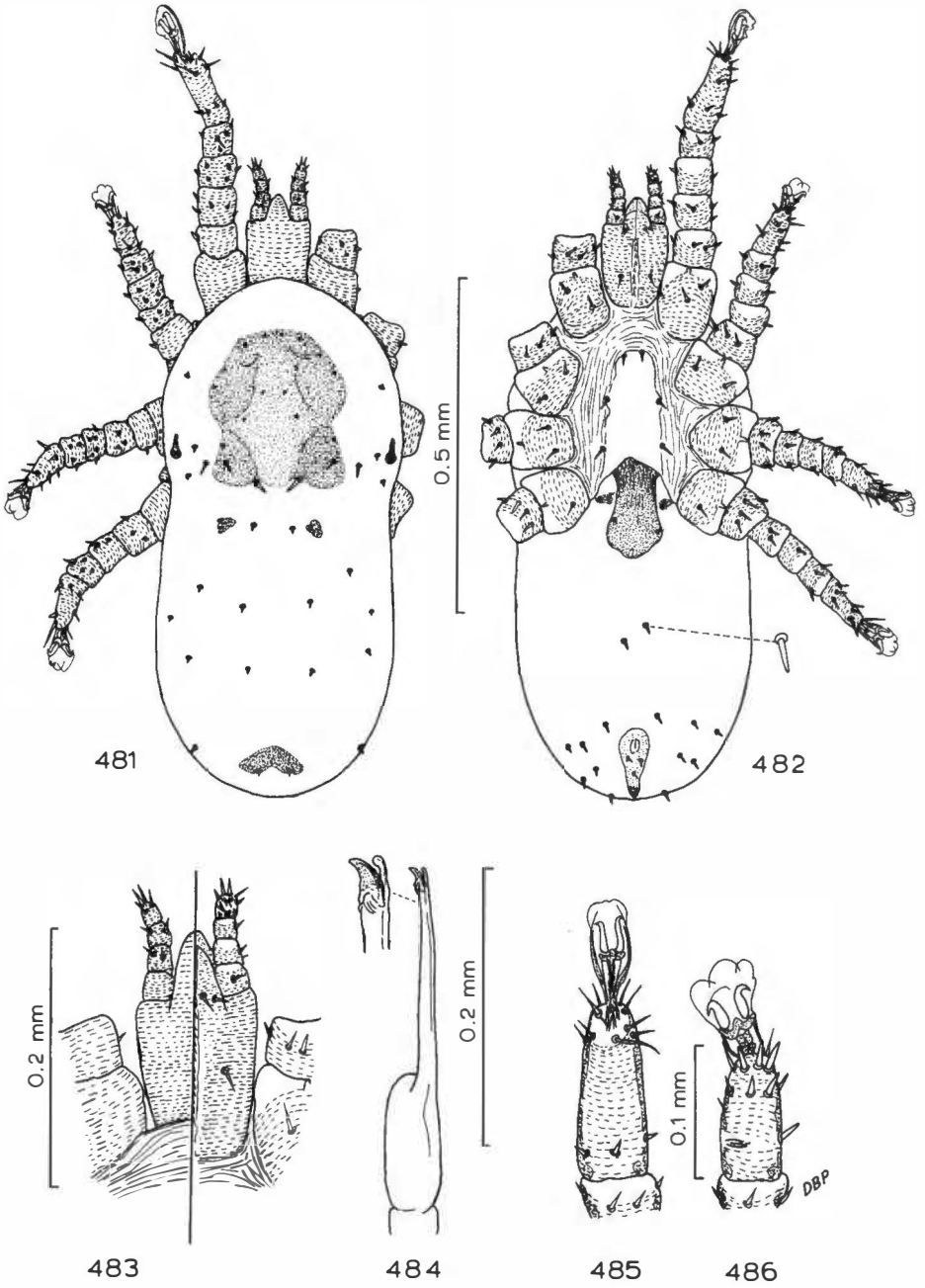


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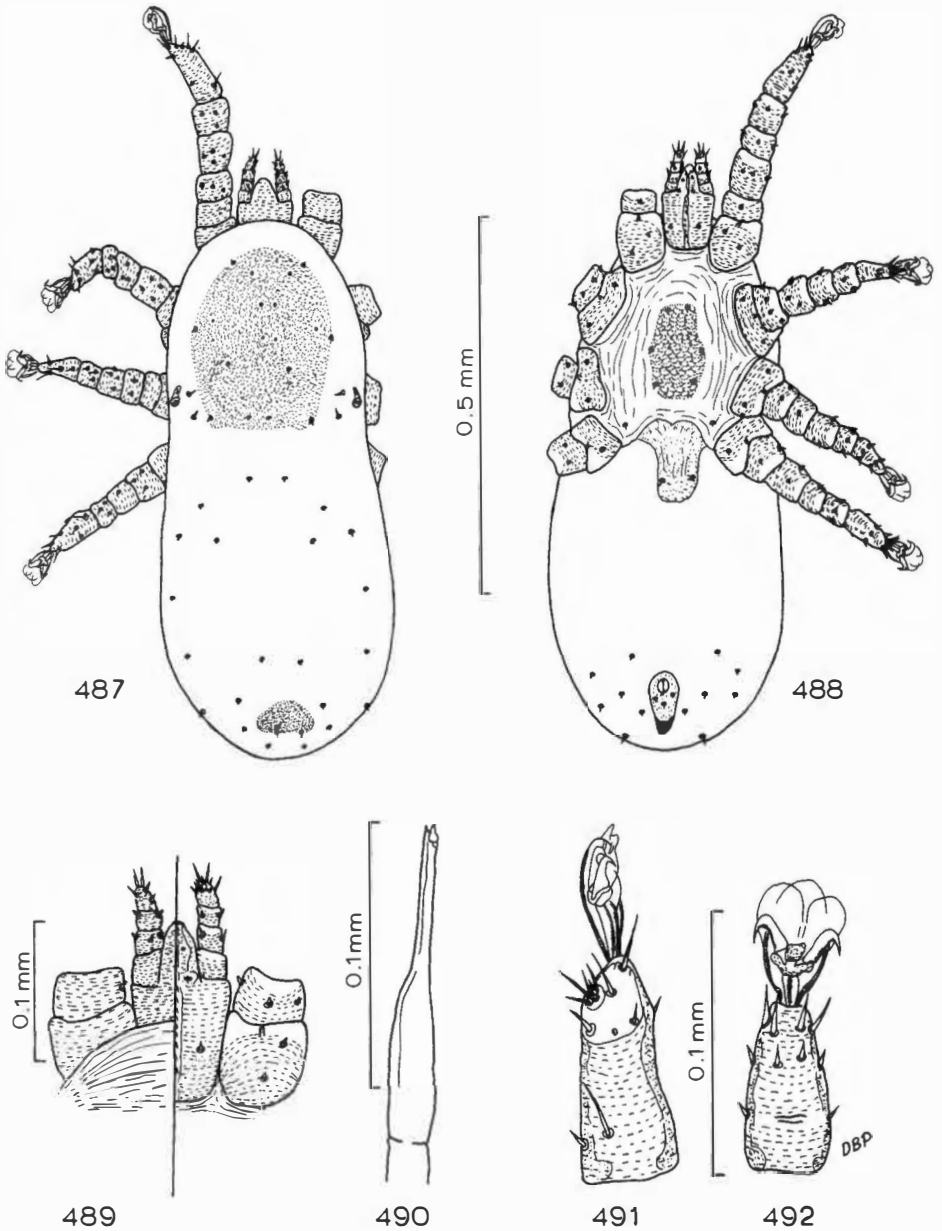
FIGS. 469-474.—*Pilonyssus acrocephali* Fain: 469, female dorsum; 470, female venter; 471, gnathosoma, dorsal and ventral views, respectively; 472, female chelicera; 473, tarsus I, dorsal view; 474, tarsus IV, ventral view.



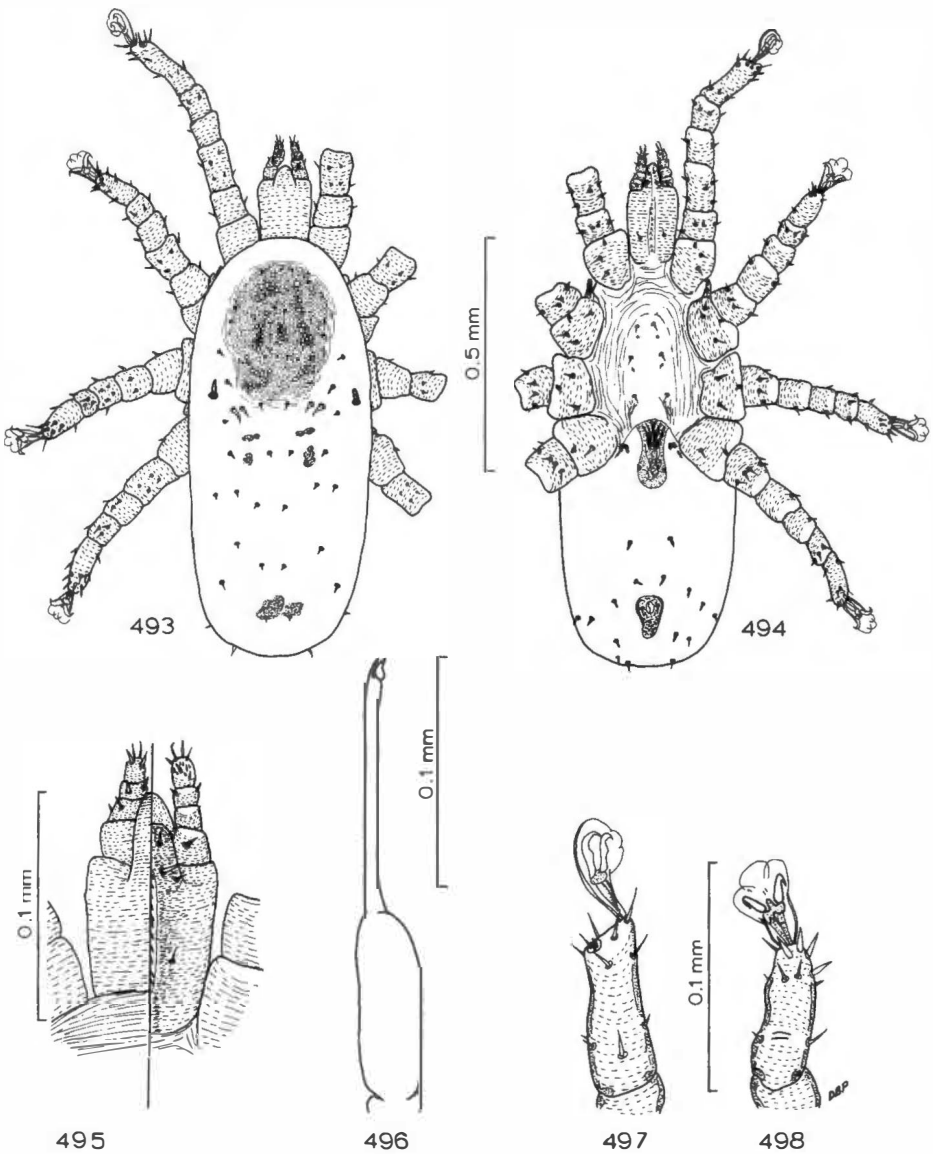
FIGS. 475-480.—*Ptilonyssus toxostomae* Pence: 475, female dorsum; 476, female venter; 477, gnathosoma, dorsal and ventral views, respectively; 478, female chelicera; 479, tarsus I, dorsal view; 480, tarsus IV, ventral view.



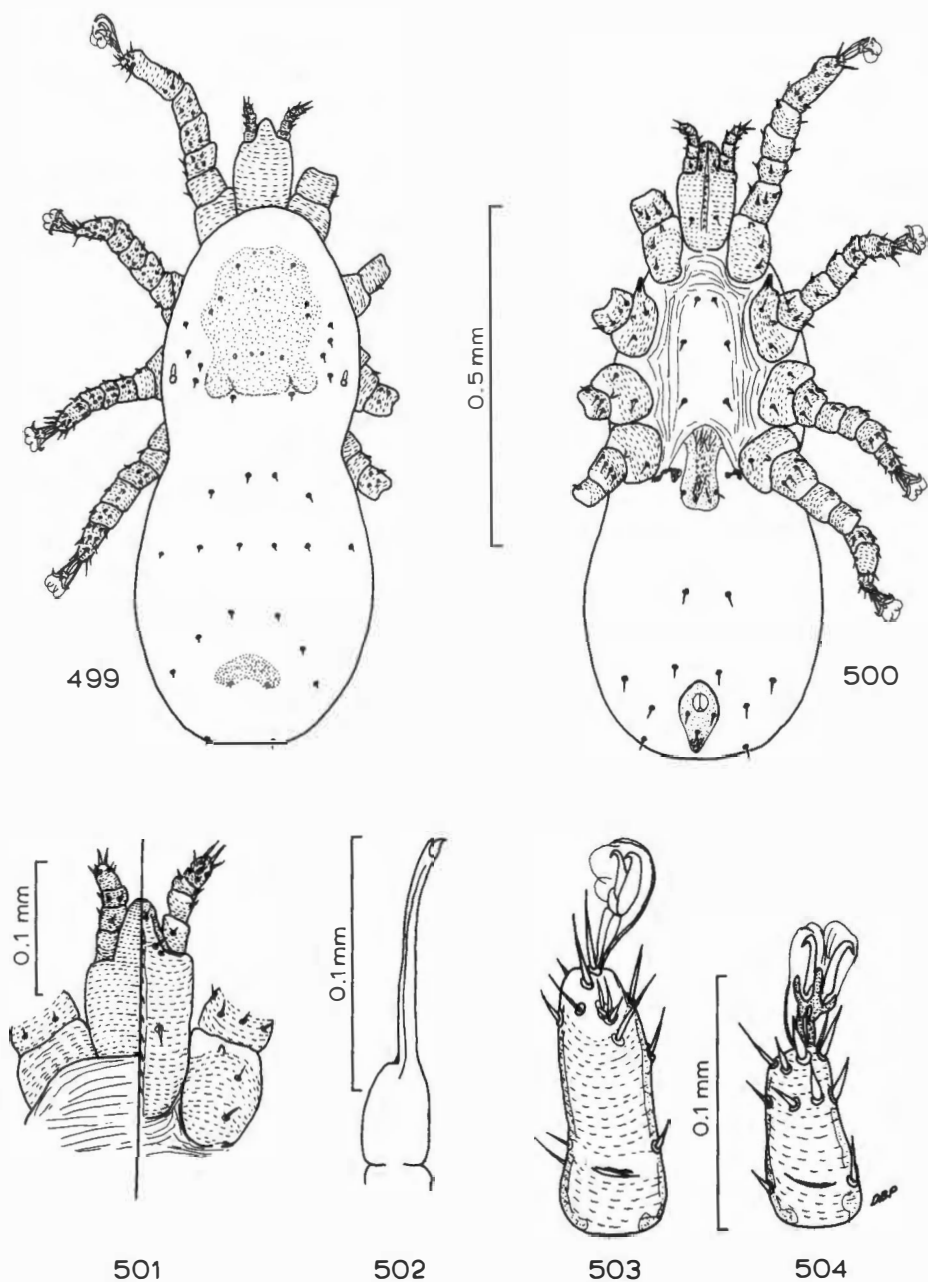
FIGS. 481-486.—*Ptilonyssus mimi* George: 481, female dorsum; 482, female venter; 483, gnathosoma, dorsal and ventral views, respectively; 484, female chelicera; 485, tarsus I, dorsal view; 486, tarsus IV, ventral view.



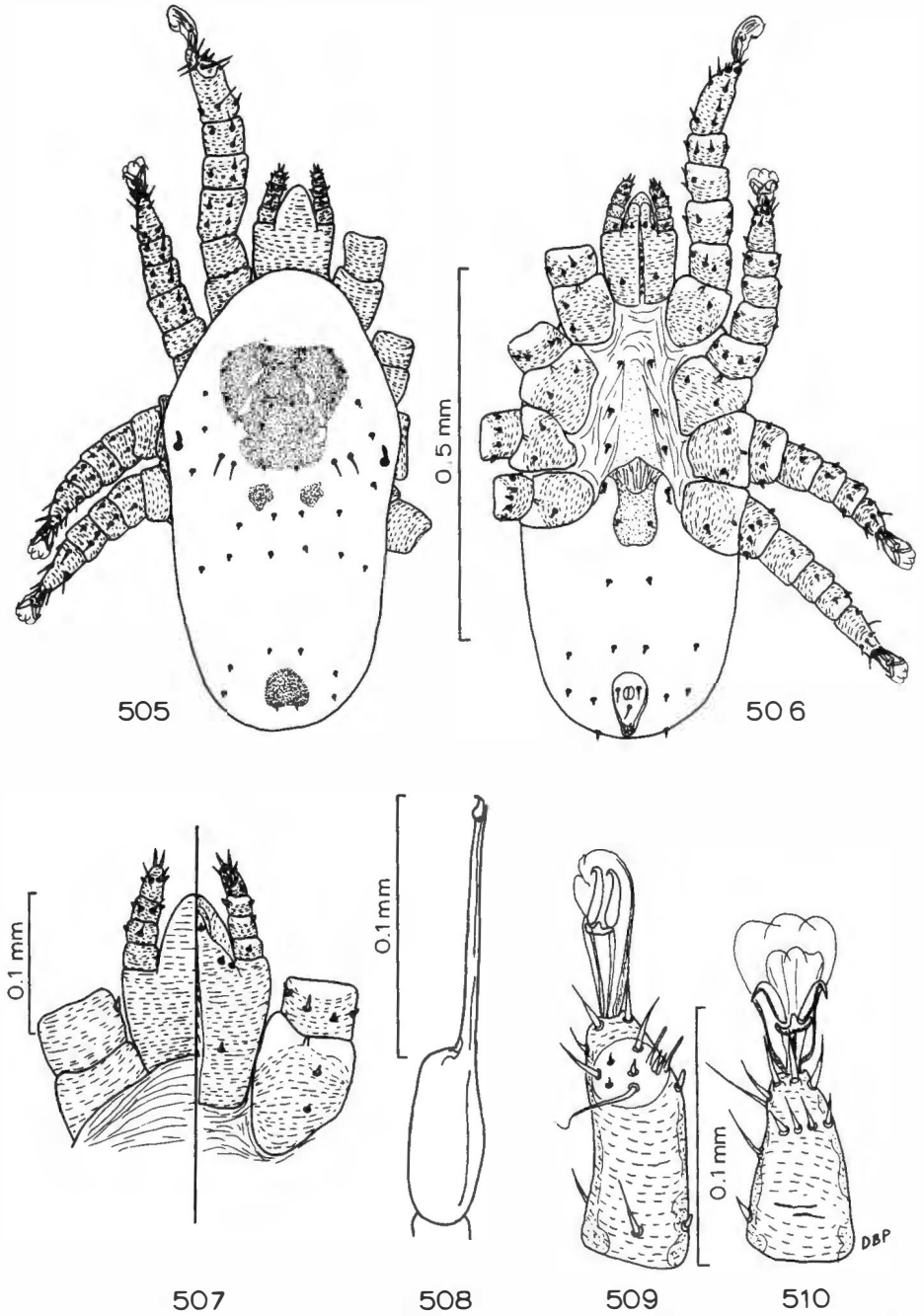
FIGS. 487-492.—*Ptilonyssus nudus* Hirst: 487, female dorsum; 488, female venter; 489, gnathosoma, dorsal and ventral views, respectively; 490, female chelicera; 491, tarsus I, dorsal view; 492, tarsus IV, ventral view.



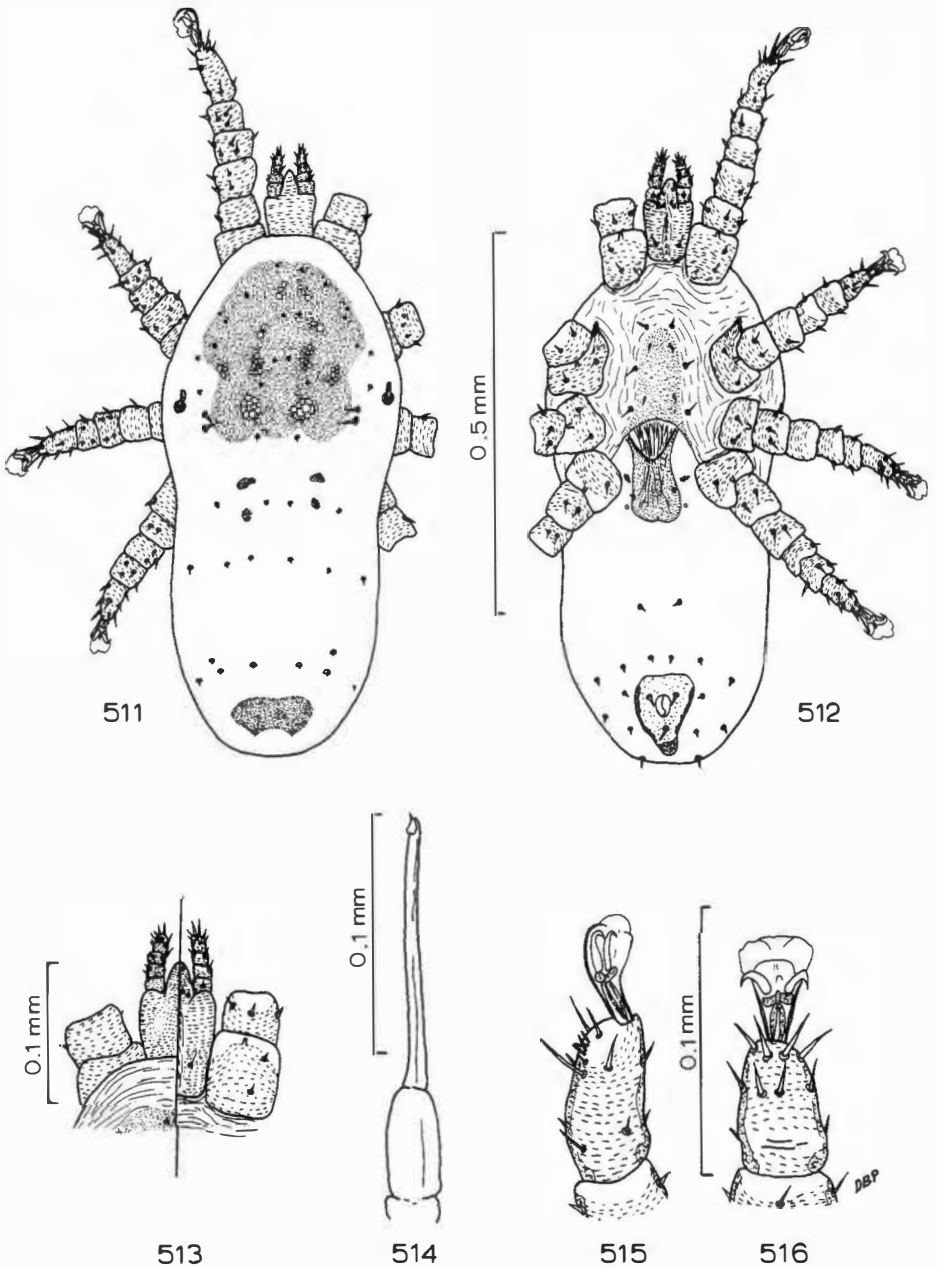
FIGS. 493-498.—*Ptilonyssus euroturdi* Fain and Hyland: 493, female dorsum; 494, female venter; 495, gnathosoma, dorsal and ventral views, respectively; 496, female chelicera; 497, tarsus I, dorsal view; 498, tarsus IV, ventral view.



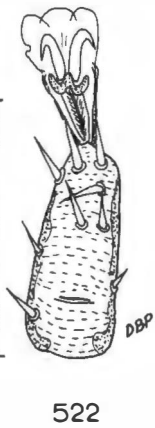
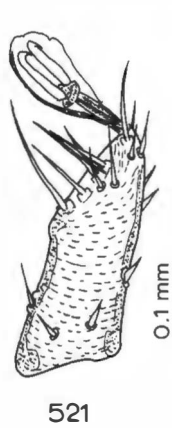
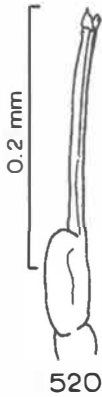
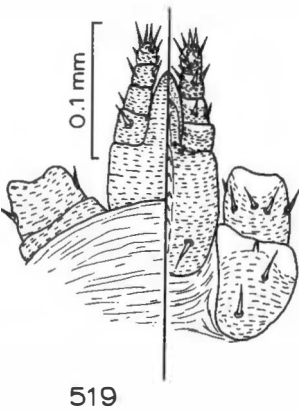
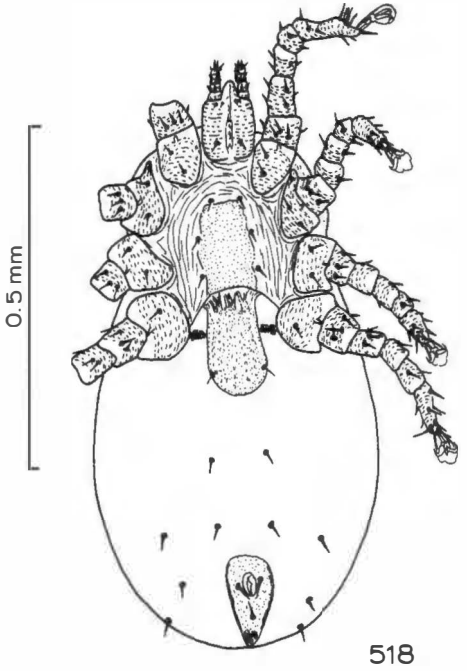
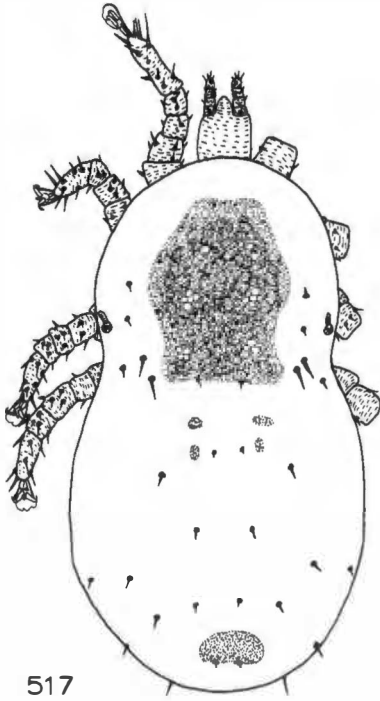
FIGS. 499-504.—*Ptilonyssus richmondinae* George: 499, female dorsum; 500, female venter; 501, gnathosoma, dorsal and ventral views, respectively; 502, female chelicera; 503, tarsus I, dorsal view; 504, tarsus IV, ventral view.



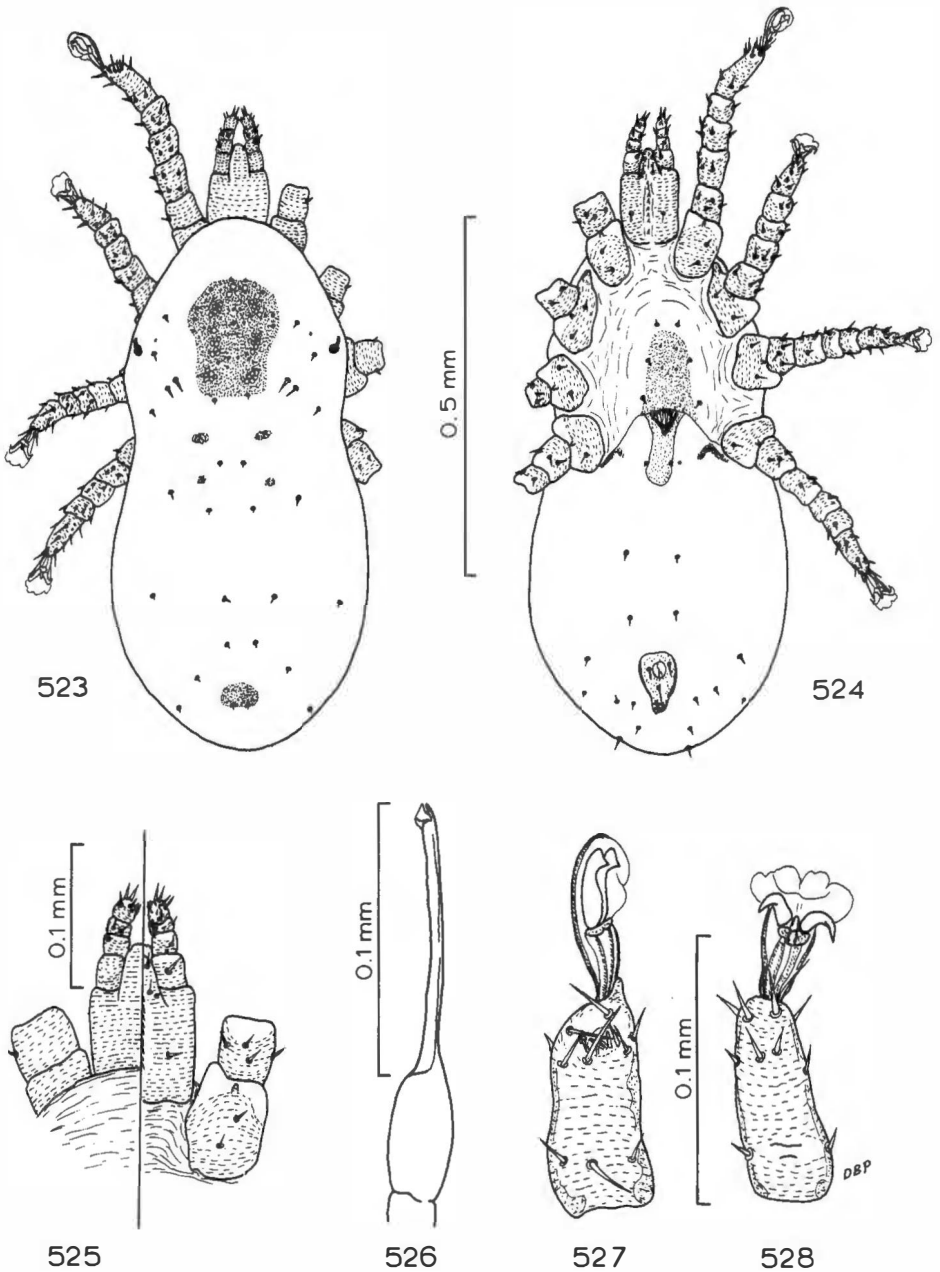
FIGS. 505-510.—*Ptilonyssus phainopeplae* George: 505, female dorsum; 506, female venter; 507, gnathosoma, dorsal and ventral views, respectively; 508, female chelicera; 509, tarsus I, dorsal view; 510, tarsus IV, ventral view.



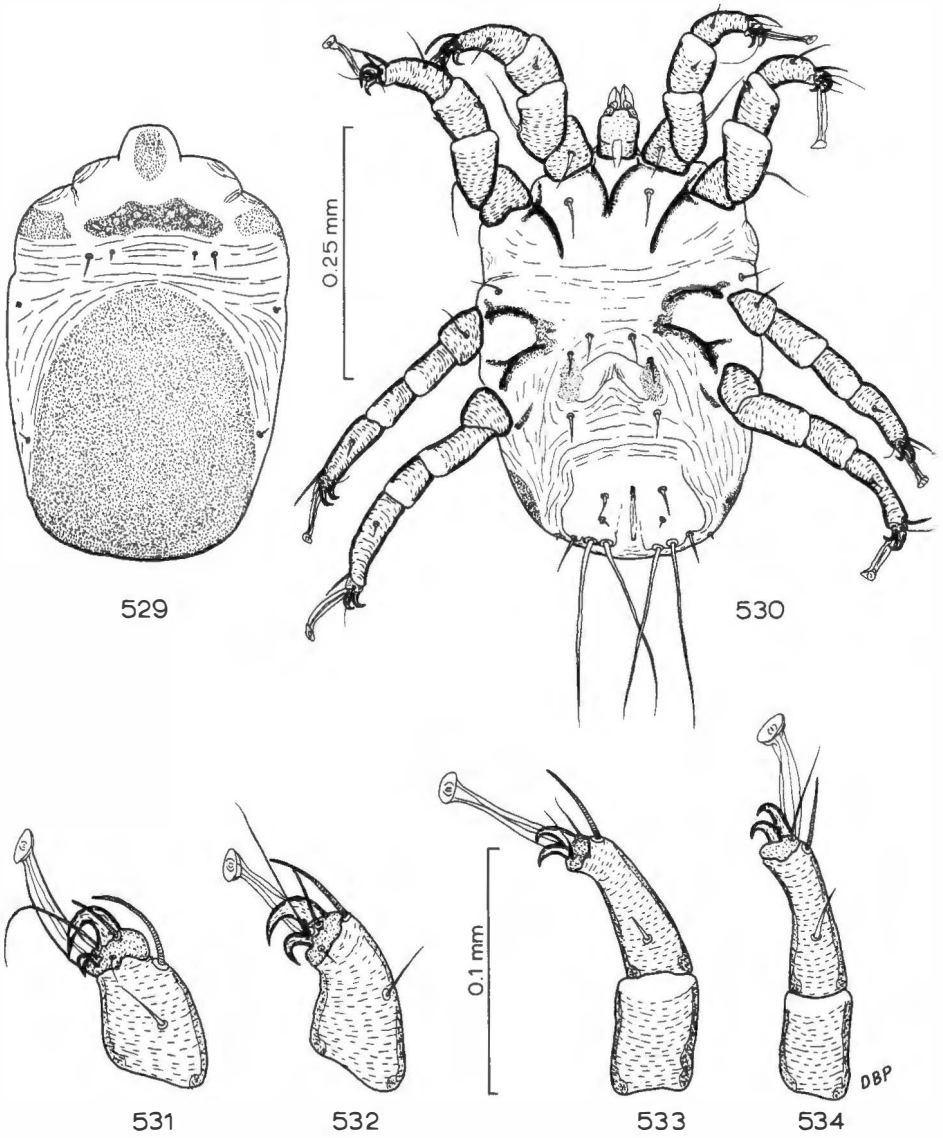
FIGS. 511-516.—*Ptilonyssus japuibensis* Castro: 511, female dorsum; 512, female venter; 513, gnathosoma, dorsal and ventral views, respectively; 514, female chelicera; 515, tarsus I, dorsal view; 516, tarsus IV, ventral view.



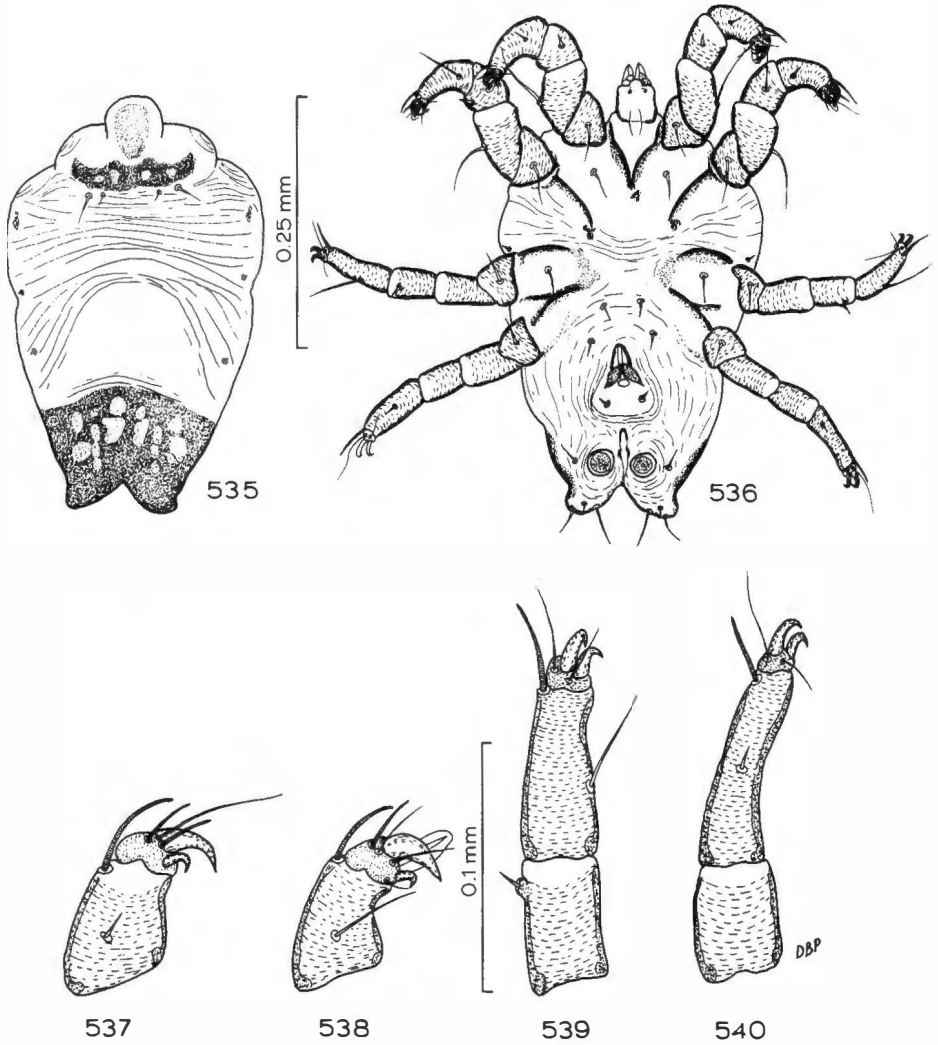
FIGS. 517-522.—*Ptilonyssus ludovicianus* Černý: 517, female dorsum; 518, female venter; 519, gnathosoma, dorsal and ventral views, respectively; 520, female chelicera; 521, tarsus I, dorsal view; 522, tarsus IV, ventral view.



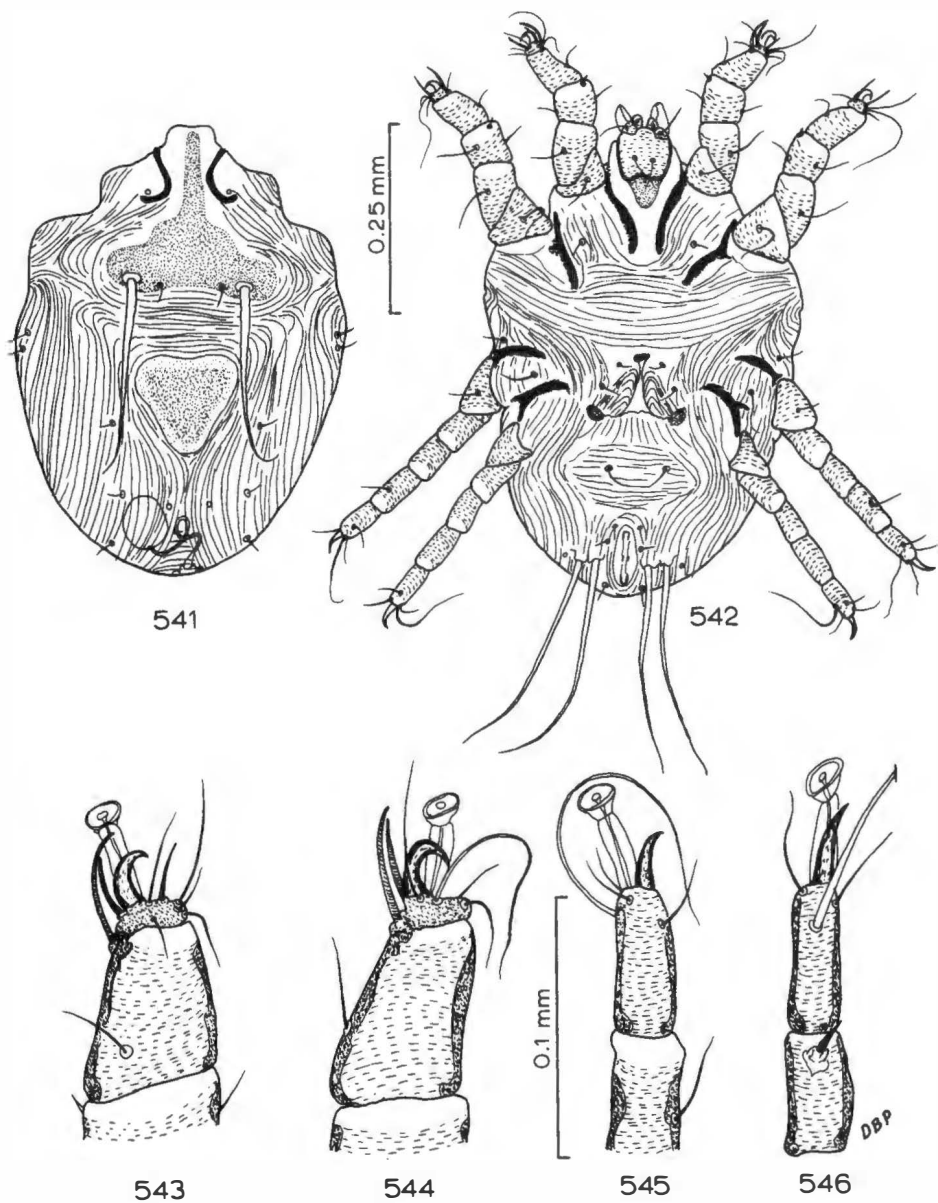
FIGS. 523-528.—*Ptilonyssus sairae* Castro: 523, female dorsum; 524, female venter; 525, gnathosoma, dorsal and ventral views, respectively; 526, female chelicera; 527, tarsus I, dorsal view; 528, tarsus IV, ventral view.



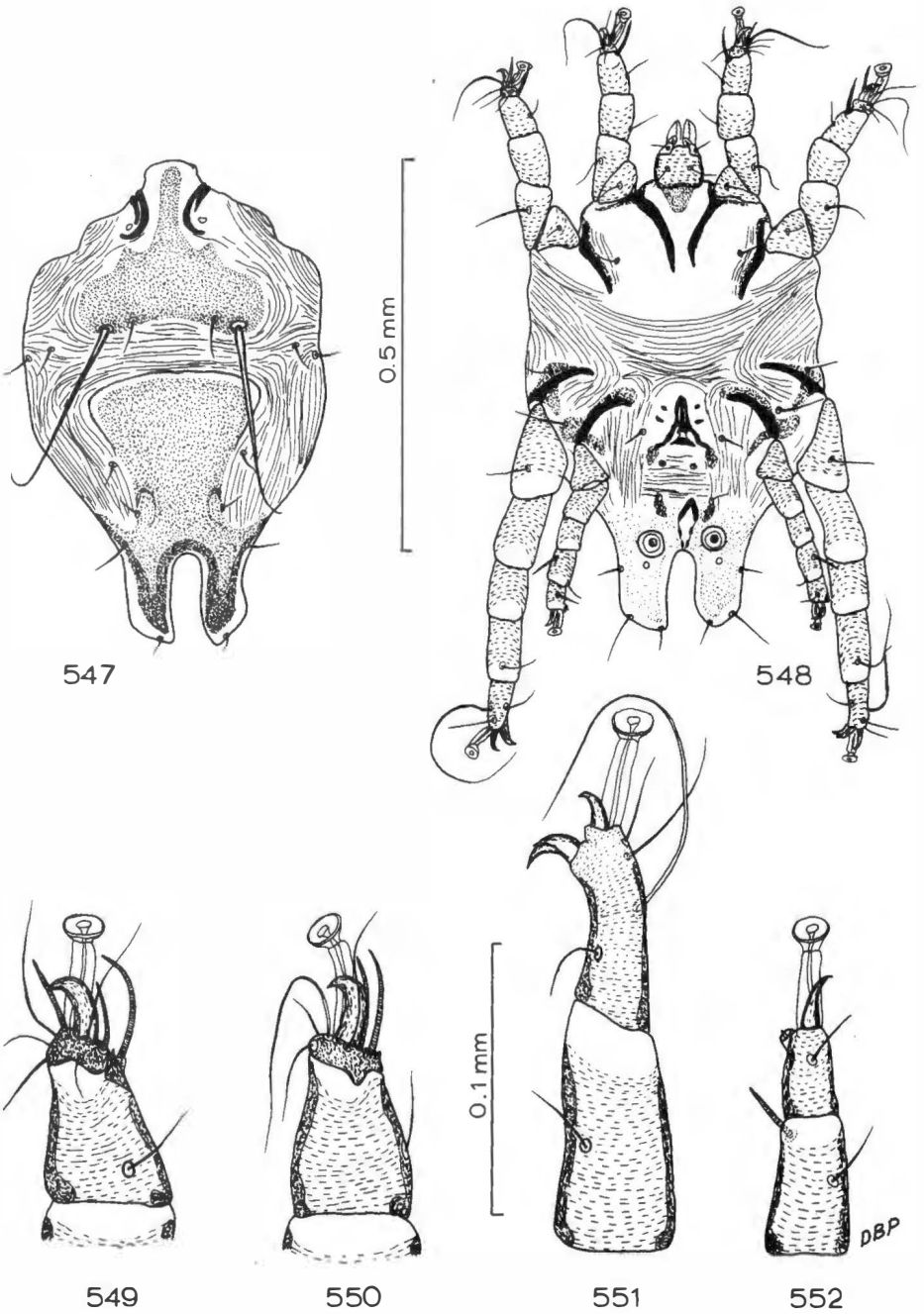
FIGS. 529-534.—*Turbinoptes strandtmanni* Boyd, female: 529, dorsum; 530, venter; 531, tarsus and tibia I; 532, tarsus and tibia II; 533, tarsus and tibia III; 534, tarsus and tibia IV.



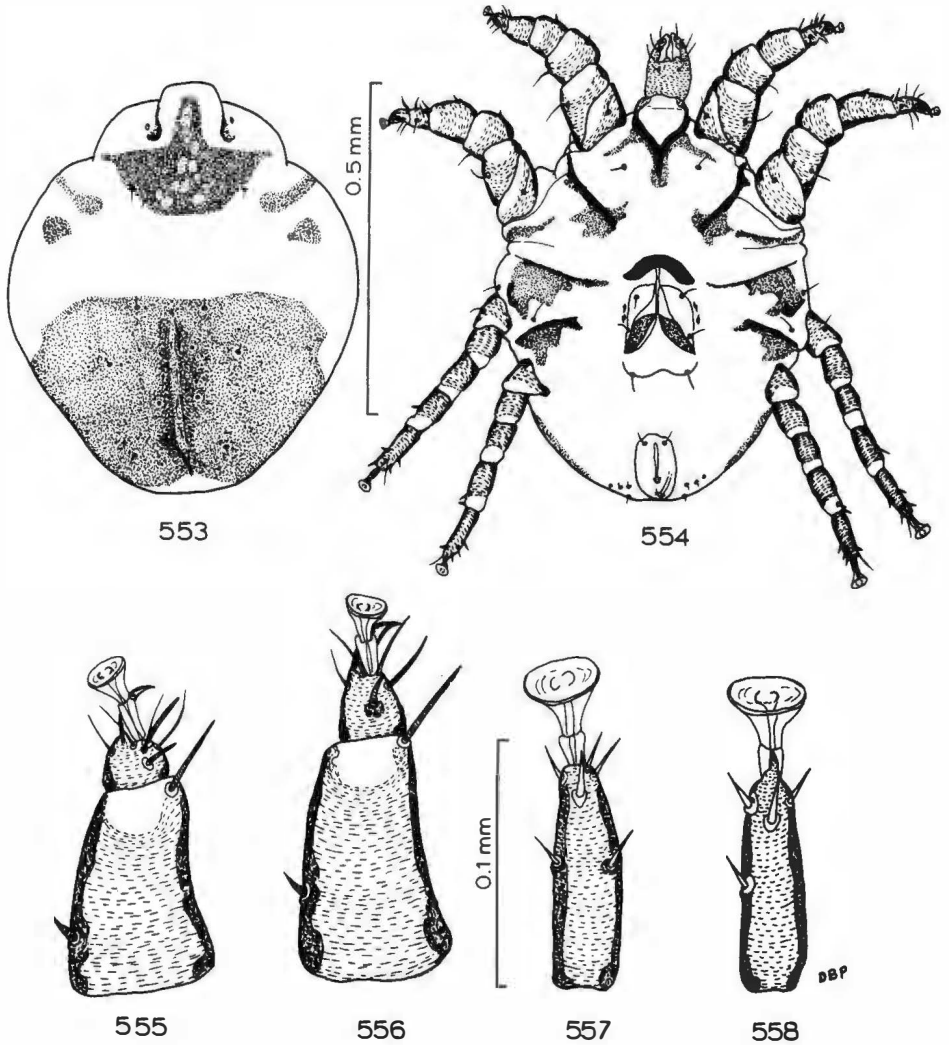
FIGS. 535-540.—*Turbinoptes strandtmanni* Boyd, male: 535, dorsum; 536, venter; 537, tarsus and tibia I; 538, tarsus and tibia II; 539, tarsus and tibia III; 540, tarsus and tibia IV.



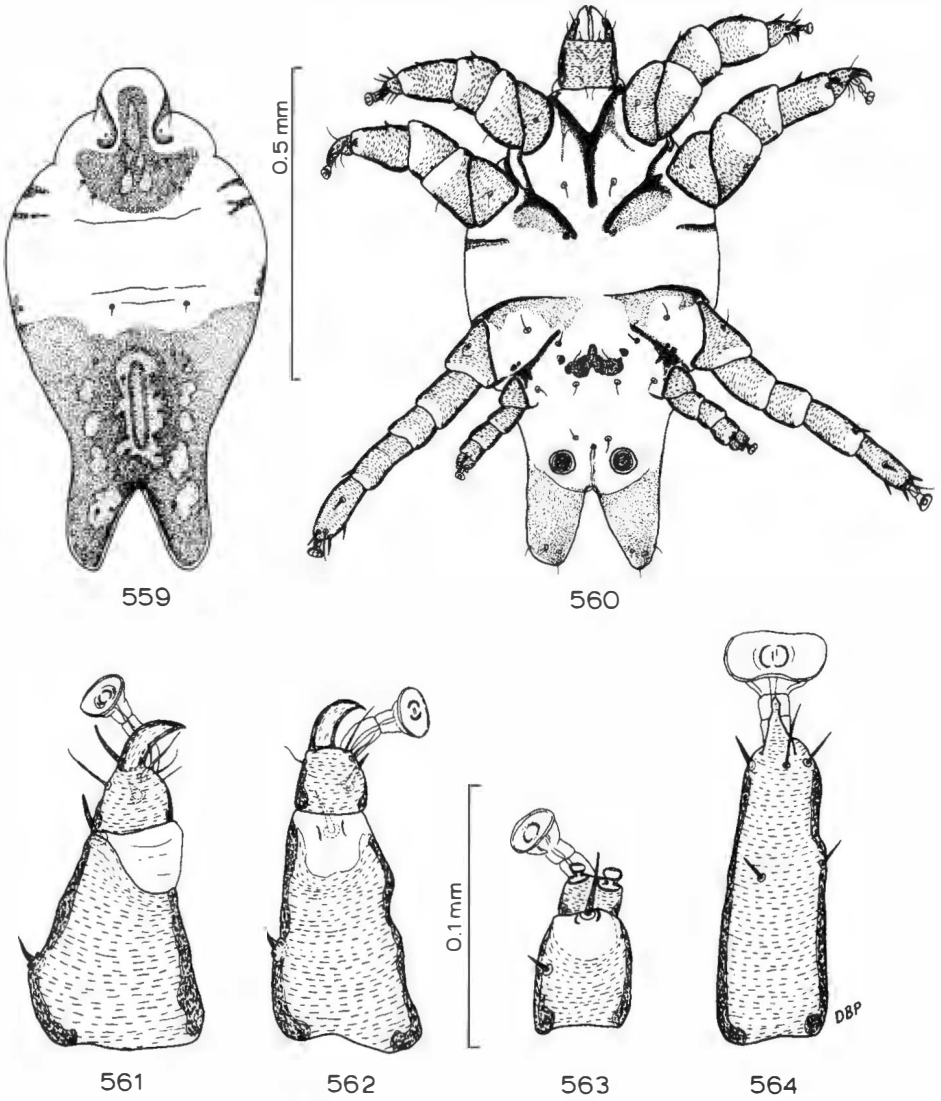
FIGS. 541-546.—*Colinoptes cubanensis* Fain, female: 541, dorsum; 542, venter; 543, tarsus and tibia I; 544, tarsus and tibia II; 545, tarsus and tibia III; 546, tarsus and tibia IV.



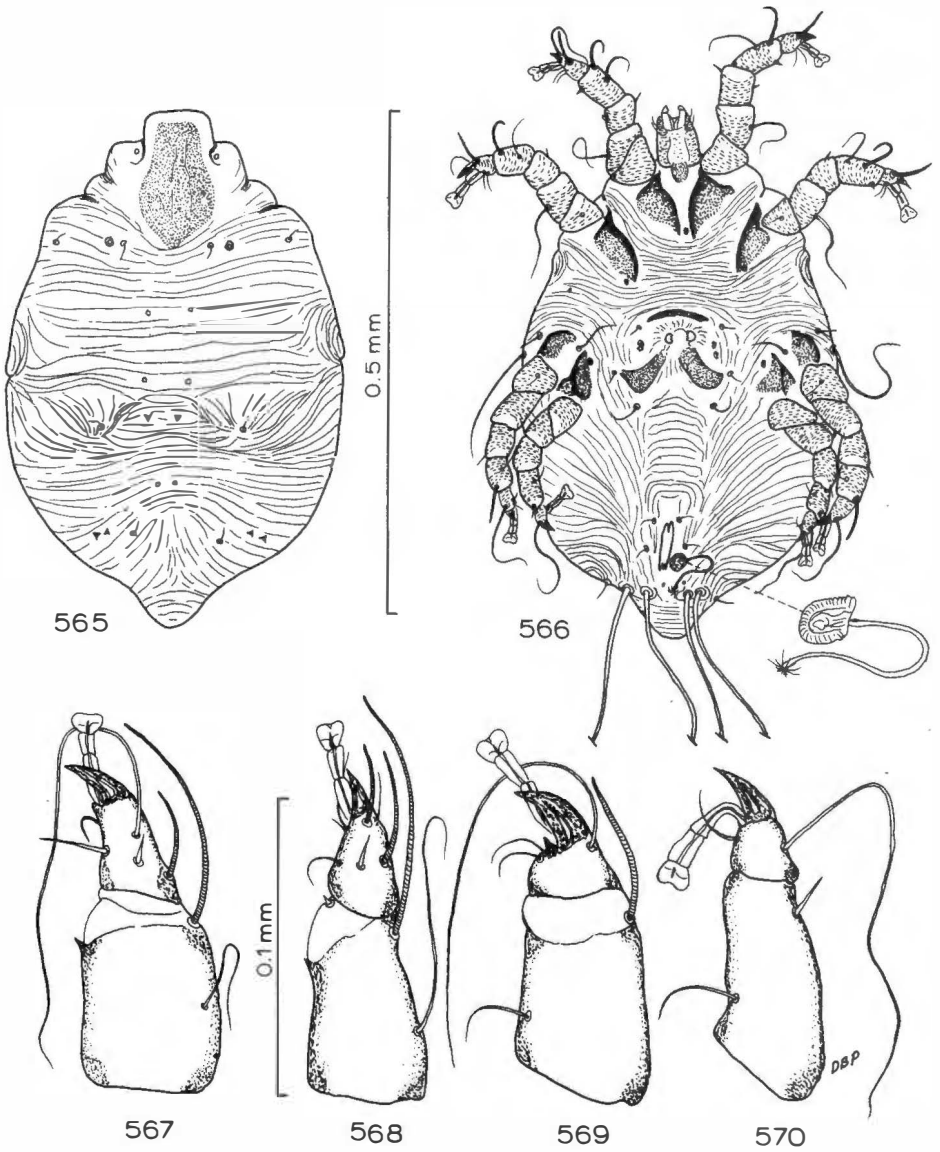
FIGS. 547-552.—*Colinoptes cubanensis* Fain, male: 547, dorsum; 548, venter; 549, tarsus and tibia I; 550, tarsus and tibia II; 551, tarsus and tibia III; 552, tarsus and tibia IV.



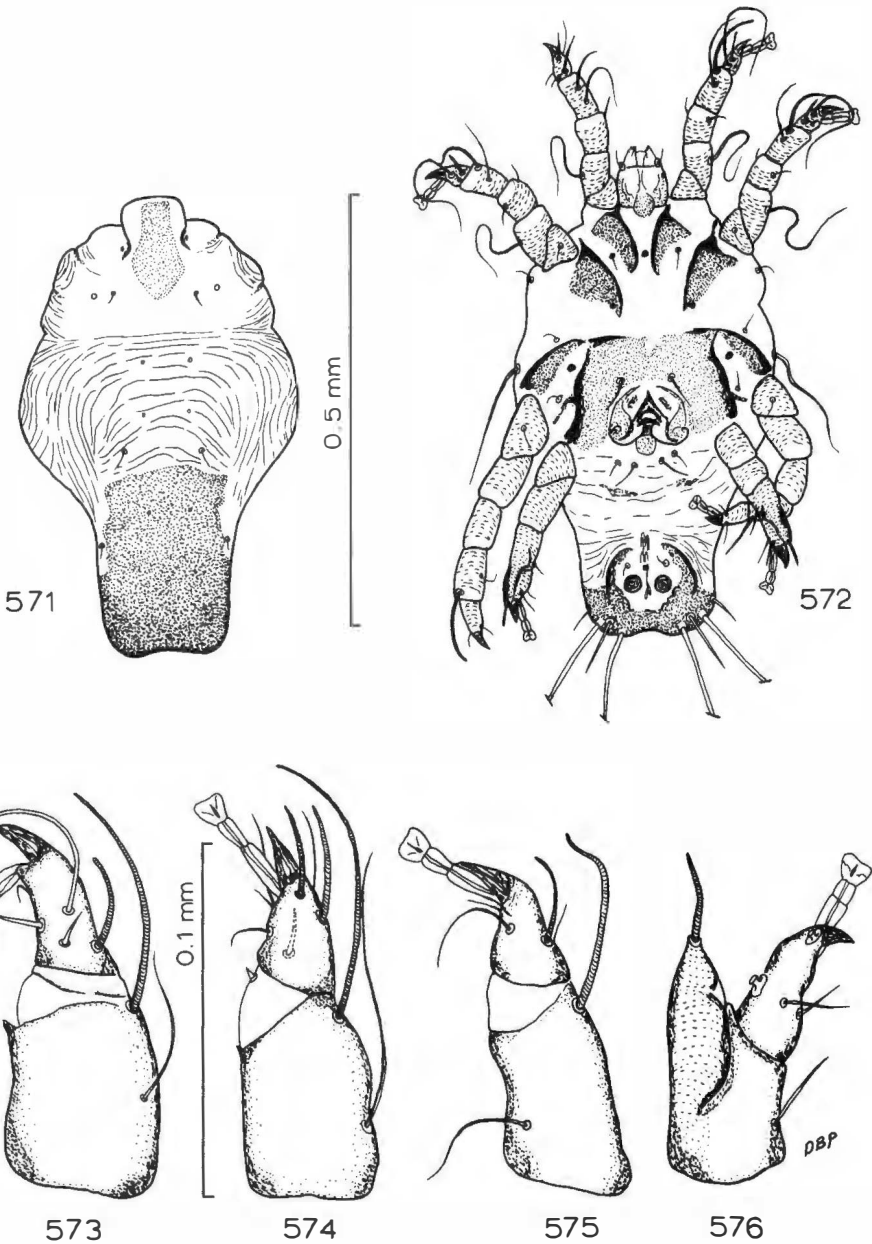
FIGS. 553-558.—*Schoutedenocoptes americanus* Fain and Hyland, female: 553, dorsum; 554, venter; 555, tarsus and tibia I; 556, tarsus and tibia II; 557, tarsus and tibia III; 558, tarsus and tibia IV.



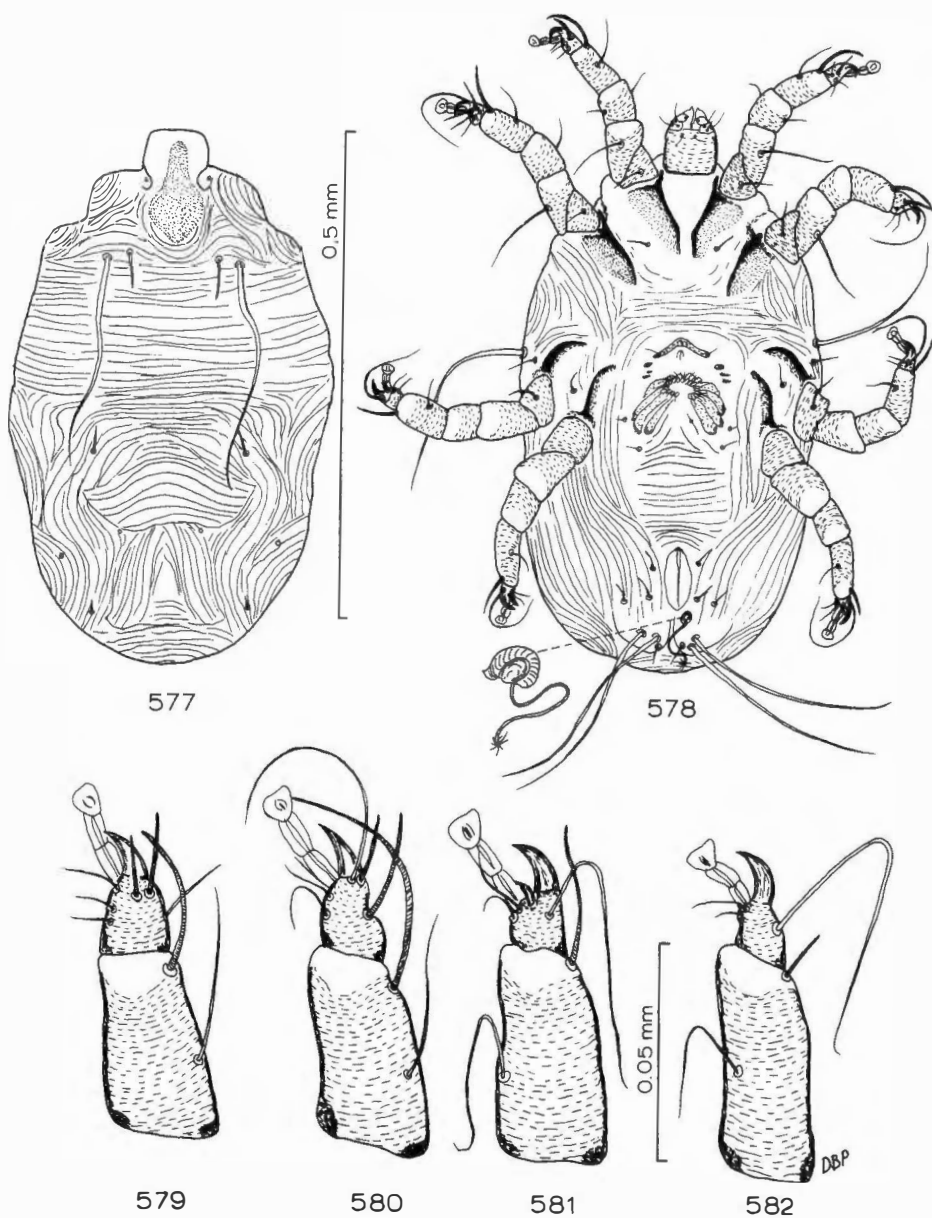
FIGS. 559-564.—*Schoutedenocoptes americanus* Fain and Hyland, male: 559, dorsum; 560, venter; 561, tarsus and tibia I; 562, tarsus and tibia II; 563, tarsus and tibia III; 564, tarsus and tibia IV.



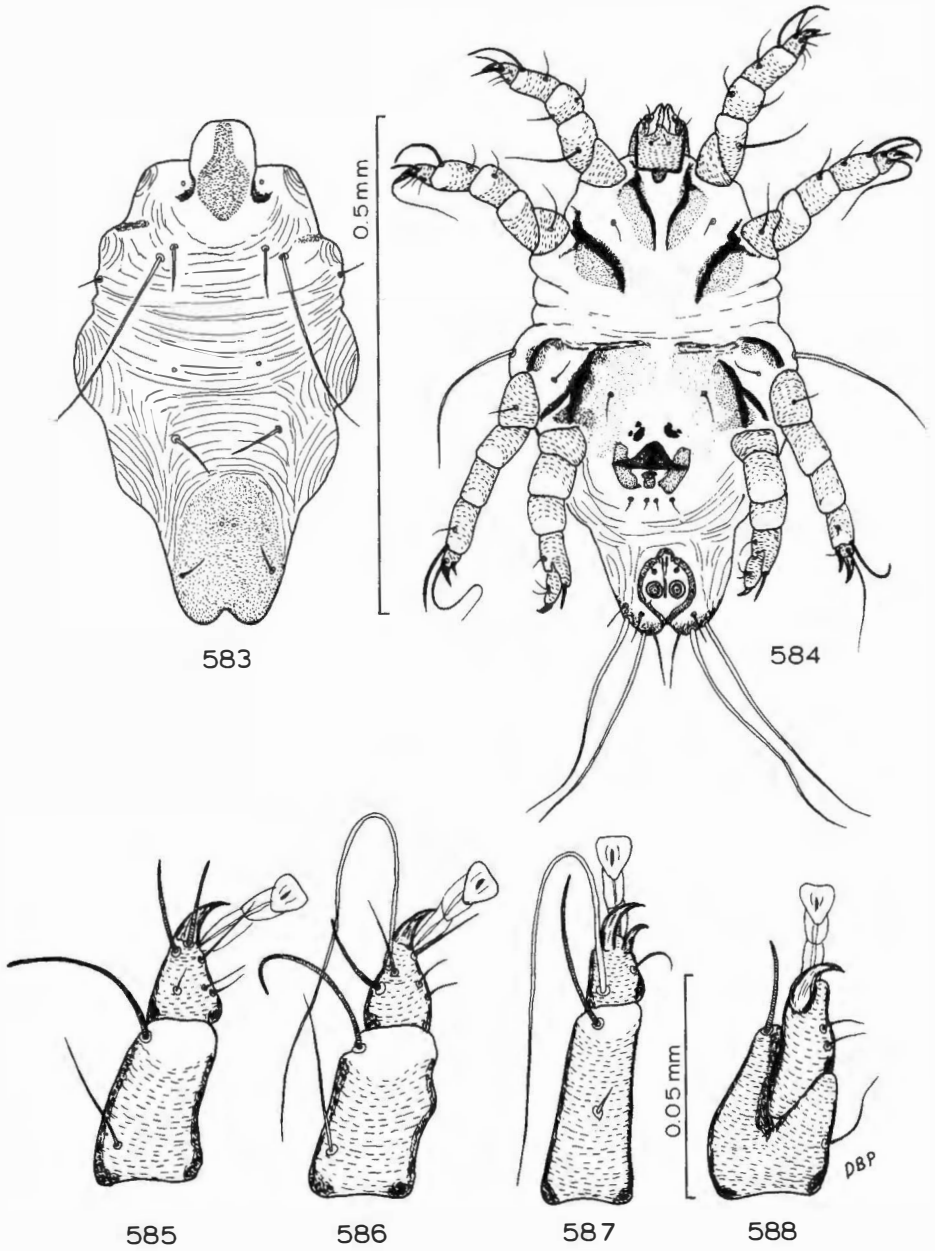
FIGS. 565-570.—*Congocoptes dryocopi* Pence, female: 565, dorsum; 566, venter; 567, tarsus and tibia I; 568, tarsus and tibia II; 569, tarsus and tibia III; 570, tarsus and tibia IV.



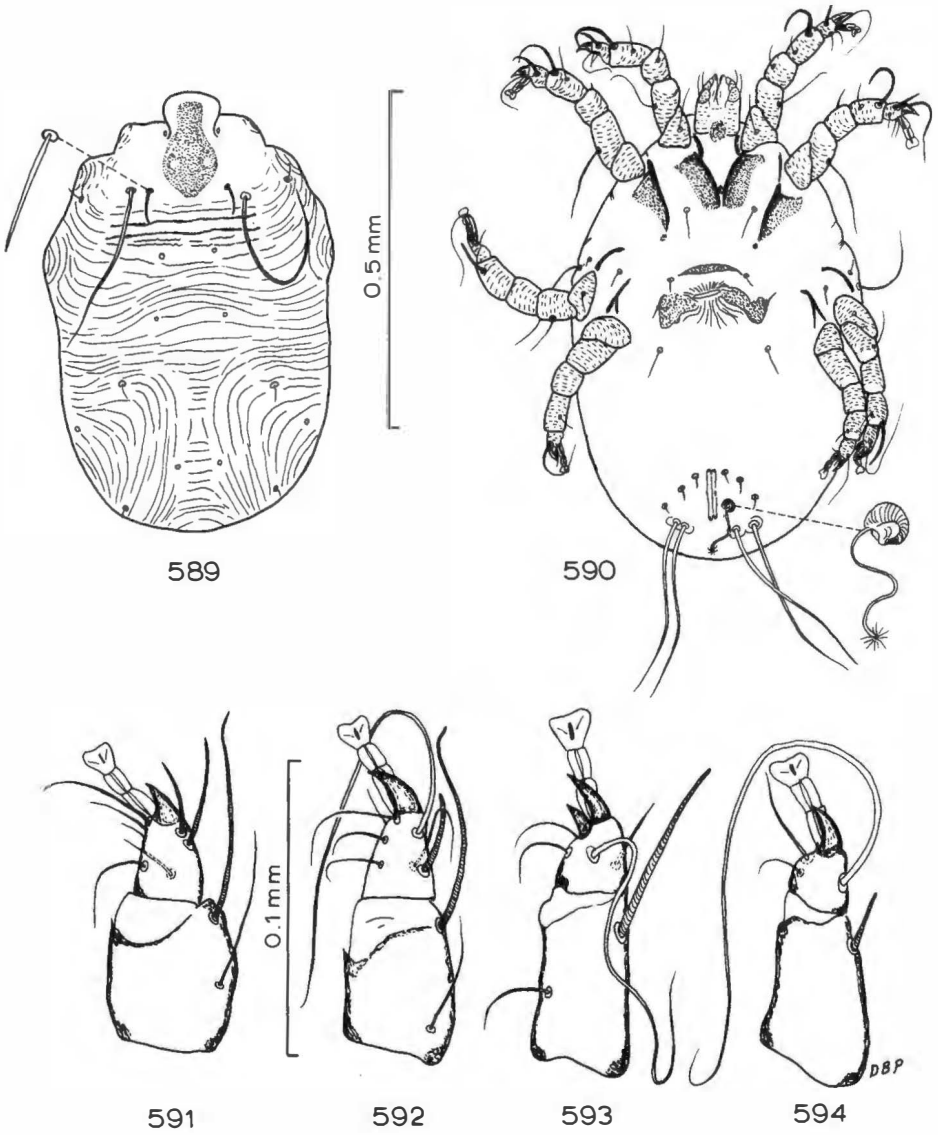
FIGS. 571-576.—*Congocoptes dryocopi* Pence, male: 571, dorsum; 572, venter; 573, tarsus and tibia I; 574, tarsus and tibia II; 575, tarsus and tibia III; 576, tarsus and tibia IV.



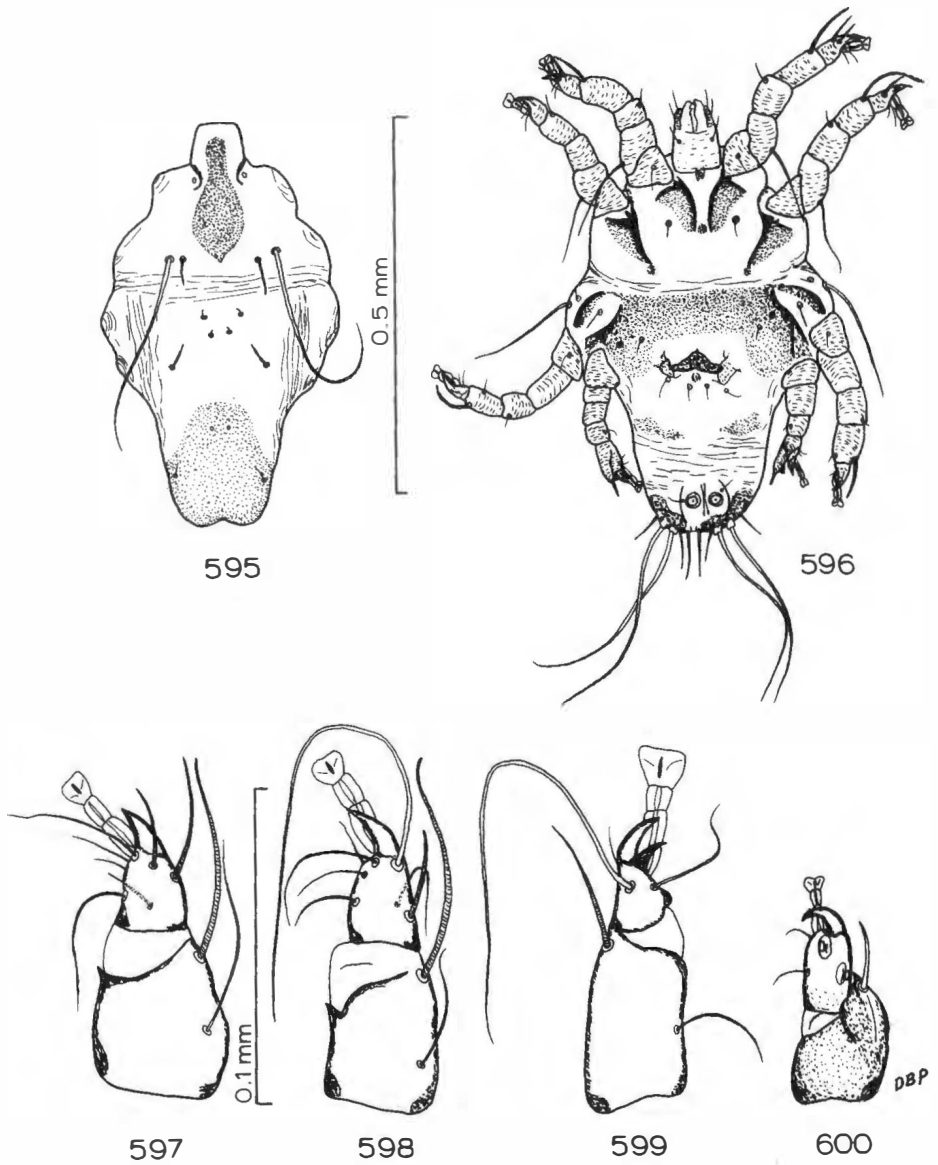
FIGS. 577-582.—*Congocoptes furmani* Fain, female: 577, dorsum; 578, venter; 579, tarsus and tibia I; 580, tarsus and tibia II; 581, tarsus and tibia III; 582, tarsus and tibia IV.



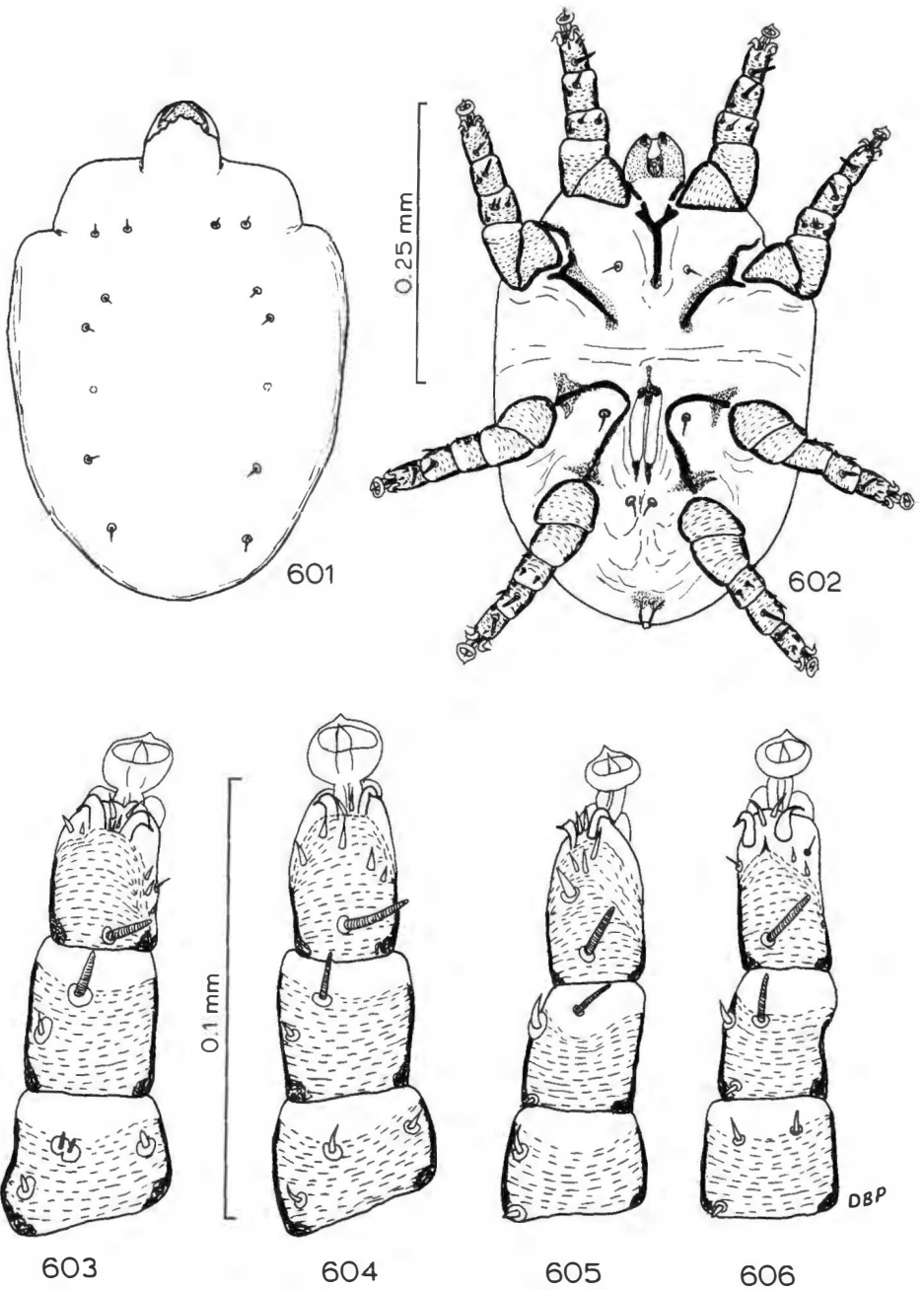
FIGS. 583-588.—*Congocoptes furmani* Fain, male: 583, dorsum; 584, venter; 585, tarsus and tibia I; 586, tarsus and tibia II; 587, tarsus and tibia III; 588, tarsus and tibia IV.



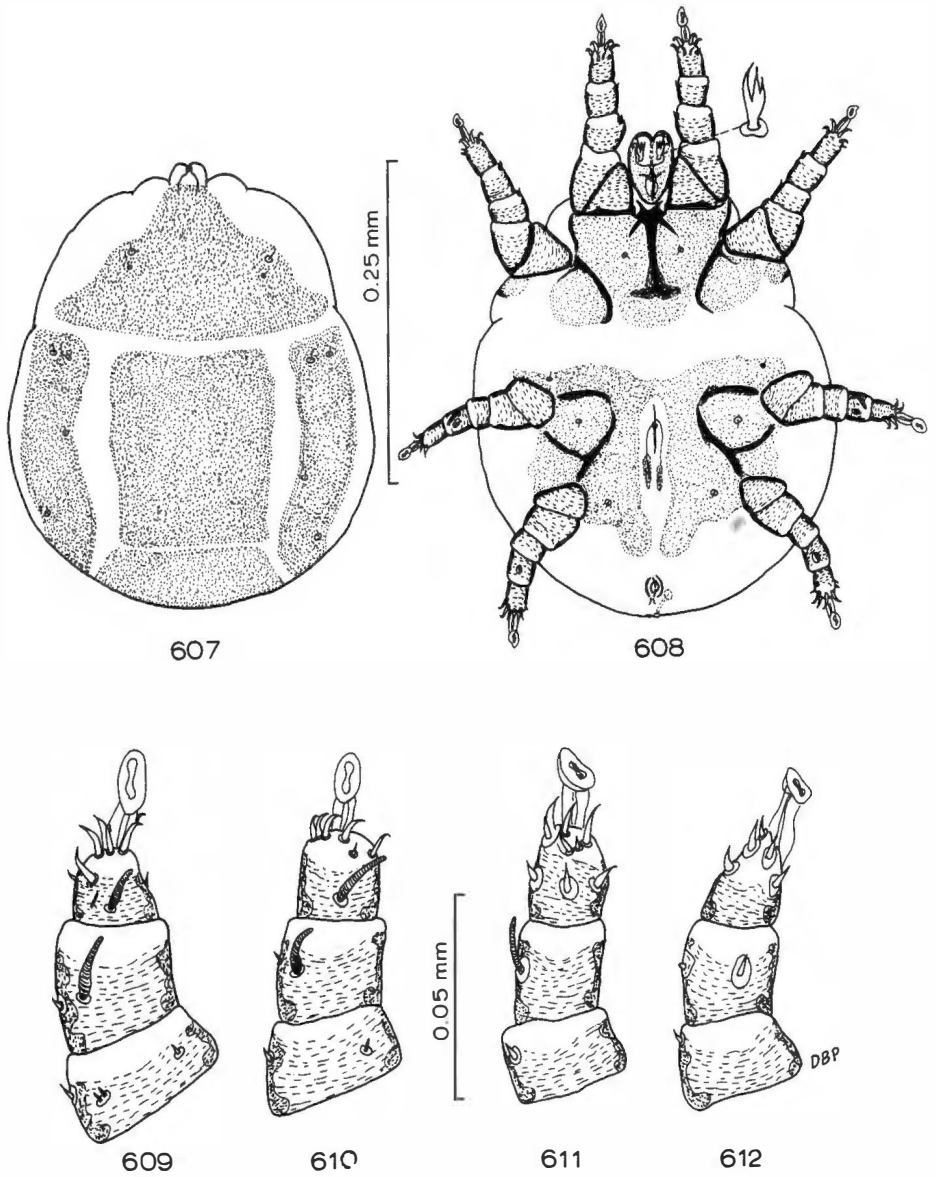
FIGS. 589-594.—*Congocoptes sphyrapicicola* Pence, female: 589, venter; 590, dorsum; 591, tarsus and tibia I; 592, tarsus and tibia II; 593, tarsus and tibia III; 594, tarsus and tibia IV.



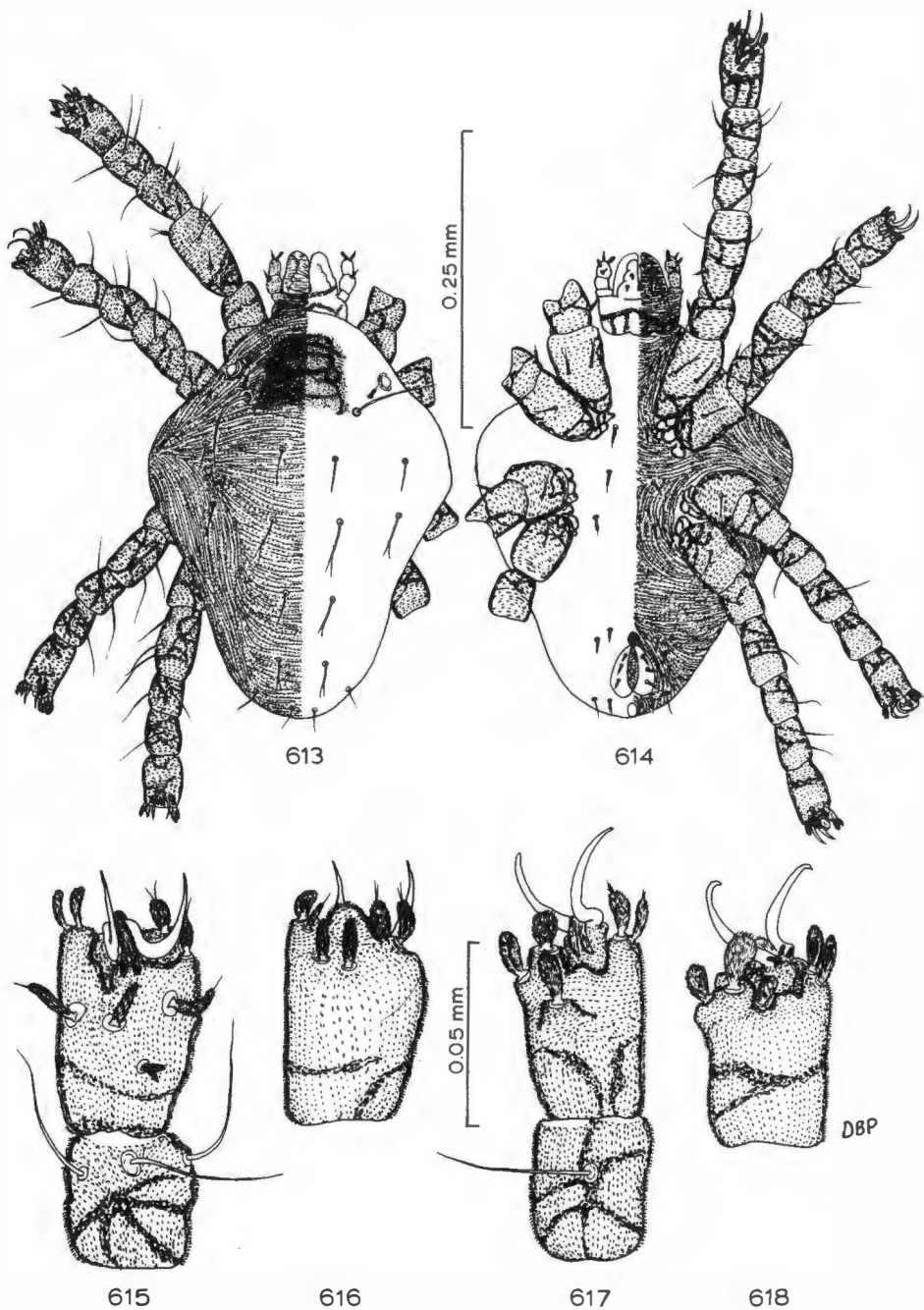
FIGS. 595-600.—*Congocoptes sphyrapicicola* Pence, male: 595, dorsum; 596, venter; 597, tarsus and tibia I; 598, tarsus and tibia II; 599, tarsus and tibia III; 600, tarsus and tibia IV.



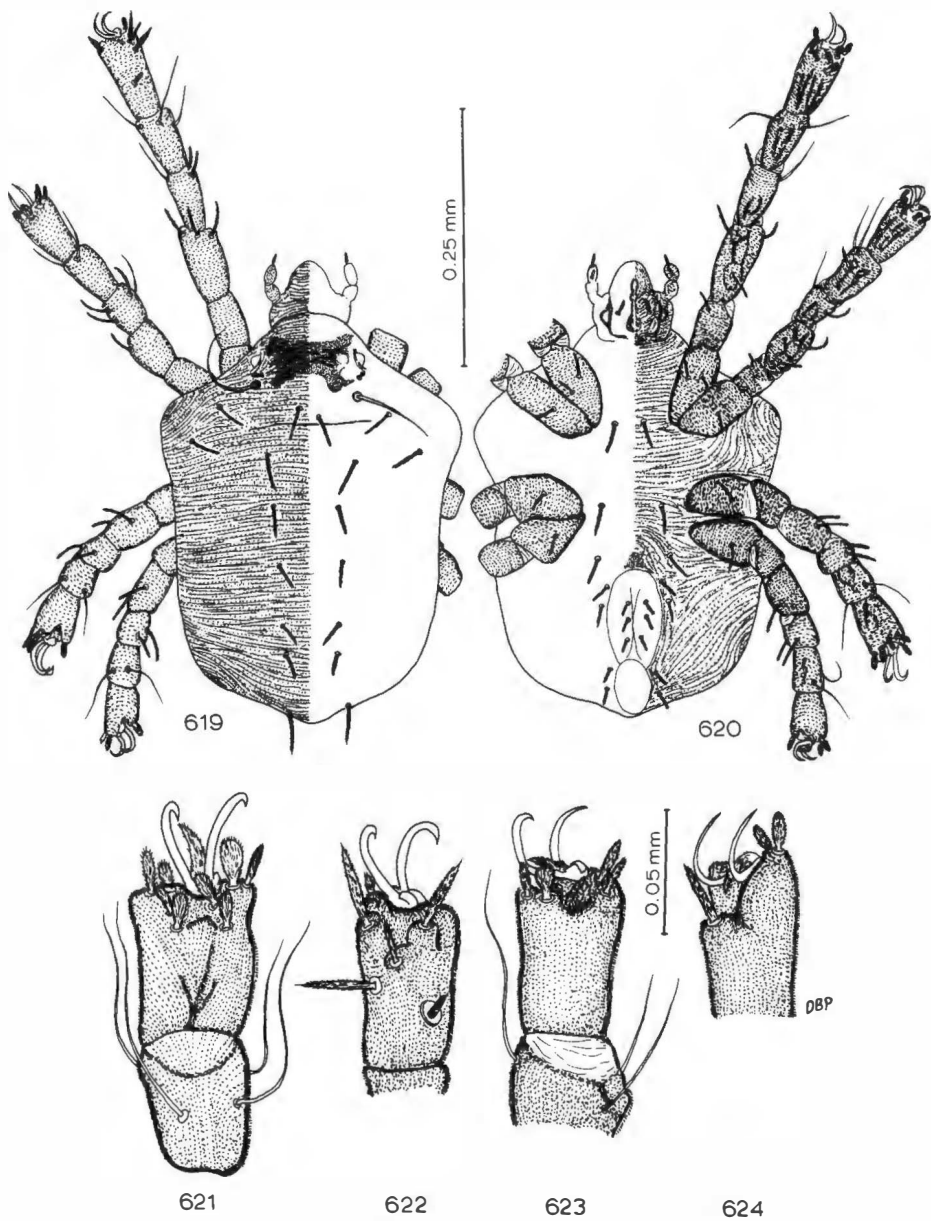
FIGS. 601-606.—*Cytodites therae* Hyland, female: 601, dorsum; 602, venter; 603, tarsus, tibia, and genu I; 604, tarsus, tibia, and genu II; 605, tarsus, tibia, and genu III; 606, tarsus, tibia, and genu IV.



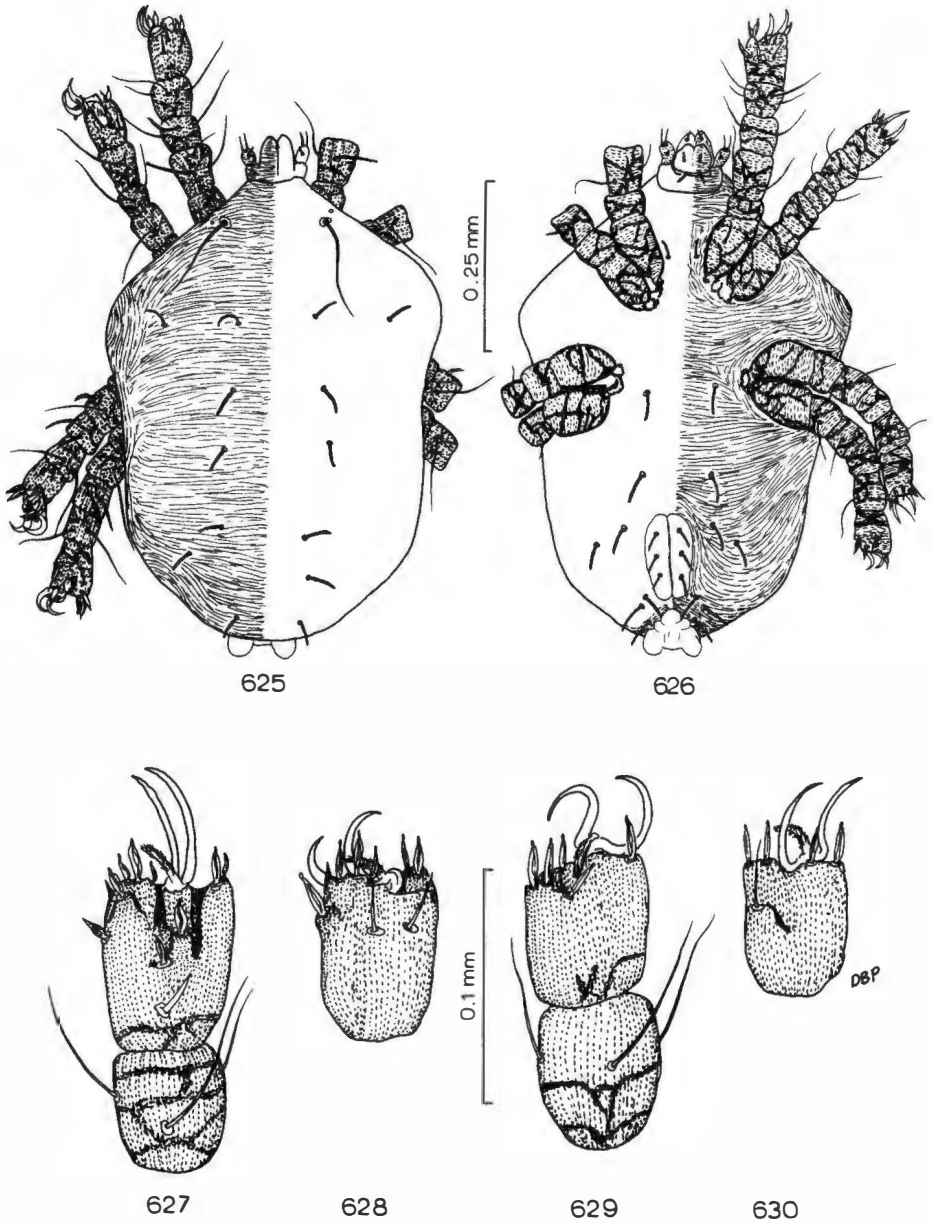
FIGS. 607-612.—*Cytomyssus thryothori* Pence, female: 607, dorsum; 608, venter; 609, tarsus, tibia, and genu I; 610, tarsus, tibia, and genu II; 611, tarsus, tibia, and genu III; 612, tarsus, tibia, and genu IV.



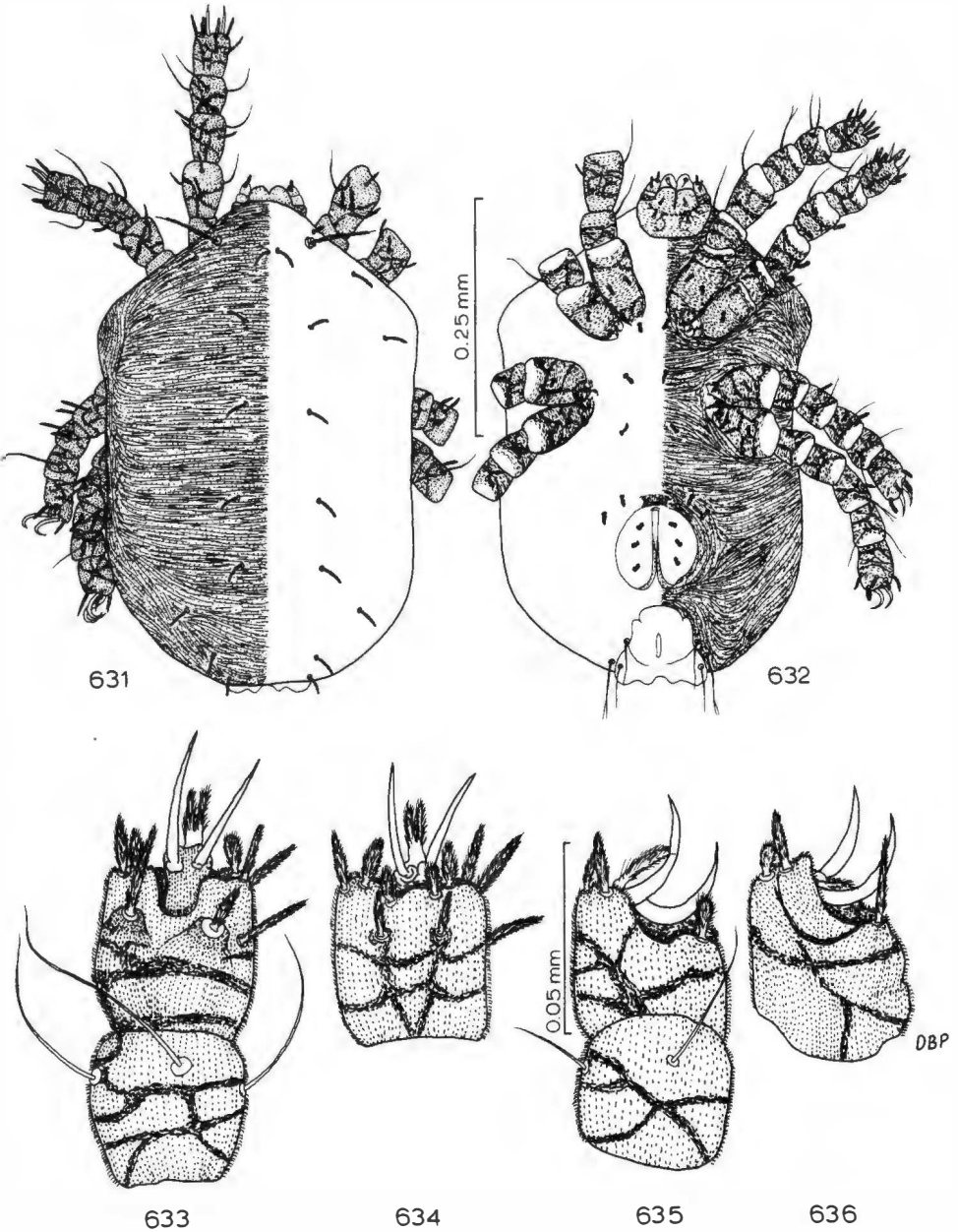
FIGS. 613-618.—*Astrida caprimulgi* Fain, female: 613, dorsum; 614, venter; 615, tarsus and tibia I, dorsal view; 616, tarsus I, ventral view; 617, tarsus and tibia IV, dorsal view; 618, tarsus IV, ventral view.



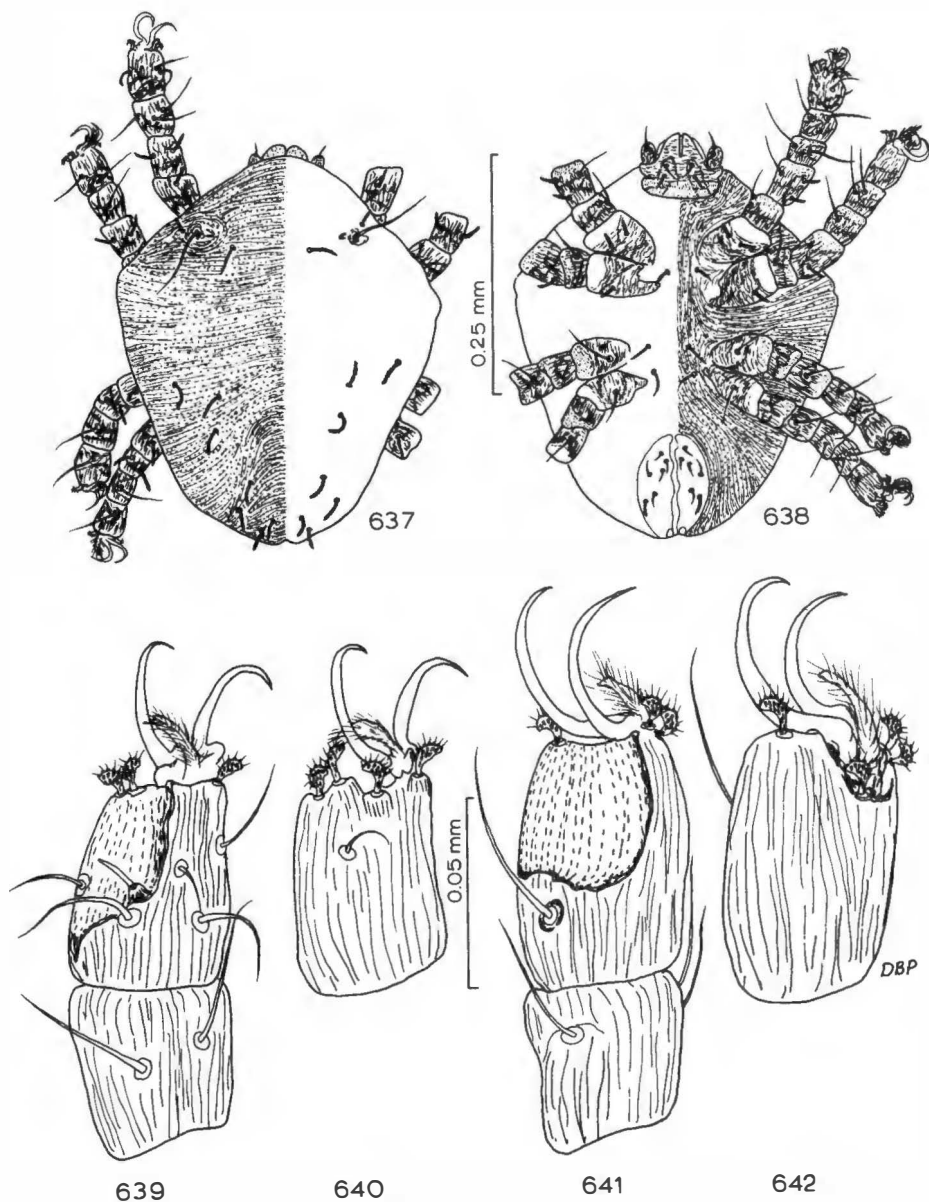
FIGS. 619-624.—*Astrida coccyzae* Pence, female: 619, dorsum; 620, venter; 621, tarsus and tibia I, dorsal view; 622, tarsus I, ventral view; 623, tarsus and tibia IV, dorsal view; 624, tarsus IV, ventral view.



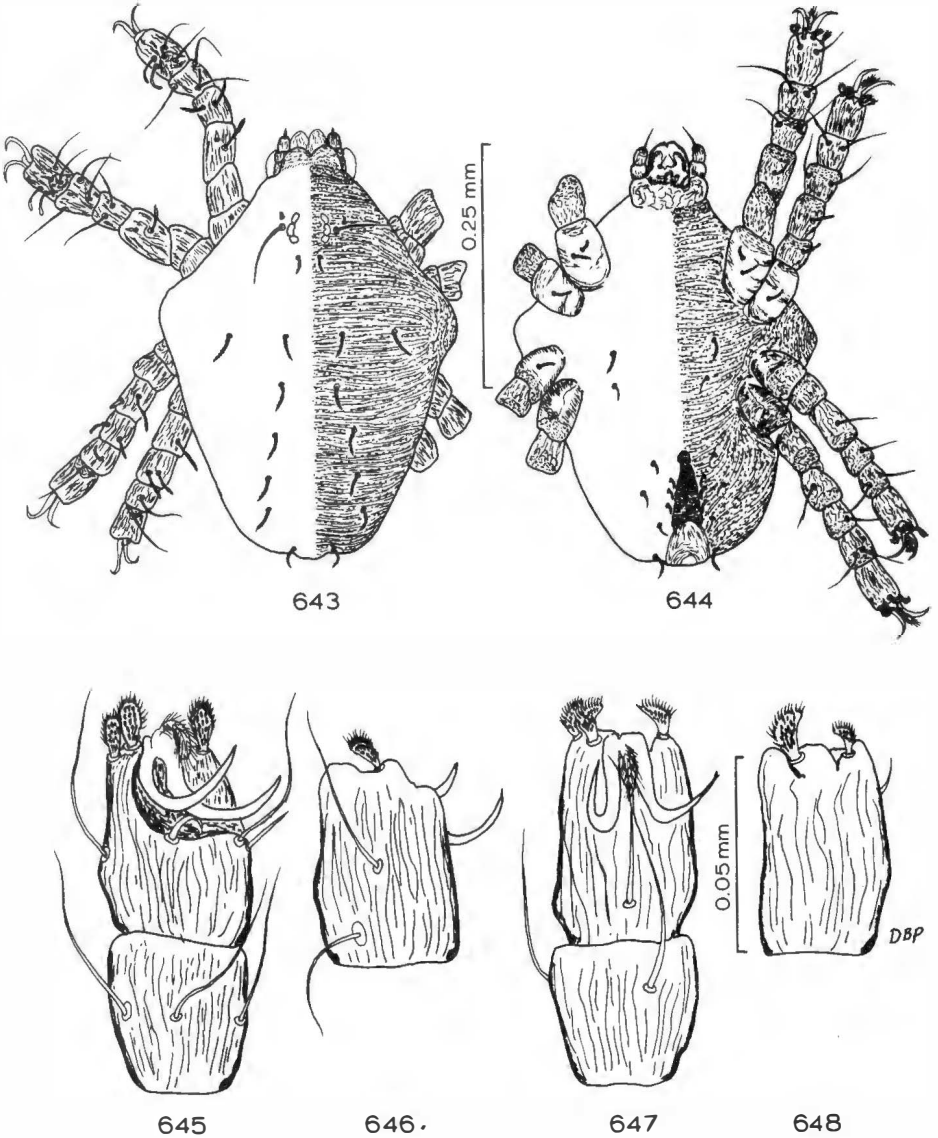
FIGS. 625-630.—*Neoboydaia aureliania* Fain, female: 625, dorsum; 626, venter; 627, tarsus and tibia I, dorsal view; 628, tarsus I, ventral view; 629, tarsus and tibia IV, dorsal view; 630, tarsus IV, ventral view.



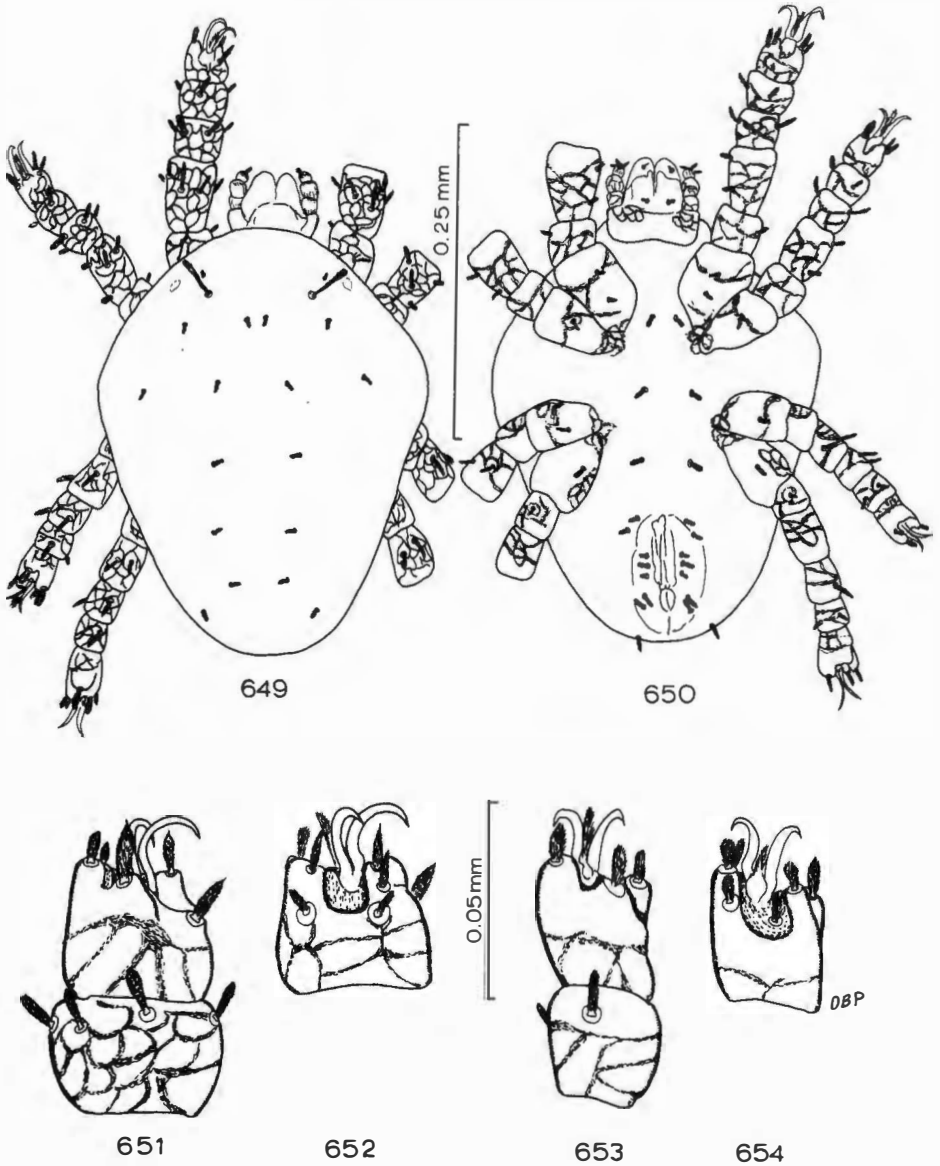
FIGS. 631-636.—*Neoboydaia lateralli* Fain, female: 631, dorsum; 632, venter; 633, tarsus and tibia I, dorsal view; 634, tarsus I, ventral view; 635, tarsus and tibia IV, dorsal view; 636, tarsus IV, ventral view.



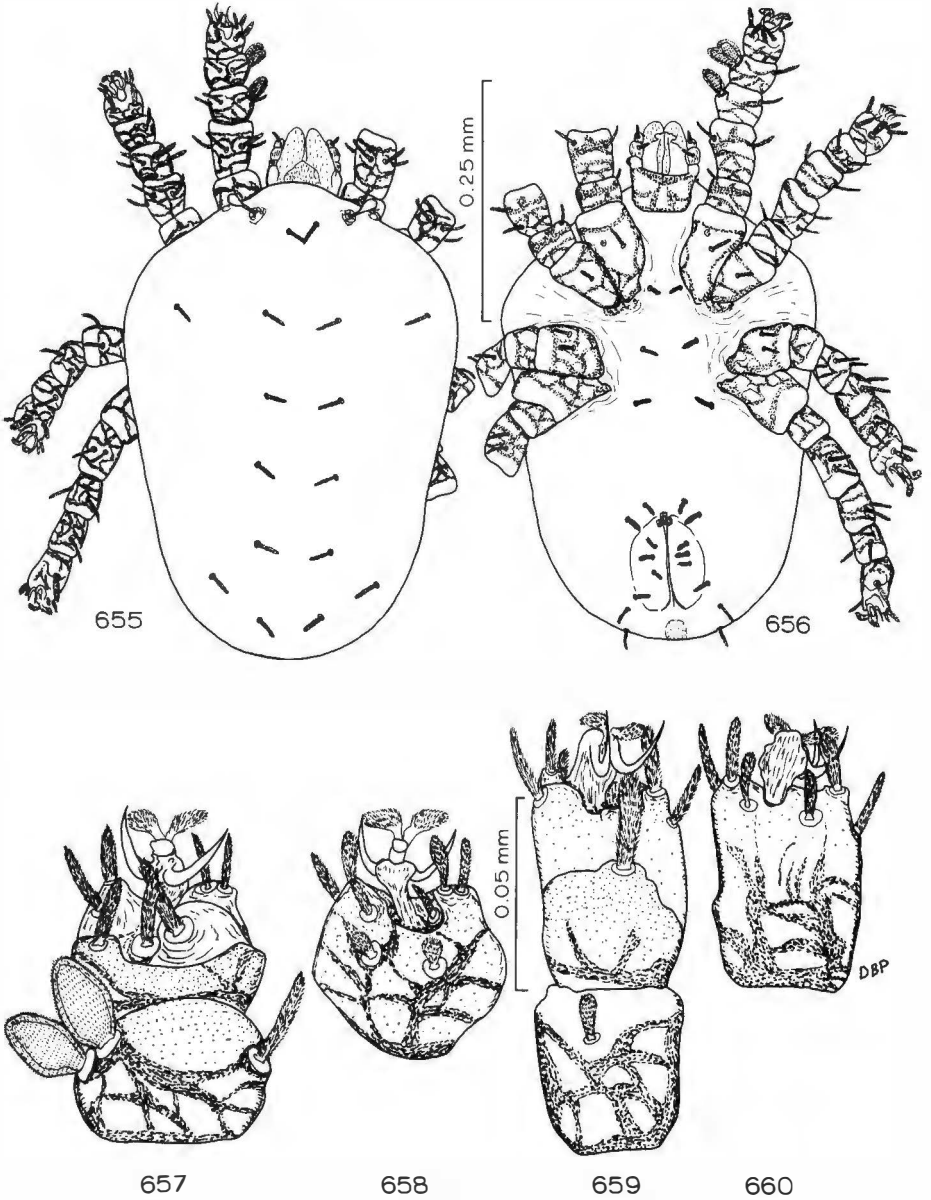
FIGS. 637-642.—*Neoboydaia colymbiformi* Clark, female: 637, dorsum; 638, venter; 639, tarsus and tibia I, dorsal view; 640, tarsus I, ventral view; 641, tarsus and tibia IV, dorsal view; 642, tarsus IV, ventral view.



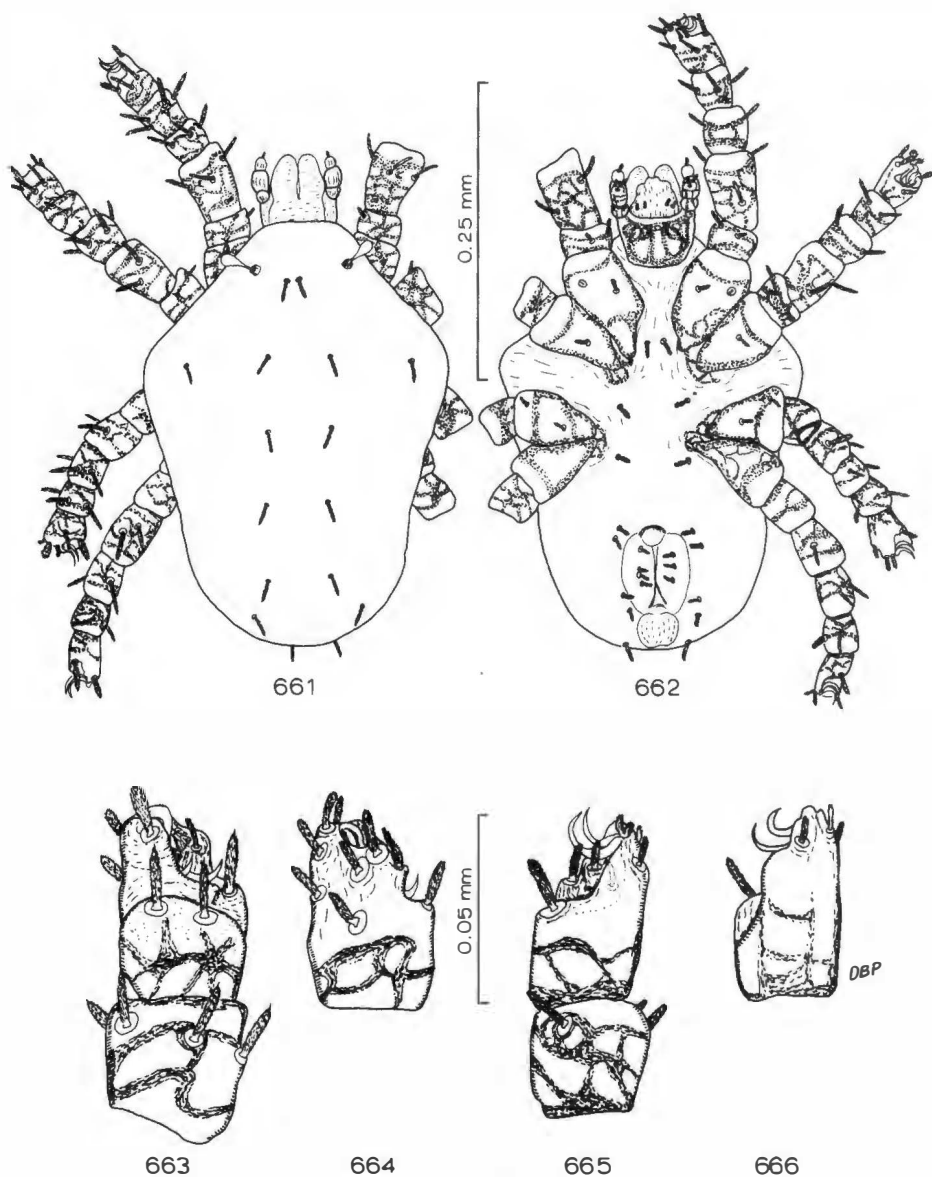
FIGS. 643-648.—*Neoboydaia philomachi* Fain, female: 643, dorsum; 644, venter; 645, tarsus and tibia I, dorsal view; 646, tarsus I, ventral view; 647, tarsus and tibia IV, dorsal view; 648, tarsus IV, ventral view.



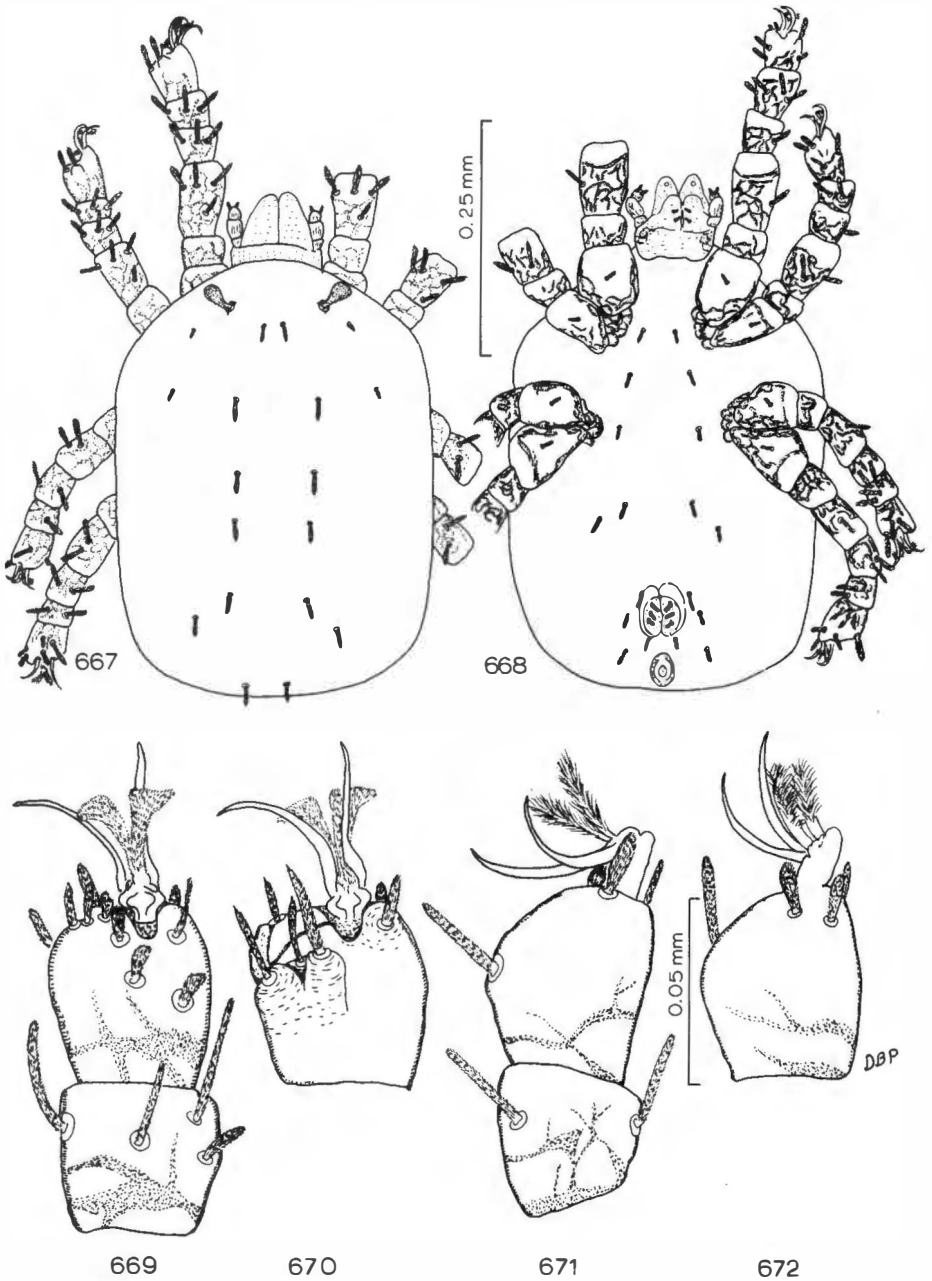
FIGS. 649-654.—*Boydaia sturni* Boyd, female: 649, dorsum; 650, venter; 651, tarsus and tibia I, dorsal view; 652, tarsus I, ventral view; 653, tarsus and tibia IV, dorsal view; 654, tarsus IV, ventral view.



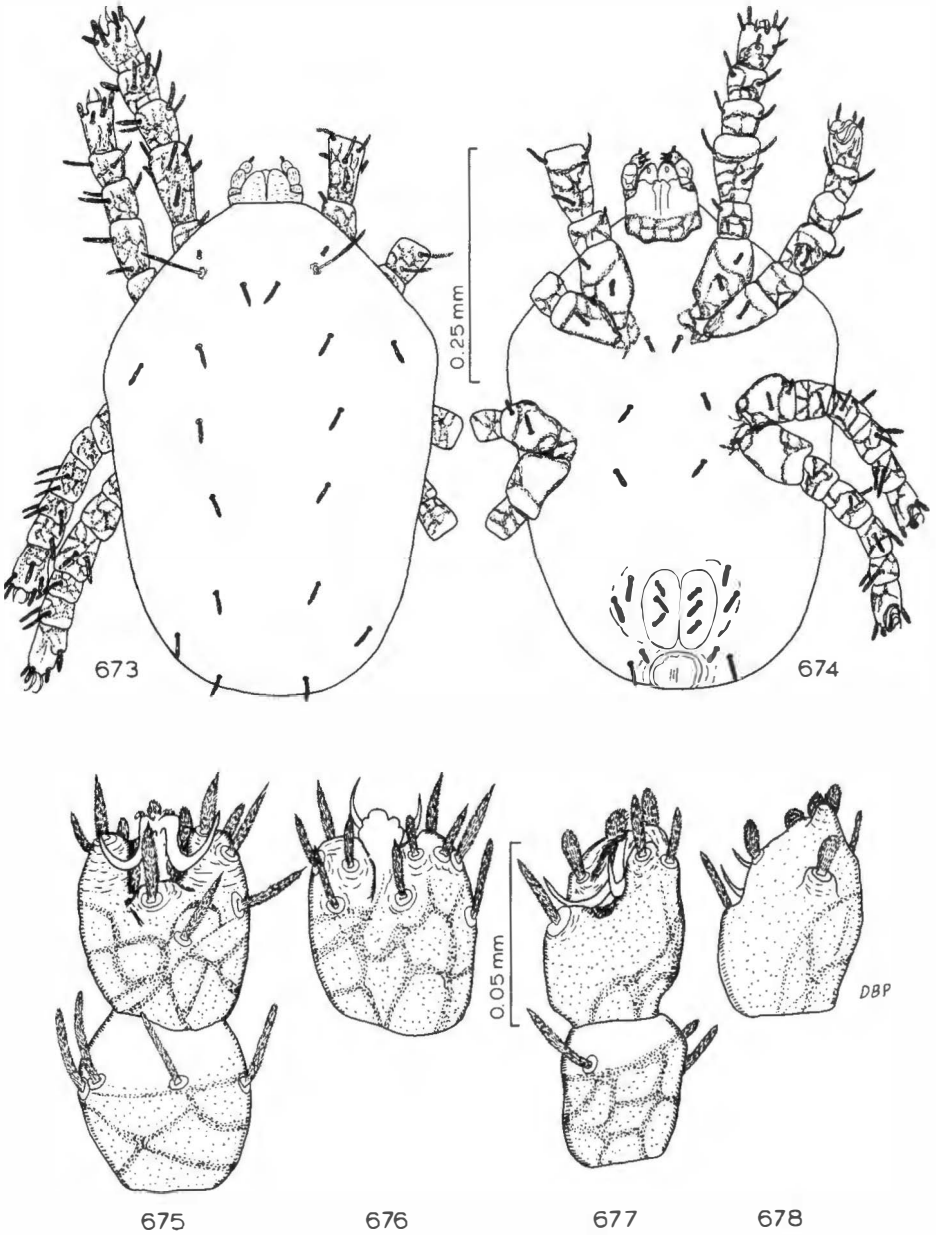
FIGS. 655-660.—*Boydaia psalidoprocnei* Fain, female: 655, dorsum; 656, venter; 657, tarsus and tibia I, dorsal view; 658, tarsus I, ventral view; 659, tarsus and tibia IV, dorsal view; 660, tarsus IV, ventral view.



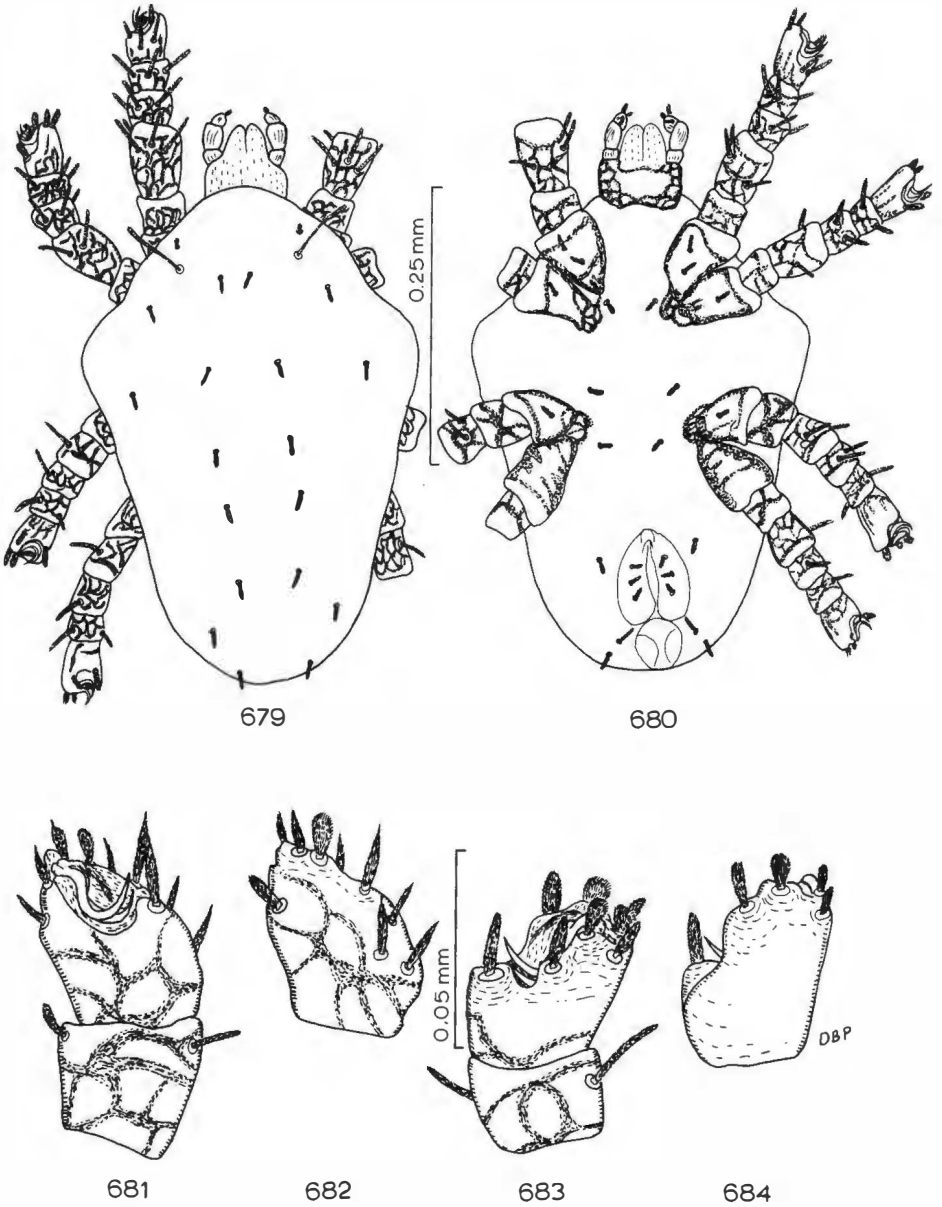
FIGS. 661-666.—*Boydaia hirundoae* Fain, female: 661, dorsum; 662, venter; 663, tarsus and tibia I, dorsal view; 664, tarsus I, ventral view; 665, tarsus and tibia IV, dorsal view; 666, tarsus IV, ventral view.



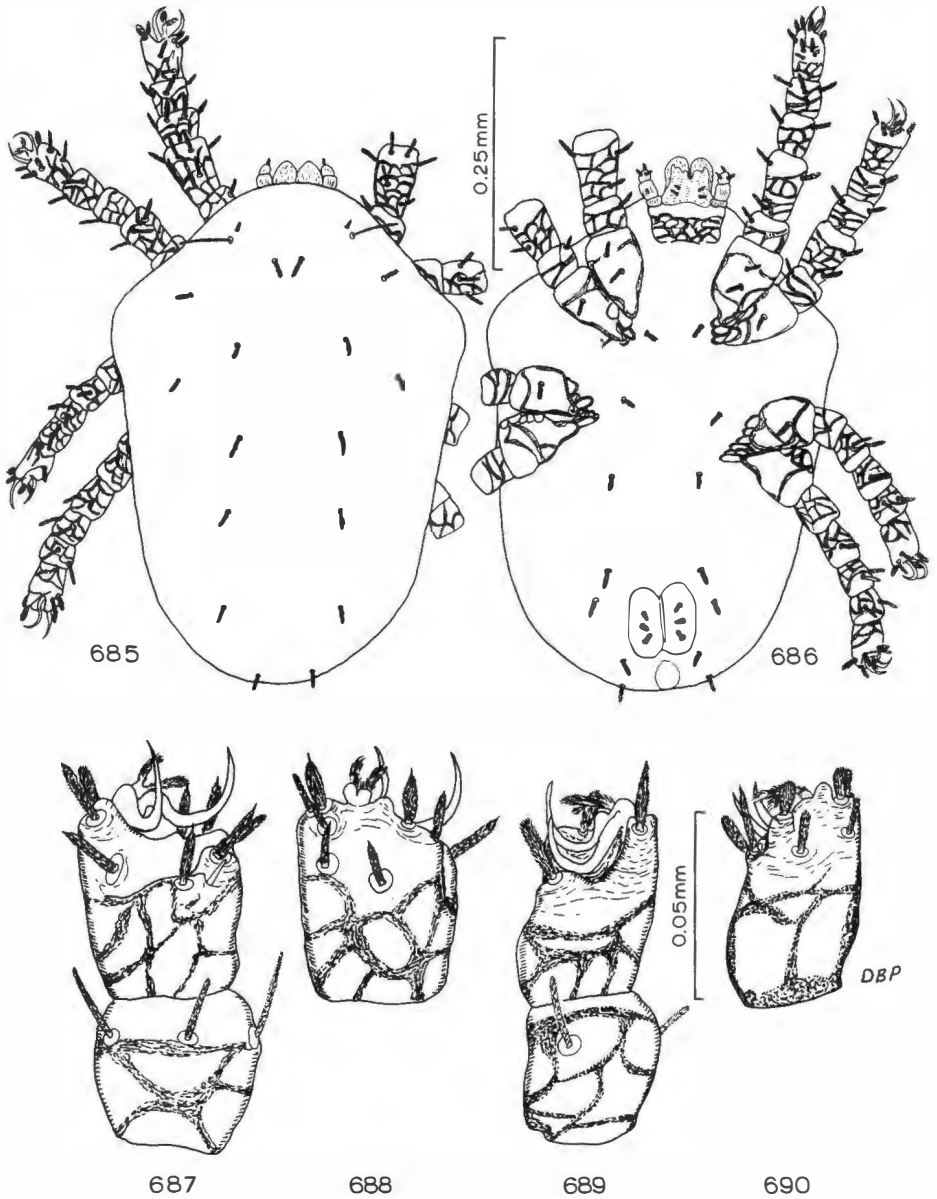
FIGS. 667-672.—*Boydaia tyrannus* Ford, female: 667, dorsum; 668, venter; 669, tarsus and tibia I, dorsal view; 670, tarsus I, ventral view; 671, tarsus and tibia IV, dorsal view; 672, tarsus IV, ventral view.



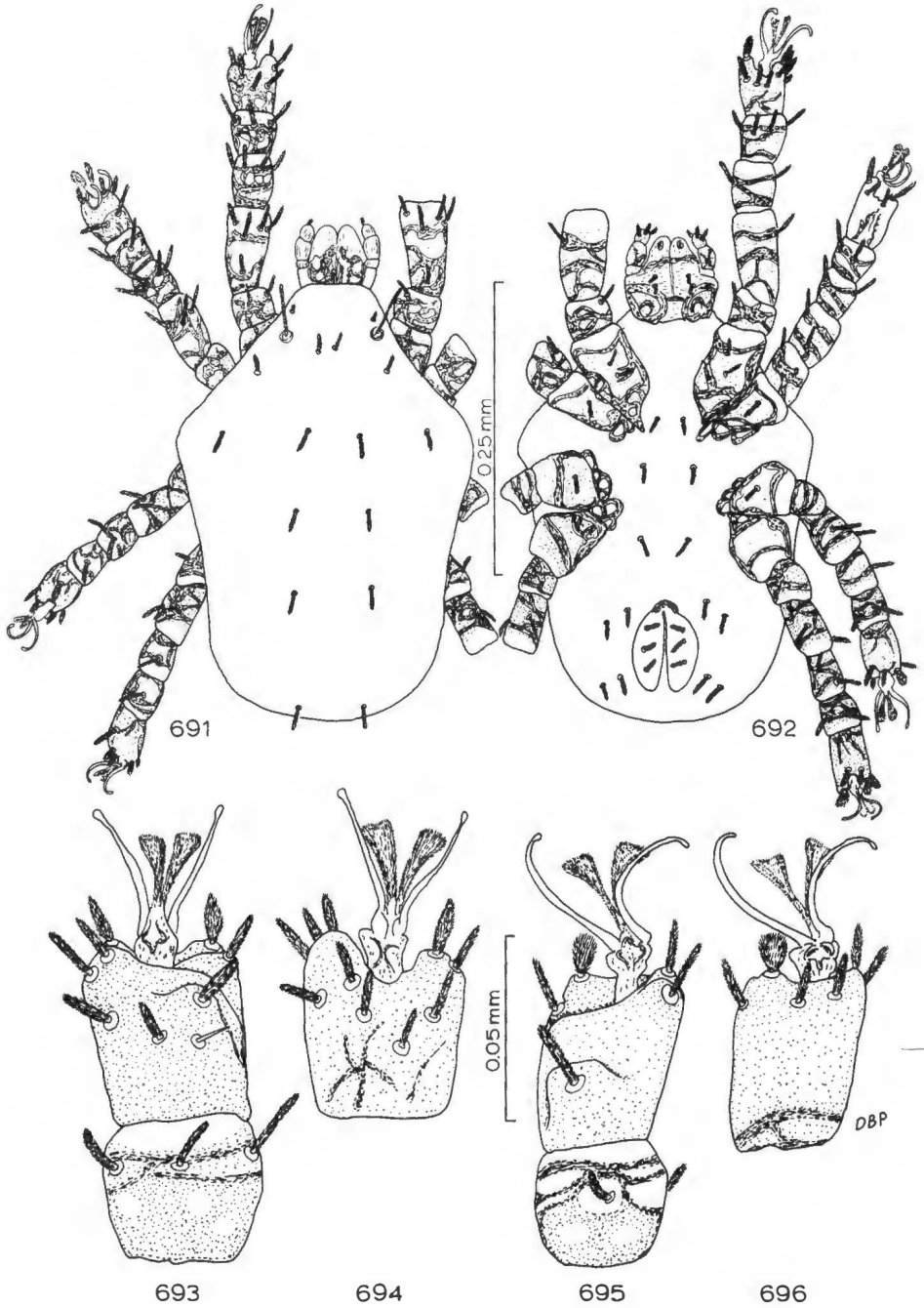
FIGS. 673-678.—*Boydaia agelaii* Fain, female: 673, dorsum; 674, venter; 675, tarsus and tibia I, dorsal view; 676, tarsus I, ventral view; 677, tarsus and tibia IV, dorsal view; 678, tarsus IV, ventral view.



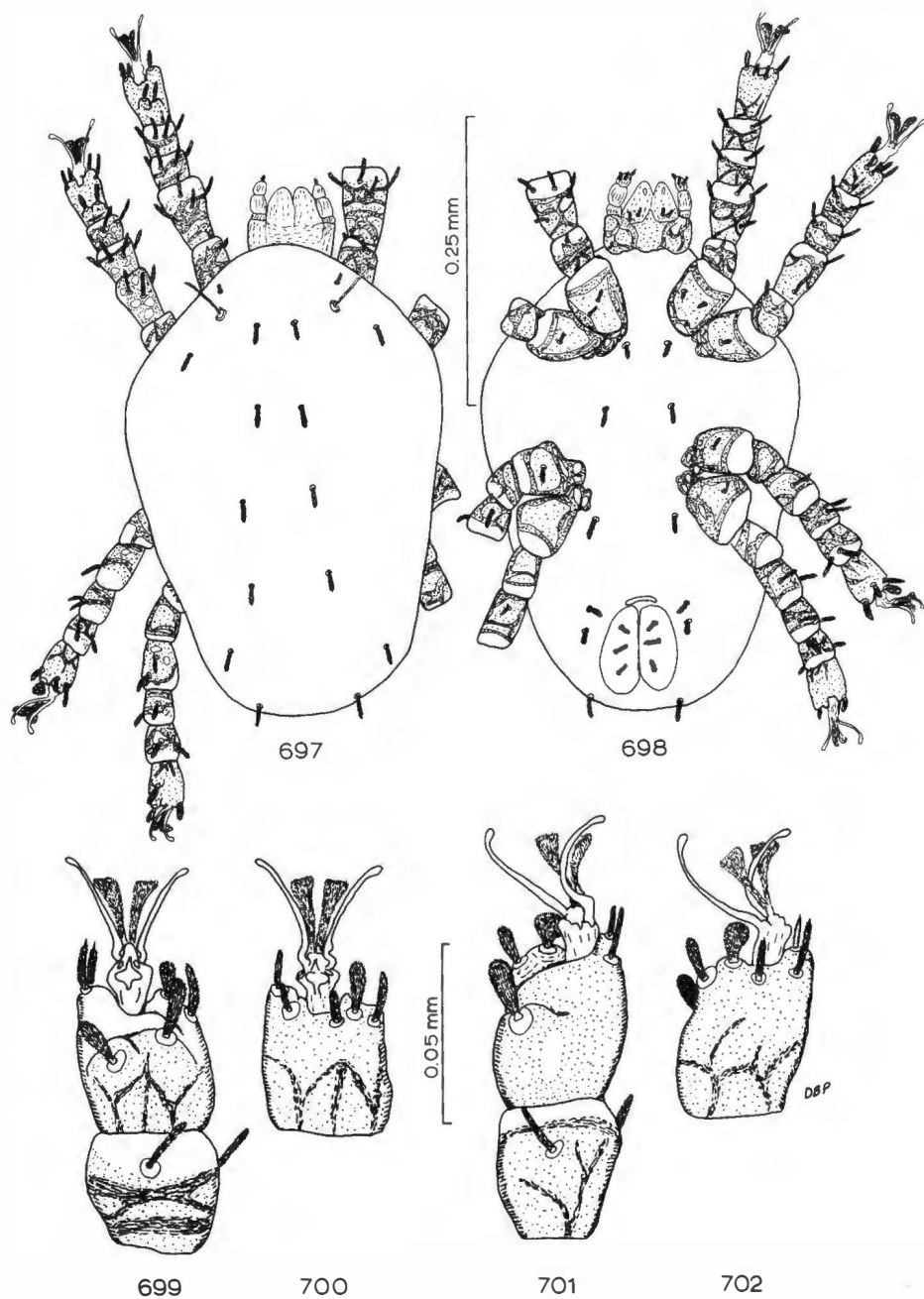
FIGS. 679-684.—*Boydaia nigra* Fain, female: 679, dorsum; 680, venter; 681, tarsus and tibia I, dorsal view; 682, tarsus I, ventral view; 683, tarsus and tibia IV, dorsal view; 684, tarsus IV, ventral view.



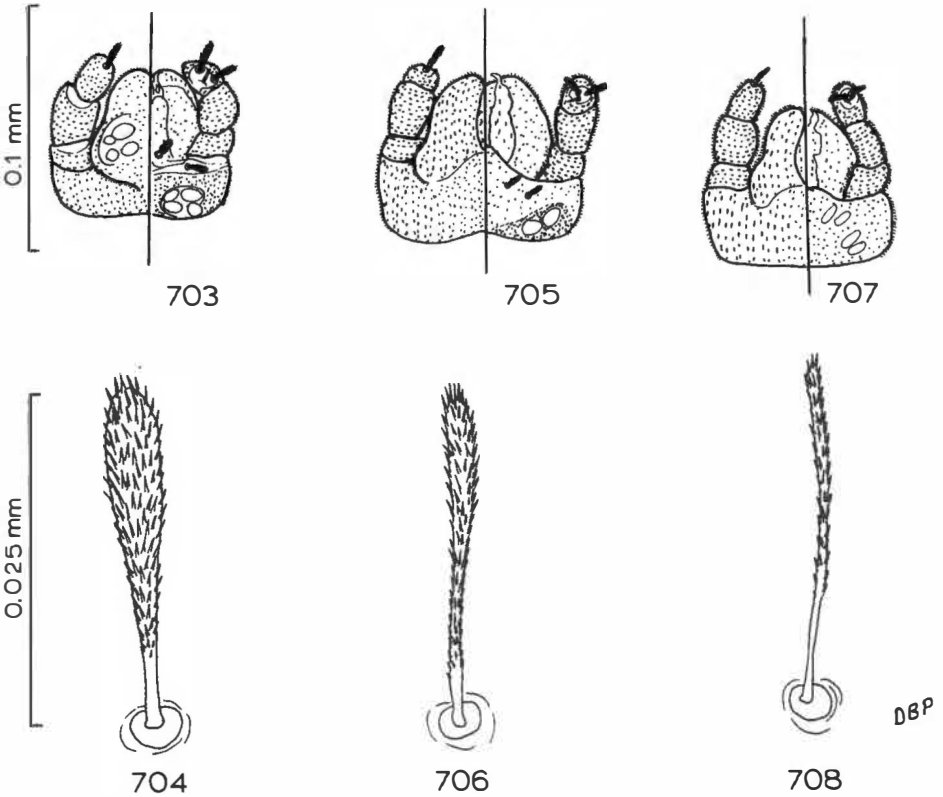
FIGS. 685-690.—*Boydaia colini* Clark, female: 685, dorsum; 686, venter; 687, tarsus and tibia I, dorsal view; 688, tarsus I, ventral view; 689, tarsus and tibia IV, dorsal view; 690, tarsus IV, ventral view.



FIGS. 691-696.—*Boydaia spatulata* Fain, female: 691, dorsum; 692, venter; 693, tarsus and tibia I, dorsal view; 694, tarsus I, ventral view; 695, tarsus and tibia IV, dorsal view; 696, tarsus IV, ventral view.



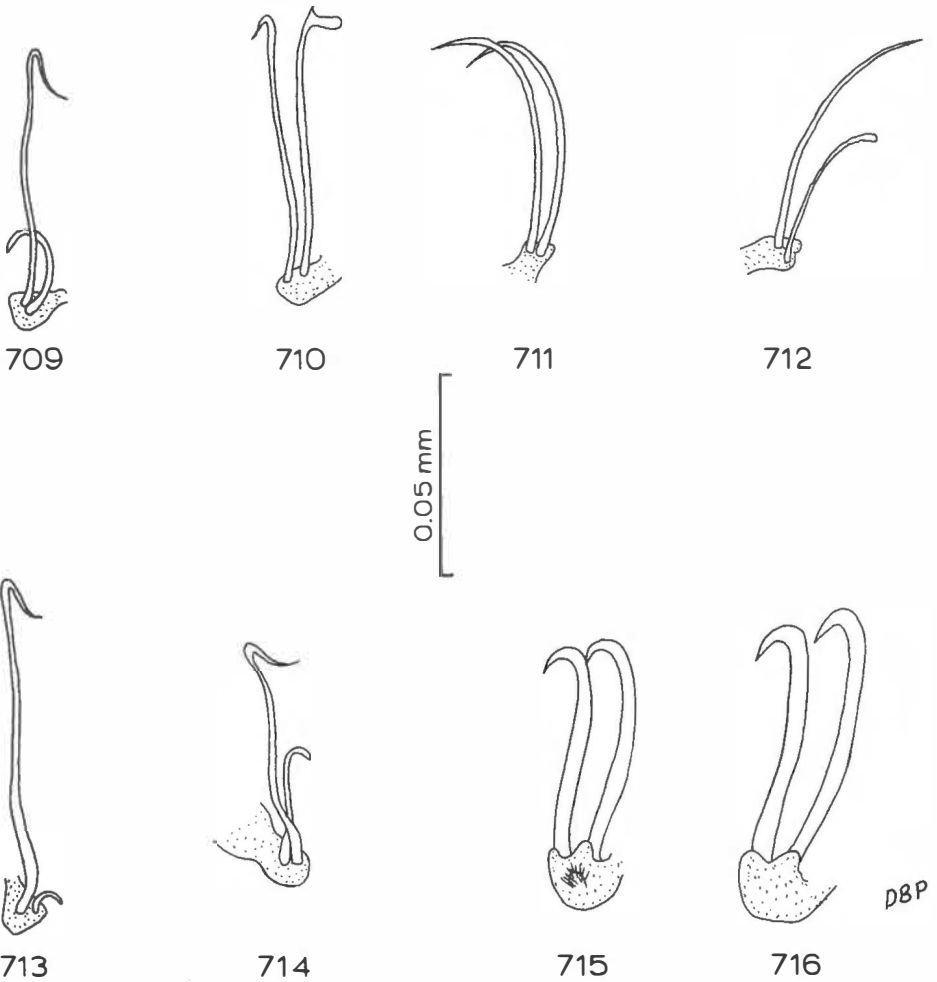
FIGS. 697-702.—*Boydaia loxiae* Fain, female: 697, dorsum; 698, venter; 699, tarsus and tibia I, dorsal view; 700, tarsus I, ventral view; 701, tarsus and tibia IV, dorsal view; 702, tarsus IV, ventral view.



FIGS. 703-704.—*Boydala rosickyi* Černý and Dusbábek, female: 703, dorsal and ventral views of gnathosoma, respectively; 704, sensilla.

FIGS. 705-706.—*Boydala faini* Černý and Dusbábek, female: 705, dorsal and ventral views of gnathosoma, respectively; 706, sensilla.

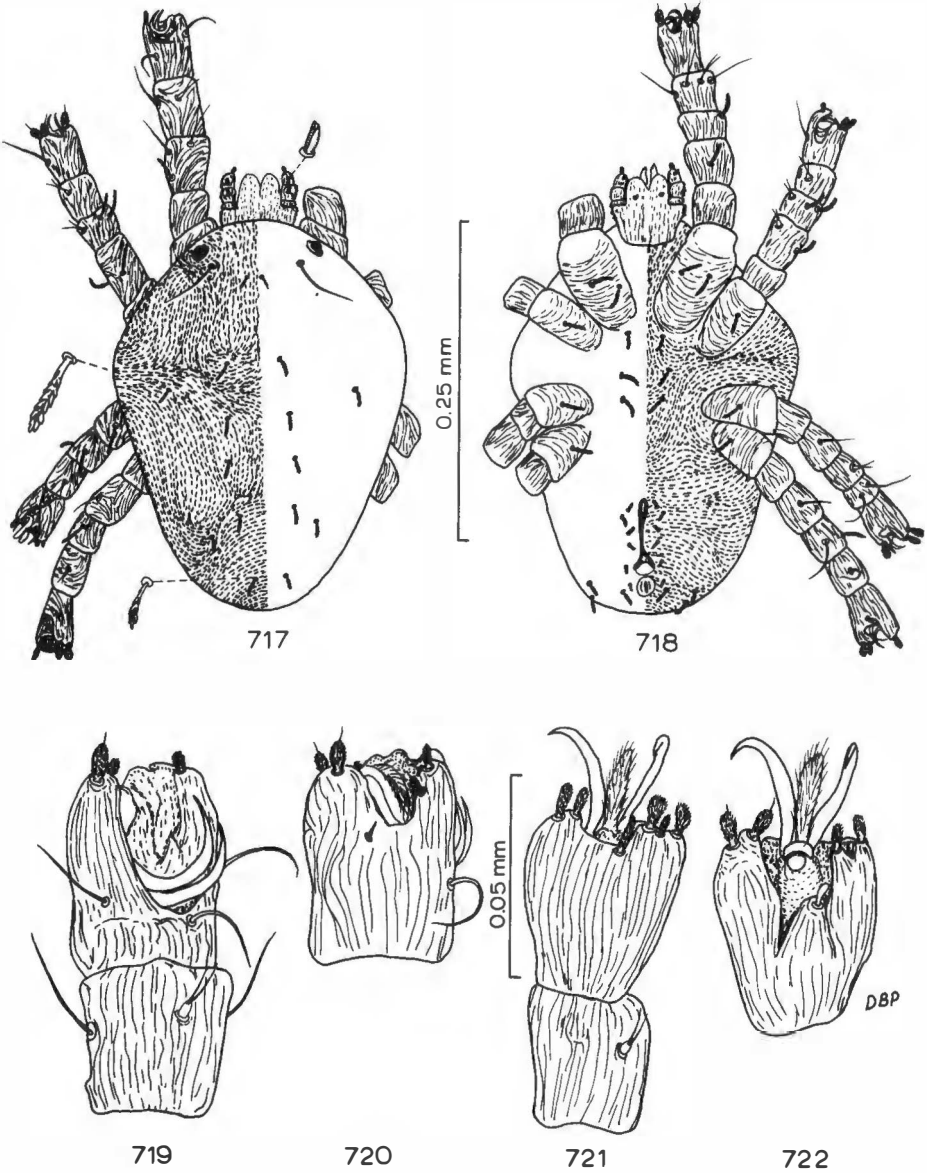
FIGS. 707-708.—*Boydala americana* Fain, female: 707, dorsal and ventral views of gnathosoma, respectively; 708, sensilla.



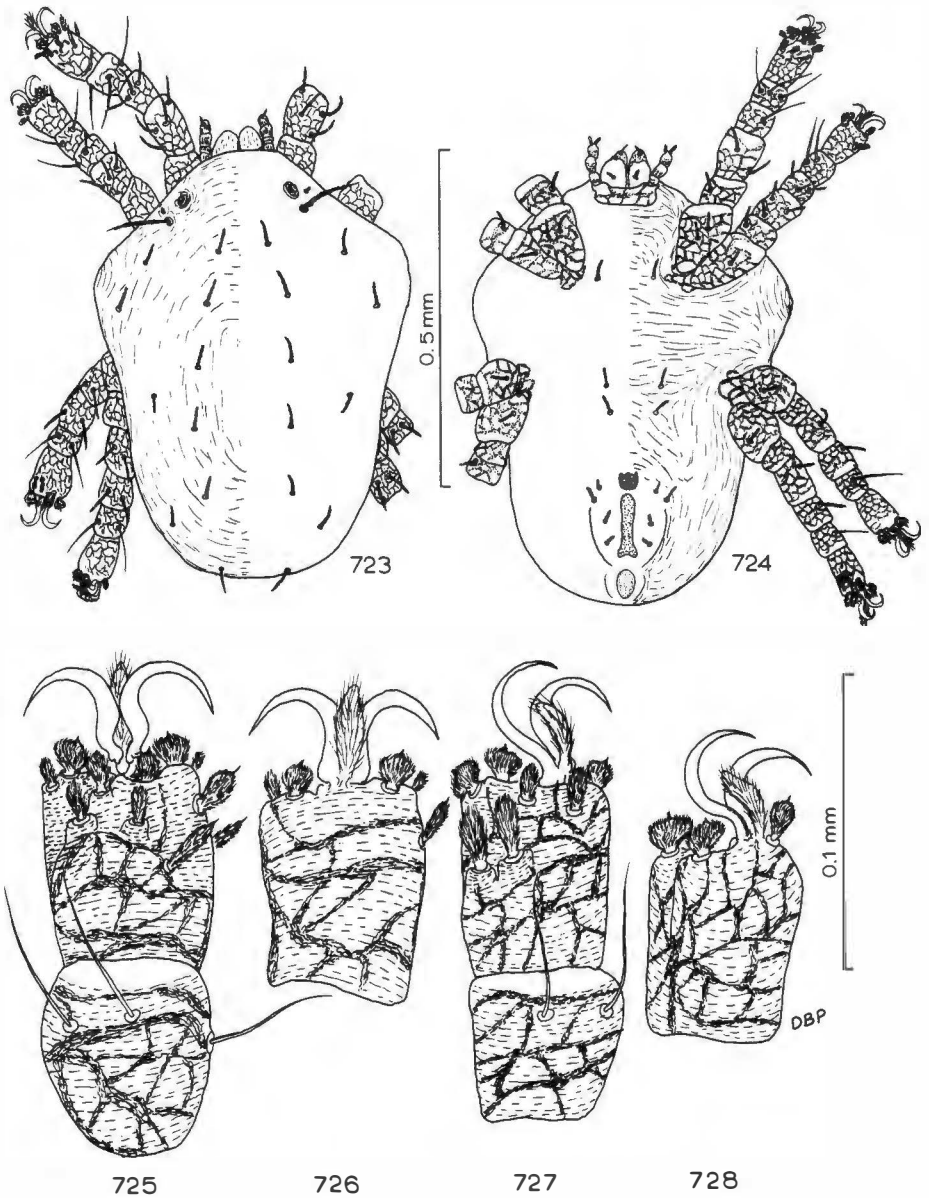
FIGS. 709-712.—Claws of tarsi I of larvae of “*spatulata*” group of genus *Boyaia*: 709, *Boyaia spatulata* Fain; 710, *Boyaia jordani* Van Eyndhoven; 711, *Boyaia mimi* Fain and Hyland; 712, *Boyaia quiscali* Clark.

FIGS. 713-714.—Claws of tarsi II of larvae of “*colini*” group of genus *Boyaia*: 713, *Boyaia colini* Clark; 714, *Boyaia clarki* Fain.

FIGS. 715-716.—Claws and pluvillus of tarsi I of larvae of “*nigra*” group of genus *Boyaia*: 715, *Boyaia sturnellae* Clark; 716, *Boyaia nigra* Fain.



FIGS. 717-722.—*Ophthalmophagus striatus* Crossley, female: 717, dorsum; 718, venter; 719, tarsus and tibia I, dorsal view; 720, tarsus I, ventral view; 721, tarsus and tibia IV, dorsal view; 722, tarsus IV, ventral view.



FIGS. 723-728.—*Ophthalmophagus womersleyi* Fain, female: 723, dorsum; 724, venter; 725, tarsus and tibia I, dorsal view; 726, tarsus I, ventral view; 727, tarsus and tibia IV, dorsal view; 728, tarsus IV, ventral view.