THE TETRANYCHOID MITES OF CHILE : I. THE SUBFAMILY BRYOBIINAE (ACARI : TETRANYCHIDAE)

BY

Roberto H. González *

Introduction

A survey of spider mites on non-cultivated and economic plants was undertaken by the author whilst in the University of Chile, Santiago. The purpose of this survey was to determine the distribution of tetranychoid mites of economic importance and to search for native species associated with wild plants throughout the territory. During the course of 1960 through 1971, over 3 000 collections were made, ranging from the northern desert and high Andean plateau down to the moorland area in the Straight of Magallanes — Cape Horn region. Ten species in the subfamily Bryobiinae, of which five are new, were found. It is worth noting the first record of the genera *Anaplonobia* Wainstein and *Hystrichonychus* McGregor for South America and the southern Hemisphere respectively, the occurrence of *Bryobia repensi* Manson, first record outside of New Zealand, and a new species of *Bryobia* feeding on *Nothofagus*, a southern beech, a rather unusual host for the group.

Early reports of Bryobiinae in Chile referred to the clover mite " *Bryobia pratensis* " and later on to the apple mite *B. praetiosa* Koch. However, with the advent of synthetic insecticides, *Bryobia* mites received increased attention on deciduous orchards, and the common brown mite, was dealt with by the present author as *B. arborea* Morgan & Anderson in a study of the spider mite fauna of apple orchards (1961).

The specimens found during the present survey have been collected by the author, unless otherwise stated. Drawings are presented in different scales and the position of leg segments (I to IV) is indicated by Roman numbers. Number of setae on leg segment coxa, trochanter, femur, genu, tibia and tarsus are indicated in that order for legs I through IV. All measurements are given in microns ; body length measurements exclude the rostrum unless otherwise stated. The holotype material is deposited in the Acarology Collection, Faculty of Agronomy, University of Chile, Santiago. Paratypes are distributed to the US National Museum, Washington, D.C. The scanning electron microscope photographs were made by the autor in the University of California at Davis. The assistance of Mr. Robert O. Schuster, Department of Entomology, is gratefully acknowledged.

* Plant Production and Protection Division FAO, United Nations, Rome, Italy.
Présent address : Faculty of Agronomy, University of Chile, Santigo.

Systematics

In the systematic arrangement of the family, I have followed TUTTLE and BAKER (1968) ; the classification proposed by MITROFANOV (1971), who divided the Bryobiinae (with family status) into three subfamilies and nine tribes, merits serious consideration but I have not followed it this time to avoid excessive splitting of the higher ranks in the group.

The tribes of Bryobiinae represented in Chile can be separated by the following key :

Key to the tribes of Bryobiinae represented in Chile

1. Claws II-IV uncinate (clawlike) ; empodia I-IV pad-like..... Bryobiini
   Claws II-IV pad-like..... 2
2. Empodia I-IV uncinate (fig. 19)..... Petrobiini
   Empodia pad-like..... Hystrichonychini

Tribe Bryobiini Berlese, 1913

Genus *Bryobia* Koch, 1836

Bryobia Koch, 1836 ; Pritchard and Baker, 1955 ; Mitrofanov, 1972

Type species : *Bryobia praetiosa* Koch

Mites of the genus *Bryobia* have four pairs of propodosomal setae, the two anteriormost pairs borne on the propodosomal lobes ; the third (preoculars) and the fourth pair (postoculars) are set in the vicinity of the eyes (*Pr.*, *Po*, Fig. 2). Twelve pairs of setae are located in the hysterosoma (*H*, humeral ; *DLH*, dorsolateral hysterosomals 1-5 ; *S*, sacrals 1-2 ; and *C*, clunals, Fig. 1). The position of the first *DLH*, sublateral or marginal, behind *H*, is important in the taxonomy of the group. The anterior projections of the propodosoma, the propodosomal lobes (*Pl*, Fig. 1 and Fig. 5) are key characters in the taxonomy of the adult female. Behind the lobes in the anterolateral margin of the propodosoma, some species bear an expansion termed the propodosomal angulations (Fig. 20). The peritremes normally anastomose distally (*pe*, Fig. 5). The number of setae on coxal segments is 2-1-1-1. Claws II-IV and often those of ambulacrum I are uncinate and provided with tenent hairs (Fig. 3) ; the latter are arranged in small bundles of 4-6 hairs of indistinct comb-like rows ; the empodium is padlike and bears bundles or comb-like rows of hairs, depending on their size (Fig. 24-25) ; empodium I is usually small, stub-like (Fig. 24) or else is well developed as in remaining legs (Fig. 33). Duplex setae on tarsus I, have a small tactil member (*ds*, Fig. 3), whilst those on tarsi III-IV have both members of the pair well developed (Fig. 44). The subgenus *Lyobia* Liv. et Mitr. lacks a duplex setae on tarsus IV (Fig. 36). The ventral opisthosoma bears 3 pairs of anal setae, a subfamily character (Fig. 29).

Bryobia kissophila van Eyndhoven

(Figs. 1-4)

Bryobia kissophila van Eyndhoven 1955, Ent. Ber. 15 : 340-347.

Bryobia praetiosa, of authors (in part).

Female

A large species 780 × 600, excluding rostrum, (n = 15 specimens) ; dorsal surface with a pattern of wrinkles, folds and granules which conform to the pattern shown on Figs. 1, 2. Granules extend throughout the dorsal aspects of legs and palpi. Propodosomal lobes (*Pl*, Fig. 1) distinctly conical, set on different planes (unmounted specimen, Fig. 1). Peritreme narrowly elongate. Dorsal setae broadly spatulate with spiny rows (see pre- and postocular setae, *Pr*, *Po*, Fig. 2). Empodium I stub-like, provided with paired bundles of tenent hairs ; claws I with 2 bundles each of capitate tenent hairs arising from 5-6 basal threads (Fig. 3) ; remaining empodia as long as claws and provided with comb-like rows of tenent hairs. Members of duplex setae on tarsi III-IV of equal length, both member of pairs borne in close association. Number of setae on leg segments as follows :

I :	2 —	1 —	20 —	8 —	15 —	(27-28)
II :	1 —	1 —	11 —	5 —	9 —	19
III :	1 —	1 —	6 —	6 —	9 —	15
IV :	1 —	1 —	5	6 —	9 —	15

Collection data. Ex *Hedera helix*, Santiago, September-October 1967, 1968, 1971, 1975.

Remarks. This species is specific to ivy and should be referred to as " the ivy mite ". It is found in early spring — feeding on the upper side of the leaves and producing a distinct stippling followed by chlorosis in younger leaves.

I have compared the Chilean population with the ivy mites from California (Davis), Germany (Munich) and Italy (Rome) and found they all fit this description, except for a small variation in the number of setae on femur, genua and tarsus I. Otherwise, they are indistinguishable. The larval stage, with its elongated dorsal setae, the first propodosomal pair about half the size of the second (preocular) setae, and the constant number of setae (3) on femora I-II, is identical in all three populations.

This species is taxonomically related to *B. praetiosa* (Koch), species which has not yet been found in Chile. It differs from *praetiosa*, *rubrioculus* and *cristata* in the number of setae on leg segments, the relative length and position of duplex setae on tarsi III-IV and in the shape of dorsal setae in the larval stage. With respect to the taxonomic value of the propodosomal lobes to separate *kissophila* from *rubrioculus*, the only possible distinct characters refer to the basal spine in the outer lobes of *rubrioculus* and the shape of setae on the internal lobes (Van Eyndhoven, 1955).

This is the first record of *B. kissophila* for South America.

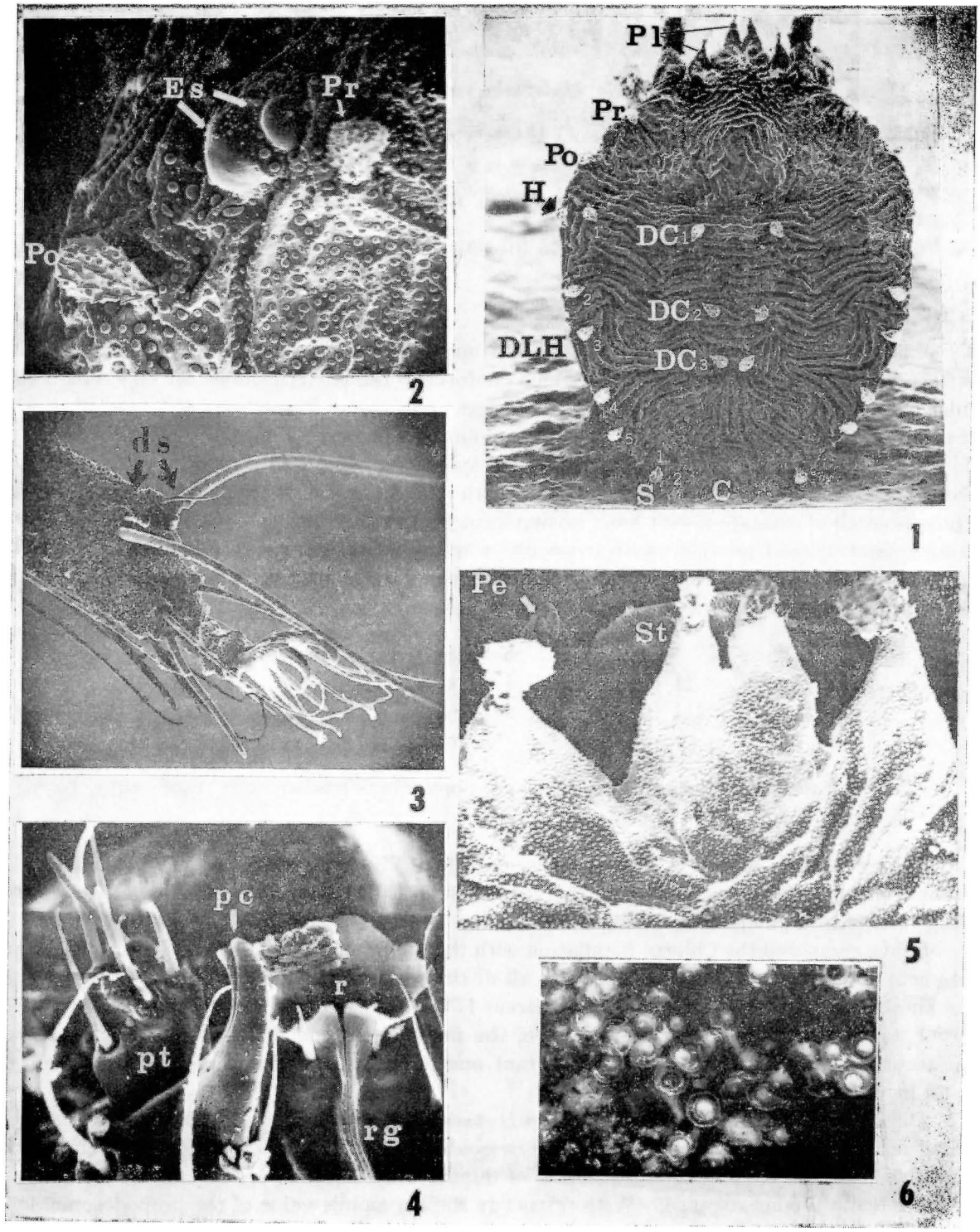


PLATE I. — *Bryobia kissophila* Van Eyndhoven (figs. 1-5) : dorsal view female ; ocular area ; tarsus I ; distal portion of palptarsus and rostrum showing rostral groove (*rg*) ; propodosomal lobes (see text for abbreviations). — **Anaplonobia algarrobicola**, n. sp. (fig. 6) : aestivating eggs on *Prosopis chilensis*.

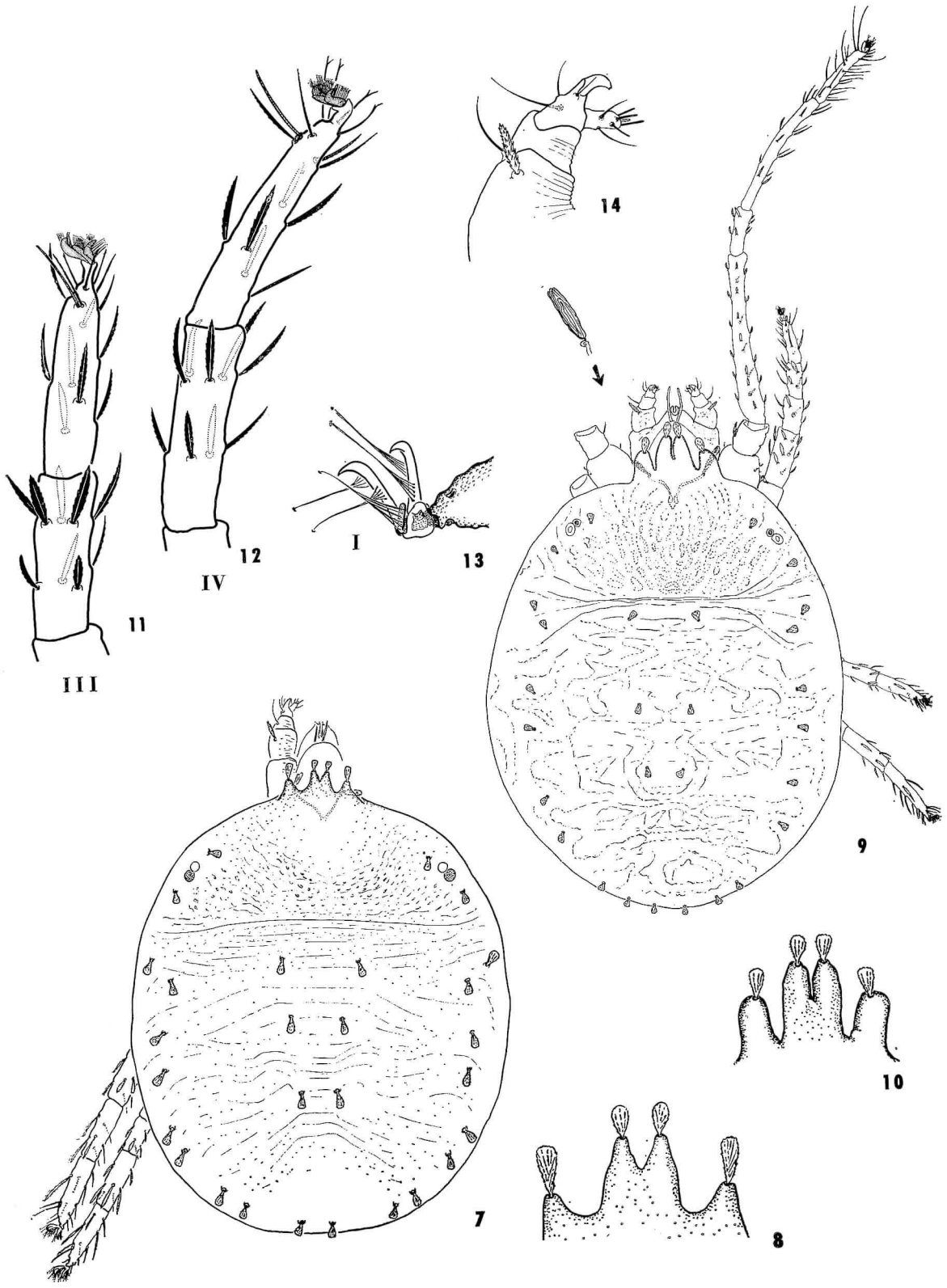


PLATE II. — *Bryobia cristata* (Dugès) (figs. 7-8) : female, dorsal view ; propodosomal lobes. *B. repensi* Manson (figs. 9-14) : female, dorsal view ; propodosomal lobes ; tibiae and tarsi, legs III-IV ; ambulacrum I (see small empodium) ; palpus.

Bryobia cristata (Dugès), 1834
(Figs. 7, 8, 15, 16)

Acarus graminum Schrank, 1781, Beytr. Natur. : 8.
Tetranychus cristatus Dugès, 1834. Ann. Sci. Nat. Paris (sér. Z) I : 15-18.
Bryobia cristata, van Eyndhoven, 1957. Ent. Ber. 17 : 171-183.
Bryobia cristata, Manson, 1967, Acarologia 9 : 82-91.
(For complete synonymy see Livshitz and Mitrofanov, 1971, p. 57 under *B. graminum* (Schrank)).

Female (Fig. 7)

Body length 800, greater width 620. Outer propodosomal lobes triangular separated from the inner lobes by a broad sinus (Fig. 8). Dorsal surface of propodosoma finely granulate ; hysterosoma with transverse wrinkles. Dorsal setae spatulate. Anterior propodosomal setae 18, second pair 28, remaining dorsals about 23. Leg I, 880 (Fig. 15). Number of setae on leg segments as follows :

I : 2 — 1 — 19 — 8 — 16 — 27 (29)
II : 1 — 1 — 10 — 6 — 9 — 18
III : 1 — 1 — 6 — 6 — 9 — 15
IV : 1 — 1 — 5 — 6 — 9 — 15

Empodium I small with paired tenent hairs ; empodia II-IV almost as long as claw, provided with a double row of hairs. Tactil members of duplex setae III-IV 28-32 respectively ; sensory members, 47-44 respectively.

Larva (Fig. 16)

Body length 290, greater width 270, leg I, 280. Dorsal setae lanceolate, the anterior propodosomal pair the shorter of dorsal series, 20 ; remaining setae slightly serrate, 30-35. Number of setae on leg segments femur, genu, tibia, tarsus, respectively as follows : I 3-4-6-8 ; II 3-4-5-8 ; III 2-2-5-6.

Collection data. Indoors and climbing outside walls from adjacent grasses (*Bromus*, Avena) in early spring, 5 September 1968, University of Chile Agricultural Experiment Station at Maipú, Santiago. Associated to *Petrobia latens* (Müller).

Bryobia repensi Manson, 1967
(Figs. 9-14)

Bryobia repensi Manson, 1967, Acarologia 9 (fasc. 1) : 91-97.

Female (Fig. 9)

Body length 785, including rostrum 1 000, greatest width 960 ; leg I 915-950 (n = 10). Propodosomal lobes with a basal width of 150, height outer lobes 66, median lobes 84 (Fig. 10). Pro-

podosomal setae : anterior pair 25-28, second pair 30-32, preoculars, postoculars and humerals 22, hysterosomals 24-26. Dorsal surface of propodosoma slightly dotted with tenuous beard — like wrinkles, hysterosoma transversely ridged. Mediodistal border of stylophore rounded, without apical notch. Distal bulb of peritreme elongated, 72 length, 12 width. Palpus as illustrated (Fig. 14). Number of setae on individual leg segments as follows :

I :	2	—	1	—	24	(25)	—	8	—	16 (17)	—	26 (27)
II :	1	—	1	—	11		—	6	—	9	—	16
III :	1	—	1	—	5		—	6	—	9	—	15
IV :	1	—	1	—	5		—	6	—	9	—	14

Ambulacrum I with a pair of capitate tenent hairs arising from claws, empodium very short with 1 pair of ventral hairs (Fig. 13) ; remaining claws with 2 rows of tenent hairs each ; empodia II-IV as long as claws and provided by 2 rows of ventrally directed hairs. Sensory member duplex setae III-IV, slightly longer than proximal pair, 32 and 28 respectively (Figs 11, 12).

Protonymph

Body length 418, leg I 390. Counts for leg segments femur, genua, tibia, tarsus respectively as follows : I 3-4-6-12 ; II 3-4-5-10 ; III 2-2-5-8 ; IV 2-2-5-6.

Diagnosis

Apart from very minor morphometric differences, the Chilean population fits in every detail with the population from New Zealand as described by Manson (1967). A major deviation found in the Chilean specimens refer to the number of setae of femur I, 11 instead of 8-10. Larvae, proto and deutonymph are similar.

Collection data. Eight females, 3 nymphs, ex *Medicago* sp. " hualputra ", and *Melilotus* sp., Baños Morales, 1 800 m foothill Andes, Santiago (21 November 1968). In the latter host plant the specimens were found in association with *Tetranychus ludeni* Zaher and *Petrobia latens* (Müller). Feeding damage — e. g. leaf stippling, was obvious on *Medicago*. Three females, on *Solanum gayanum*, " natri ", Pucatrihue, Osorno (L. E. Peña), 12 April 1968.

This is the first record of *B. repensi* outside of New Zealand.

Bryobia magallanica, González n. sp.

(Figs. 20-29)

Female (Fig. 20)

Body length, excluding rostrum, 720, width 490 ; leg I, 680 ; II, 300 ; ratio legs I-II to body length 1 : 1,05 and 1 : 2,4 respectively. Length of individual segments femur, genu, tibia, tarsus as follows : I 60-60-195-135 ; II 84-52-52-80. Outer propodosomal lobes prominent, broadly cylindrical, reaching half length of inner lobes (Fig. 21). Anterolateral angular propodosomal expansions present. Anterior margin of the stylophore rounded. Peritremes narrowly elongated. Palpfemur with a strongly developed dorsal setae, almost as long es segment (Fig. 26). Dorsal body setae palmate ; length of setae in propodosomal lobes 25, each pair ; pre- and postoculars 18, remaining hysterosomals 23. Distances between DC_1-DC_2, 150, DC_2-DC_3, 90. Setae on leg segments I, II as illustrated (Figs. 22, 23). Number of setae on leg segments as follows :

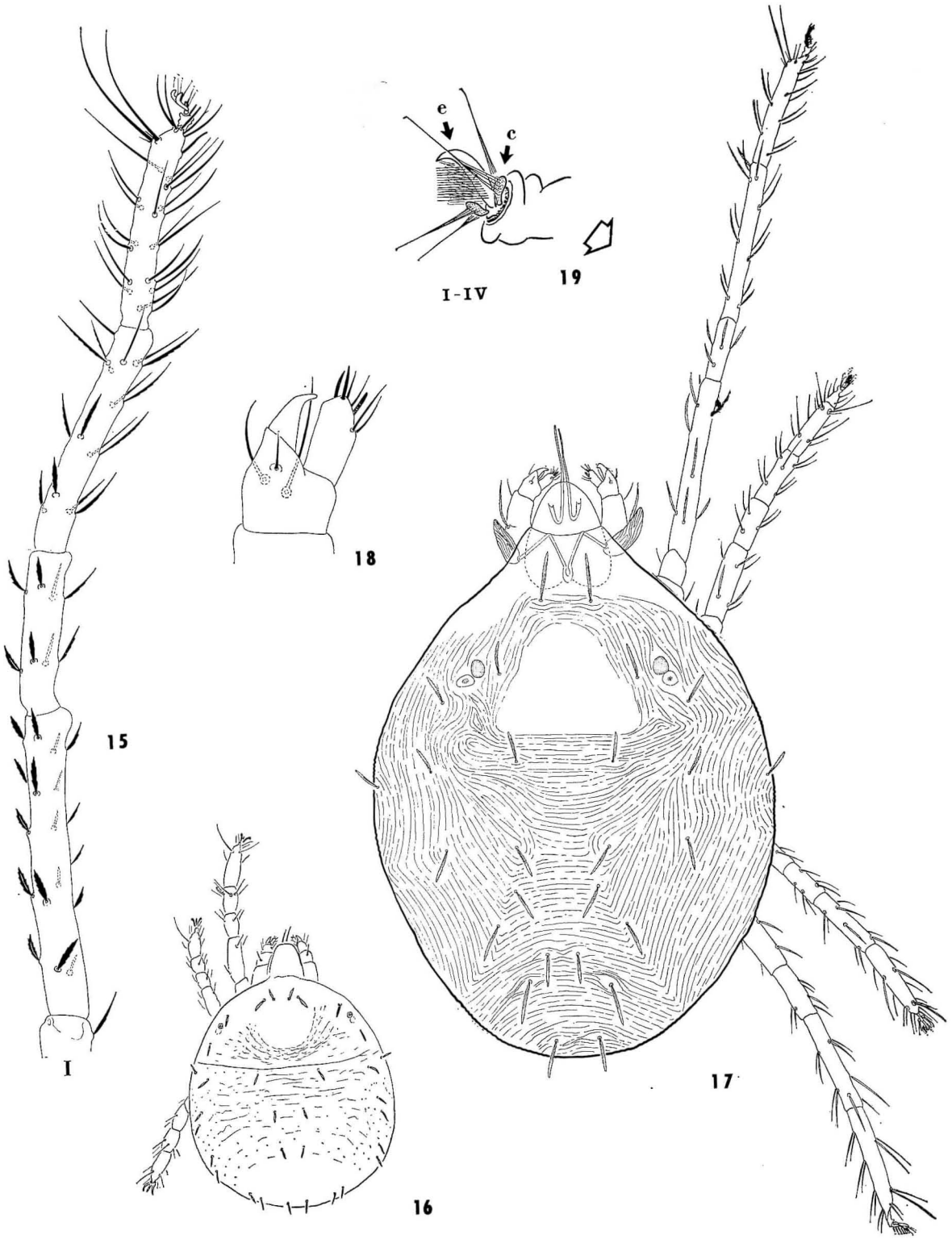


PLATE III. — *B. cristata* (Dugès) (figs. 15-16) : leg I, adult female ; larva, dorsal. *Petrobia latens* (Müller) (figs. 17-19) : female, dorsal view ; tip of palpus ; ambulacrum legs I-IV (*c*, pad-like " claws " ; *e* uncinate empodium).

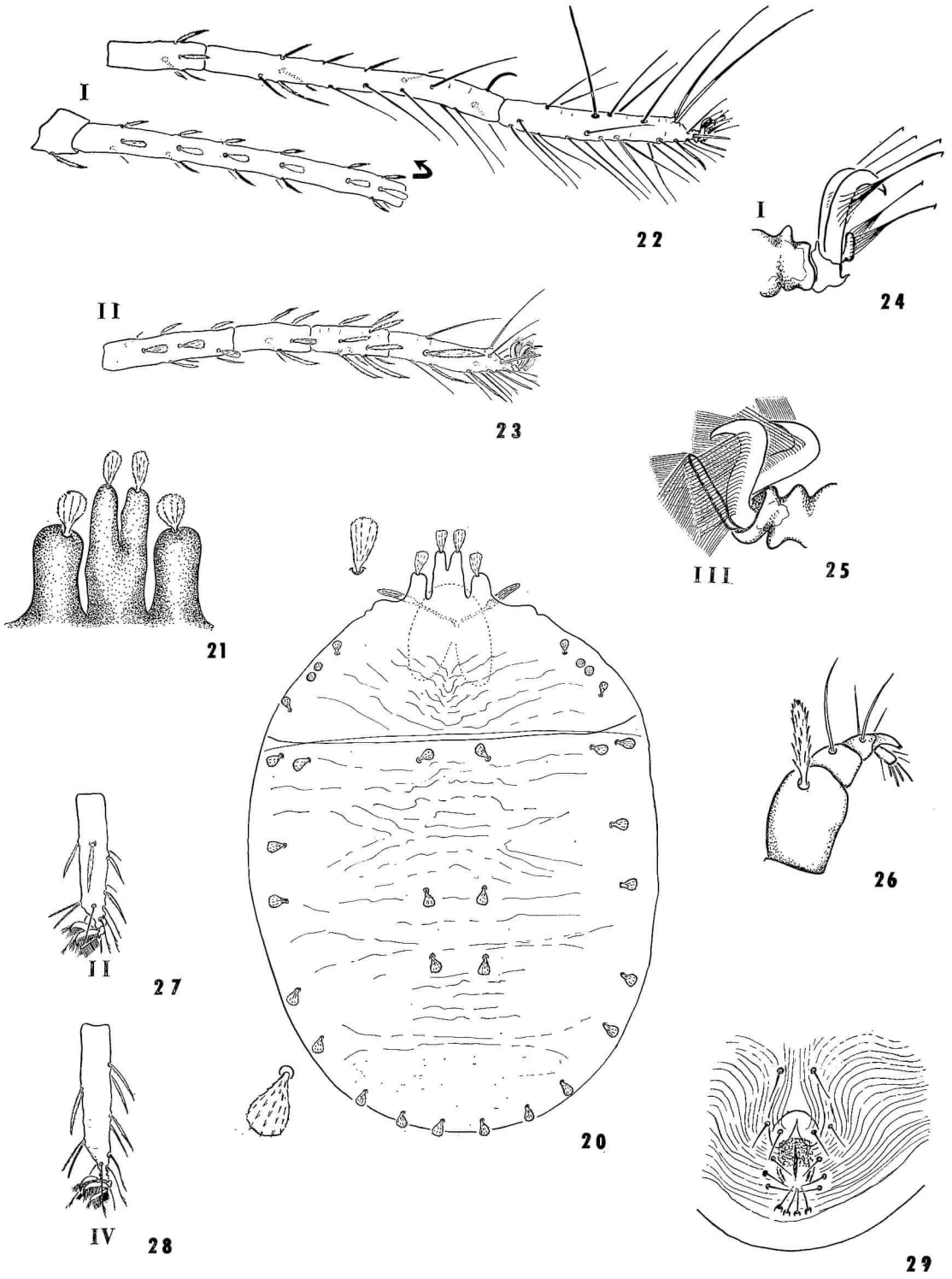


PLATE IV. — **Bryobia magallanica** n. sp. (figs. 20-29) : female, dorsal view ; propodosomal lobes ; leg I ; femur trough tarsus leg II ; ambulacrum I with short empodium ; ambulacrum III with long empodium ; dorsal view palpus ; tarsus leg II ; tarsus IV ; anogenital area of female.

I : 2 — 1 — 22 — 4 — 15 — 28
II : 1 — 1 — 10 — 5 — 10 — 17
III : 1 — 1 — 6 — 5 — 9 — 14
IV : 1 — 1 — 5 — 3 — 9 — 12

Claws I with one pair of tenent hairs, each bundle with 6 basal hairs, empodium I stub-like, less than one fourth the length of claws, with a pair of tenent hairs (Fig. 24). Claws II-IV broad, with a double row of comb-like hairs, empodia as long as straight portion of claws, provided with a distinct double row of hairs (Fig. 25). Duplex setae on tarsi II-IV with both members of the pair of equal length (Figs. 27, 28). Genito anal area with one pair of pregenital setae ; vagina covered by a pair of anterior lobes (Fig. 29).

Male — Not known.

Holotype

Punta Carrera, (circa 54°S 72W), 50 km SW Punta Arenas, Straight of Magallanes, 16 December 1971.

Habitat

On graminaceous grasses in a stream area, in the magallanic moorland zone ; the collection site is covered with mosses and exposed to strong winds. This represents the southernmost collection record for a species of *Bryobia*.

Diagnosis

B. magallanica belongs to the subgenus *Bryobia*, since it possess the following combination of characters, viz., angular propodosomal expansions and first lateral hysterosomal setae placed sublaterally. A related species in the group, *B. alpina* Mathys (1962) from Central Europe has likewise large propodosomal lobes and 4 setae on genu I ; *magallanica* differs by having a stylophore rounded at the anterior, larger body size and, particularly, claws II-IV have a distinct double row of comb-like hairs.

Bryobia nothofagi González n. sp.
(Figs. 30-37)

Female (Fig. 30)

Body length 650 (including rostrum), width 450 ; leg I 390-400 (Fig. 31). Outer pair of propodosomal lobes reach the base of sinus between inner lobes ; stylophore distally rounded. Peritremes anastomosing distally. Sublateral rod-like sensory on distal end of palpur almost as long as palptarsal segment (Fig. 32). Dorsal setae narrowly spatulate, ribbed fanwise ; first propodosomal 24, remaining dorsals, 30. First dorsolateral hysterosomal in transverse line mesad to humeral. Counts for individual setae on leg segments as follows :

I : 2 — 1 — 8 — 4 — 9 — 17
II : 1 — 1 — 6 — 4 — 5 — 12
III : 1 — 1 — 4 — 3 — 5 — 11
IV : 1 — 1 — 2 — 2 — 5 — 10

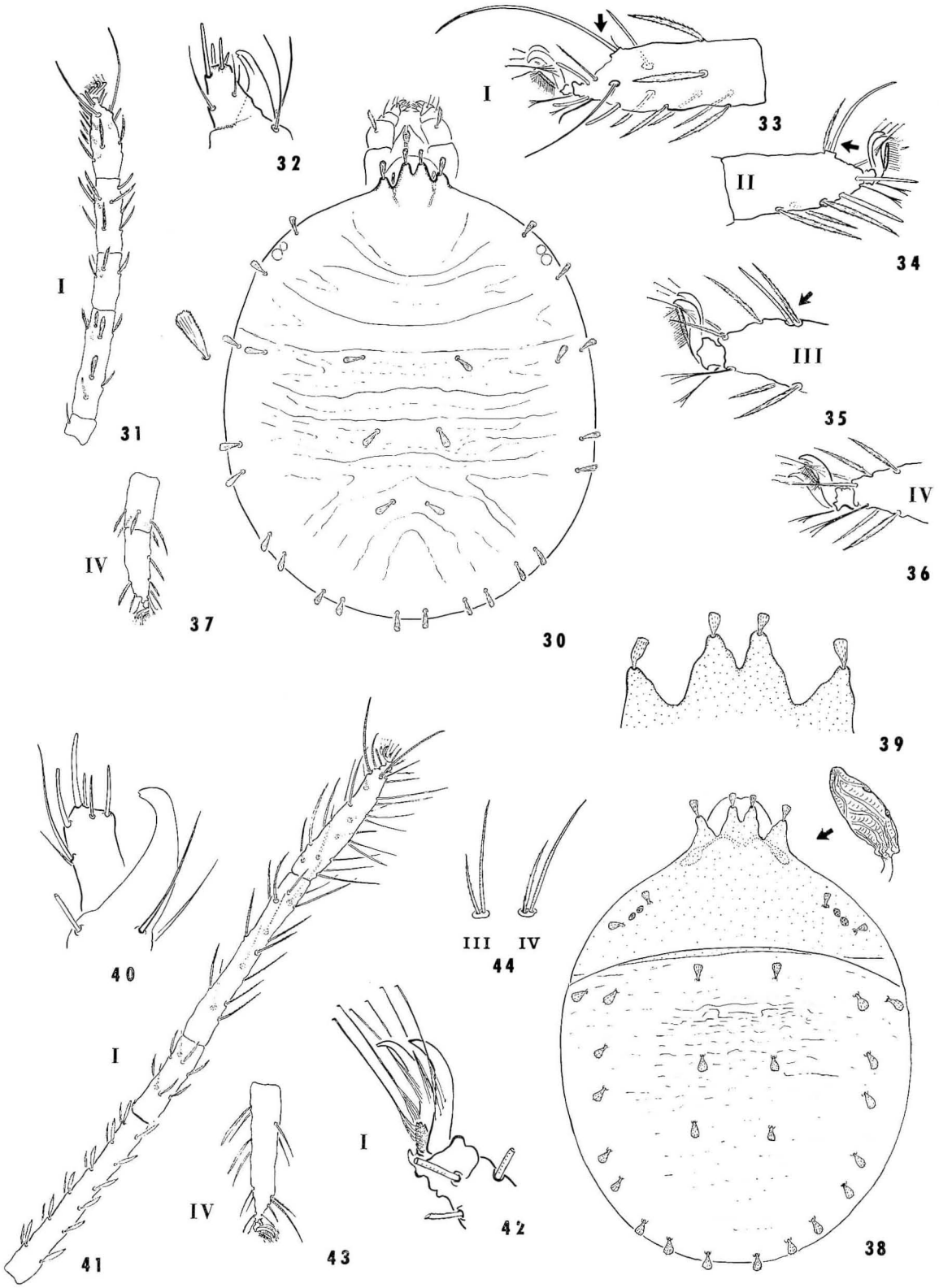


PLATE V. — **Bryobia nothofagi** n. sp. (figs. 30-37) : female, dorsal view ; leg I ; tip of palpus ; figs 33-36 : tarsi I-IV (arrows point to duplex setae of tarsi I-III) ; tibia and tarsus IV. **Bryobia fuegina** n. sp. (figs. 38-44) : female, dorsal view ; propodosomal lobes ; tip of palpus ; femur trough tarsus leg I ; ambulacrum I ; tarsus IV ; pairs of duplex setae tarsi III-IV.

Members of duplex setae tarsus III of equal length (Fig. 35). Tarsus IV lacks duplex setae (Fig. 36). All dorsal leg setae strongly lanceolate, serrate. Empodium I over half the length of respective claws (Fig. 33) ; empodia of remaining ambulacra as long as straight portion of claws. All four empodia provided with a double row of comb-like hairs, whilst claws possess simple bundles of tenent hairs (Figs. 33-36).

Male and *immature stages* not known.

Holotype

On leaves of *Nothofagus pumilio*, " ñirre ", Rio Verde, road to Seno Ottway, Magallanes (20 December 1971).

Paratypes

Two females, same data ; one female on " ñirre ", Parque Chabunco, City of Punta Arenas, Magallanes (19 December 1971).

The collection data for *B. nothofagi*, 53°S latitude, 71°W longitude, and the host plant, a southern beech, makes this species an extremely interesting biotype.

Diagnosis

The lack of duplex setae on tarsus IV, the mesal position of the first lateral hysterosomal setae and the absence of anterolateral propodosomal angulations, characterizes the subgenus *Lyobia* as stated by Mitrofanov (1971) to which *B. nothofagi* belongs.

All known species of *Bryobia* in Chile have longer legs and a greater number of leg setae than *B. nothofagi*. The adult female of the latter species is unique in having the combined formulae of 4-4-3-2 and 17-12-11-10 for the genu and tarsi respectively. The arrangement of comb-like tenent hairs on empodia I-IV is also unique.

Bryobia fuegina, González n. sp.

(Figs. 38-44)

Female (Fig. 38)

Body lengh (excluding rostrum) 950, width 690 ; leg I, 840 (Fig. 41) ; leg II, 410 ; ratio leg I to body length 1 : 1,09 ; length of individual segments leg I femur 280, genu 115, tibia and tarsus 210 each ; leg II, femur 150, genu 80, tibia 90, tarsus 110. Propodosomal lobes conical, inner pair separated by a narrow sinus, outer pair conspicuously divergent (Fig. 39). Peritremes anastomosing distally in a broadly oval bulb. Stylophore distally emarginate. Palptarsus with a strong distal sensory rod (Fig. 40). Dorsal propodosomal surface, including lobes, conspicuously granulate ; hysterosoma with transverse ridges. Dorsal body setae palmate, first propodosomals 21, second 32, remaining propodosomal 26 each ; hysterosomals 32. Number of setae on individual leg segments as follows :

I : 2 — 1 — 18 — 8 — 16 — 27
II : 1 — 1 — 10 — 6 — 9 — 17
III : 1 — 1 — 6 — 6 — 9 — 14
IV : 1 — 1 — 4 — 5 — 9 — 14

Duplex setae tarsus III with sensory member 48, tactil 26 ; those on tarsus IV, 48 and 34 respectively (Fig. 44). Claw I with one pair of tenent hairs, empodium I small, stub-like, about one fourth as long as claws, with one pair of tenent hairs (Fig. 42) ; claws and empodia II-IV each with a double row of comb-like tenent hairs, empodia almost as long as claws.

Male and *immature forms* unknown.

Holotype

On grasses, Springhill, Tierra del Fuego (Chile), eastern entrance of Straight of Magallanes (52°S, 69°W), November 14, 1965 (H. Castro).

Paratypes

Five females collected on soil, Tierra Mayor, Tierra del Fuego (Argentina), January 1960 (P. Wygodzinsky).

Diagnosis

B. fuegina belongs to the subgenus *Lyobia*. It differs from a nearest species in the number and shape of leg setae and in the relative lengths of duplex setae III-IV. In addition, the notched stylophore, and the shape of propodosomal lobes separate this species from *B.* (*L.*) *angustisetis* Jakobashvili described from the Soviet Union (Livshitz and Mitrofanov, 1971).

It is worth noting that P. Kramer, in 1908 (In Hamburger Magalhaensische : Acariden, p. 14) recorded " *Bryobia praetosia* C. L. Koch " collected in Ushuaia, Tierra del Fuego, under stones, 15 November 1892, Michaelsen, colr. This is also a most austral record for a species of *Bryobia*, its identity remaining to be known.

Bryobia rubrioculus (Scheuten) 1857

Sannio rubrioculus Scheuten 1857, Arch. Naturg. 23 : 104-112.
Bryobia rubrioculus (Scheuten), van Eyndhoven, 1956, Ent. Ber. 16 : 45-6.
Bryobia arborea Morgan & Anderson, 1957, Canad. Ent. 89 : 485-490.

Female

Body length, excluding rostrum, 650-690 ; leg I, 620-640 ; leg II, 340-360. External propodosomal lobes bear a small outgrowth below the setal bases. Duplex setae on tarsus III subequal, closely together, proximal member of duplex setae tarsus IV nearly 4/5 as long as distal member, both pairs widely separated. Numbers of setae on leg segments as follows :

I :	2	— 1 —	18	— 8 —	19	(16)	—	26
II :	1	— 1 —	10	— 5 —	9		—	16
III :	1	— 1 —	6	— 6 —	8	(9)	—	14
IV :	1	— 1 —	5	— 6 —	9		—	14

Male — Not known.

Larva

Body length 250-270 ; leg I, 220. Anterior propodosomal setae short, setiform ; remaining dorsal setae narrowly spatulate.

Collection data. This is the common " brown mite " occurring on deciduous fruit trees in central Chile. It has been collected on almond, apple, apricot, cherry, peach, pear, plums, prunes and walnuts. The bionomics of this species on apple trees has been studied in Chile by the author (1961).

Remarks

The species *B.* (*L.*) *redikorzevi* Reck, occurring in the USSR, is no doubt *B. rubrioculus*. However, Livshitz and Mitrofanov (1971) have also illustrated the male, whilst this species is known elsewhere to be thelyotokous.

Tribe Petrobiini Reck, 1952

Genus *Petrobia* Murray

Petrobia latens (Müller)

(Figs. 17-19)

Acarus latens Müller, 1776, Zool. Dan. Prodr. : 187.
Petrobia latens, Pritchard and Baker, 1955 : 51-56.
(For full synonymy see the latter reference).

Female (Fig.16)

Body length 780-800, width 660, leg I 660, II 355. Dorsal surface with crenulated striae ; area between dorsocentral hysterosomal seta with transverse striae, lateral areas with longitudinal striae. Stylophore cupuliform. Peritremes with distinct, elongated bulbs. Tip of palpus with usual 7 setae of which one is rod-like (Fig. 18). Dorsal body setae short, lanceolate, serrate, not borne on tubercles. First propodosomal pair 24, the longest of dorsal series ; remaining dorsals range from 15 to 22 ; leg setae lanceolates ; counts for individual leg segments femur, genu, tibia, tarsus, respectively as follows :

I : 8 — 5 — 14 — 19
II : 6 — 5 — 9 — 16
III : 4 — 6 — 9 — 14 (15)
IV : 4 — 6 — 8 — 14

Duplex setae legs III-IV with tactil seta shorter than sensorial member. Ambulacra I-IV with empodia uncinate (*e*, Fig. 19) provided with a double row of tenent hairs ; true " claws " are pad-like, very short, with a pair of tenent hairs each (*c*, Fig. 19).

Larva

Body oval, 210 length, 185 width. Idiosoma with fine and regular striations ; area between dorsocentrals, clunal and sacral setae, covered by transverse striae. Dorsocentral setae lanceolate, denticulate ; length of dorsal setae : propodosomals 16 ; DC_1-DC_2, 25 ; DC_3, 35 ; *H* and DLH_1, 20 ; *C* and *S*, 40. Leg I 184. Number of setae on femur, genu, tibia and tarsus as follows : I 3-4-6-8 ; II 3-4-5-8 ; III 2-2-5-6.

Male — Not known.

Collection data. On grasses, University of Chile, Agricultural Experiment Station at Maipú, Santiago, September-October 1965, 1969.

Remarks

This is the first record of this species for the neotropical region south of Mexico.

Tribe Hystrichonychini Pritchard and Baker, 1955

Hystrichonychini Pritchard & Baker, 1955, Pac. Coast Ent. Soc. Mem. 2 : 35.

This tribe is intermediate between *Bryobiini* and *Petrobiini*, although much related to the latter group. It is characterized by the ambulacra lacking uncinate elements, i. e. both the true claws and empodia are pad-like. Two genera in this tribe are represented in Chile, *Anaplonobia* from the desert and *Hystrichonychus* from the dry chaparral area. The former genus was not previously known in South America whilst *Hystrichonychus* is for the first time reported in the Southern Hemisphere.

Genus *Anaplonobia* Wainstein, 1960

Anaplobia Wainstein, 1960 : 143.
Type species : *Aplonobia calame*, Pritchard and Baker, 1955.

This genus is related to *Langella* Wainstein, differing in the relative distance between members of pair DC_4. Notwithstanding this is not an appropriate character for separating species among both genera, I have retained the new species described below under *Anaplonobia* until a comprehensive study is made on the *Paraplonobia-Langella-Anaplonobia* group. *Paraplonobia* was erected by Wainstein for *P. echinopsili* Wainstein, a species having simple (not anastomosing) peritreme bulbs. Tuttle and Baker (1968) gave subgeneric status to *Langella* under *Paraplonobia* although *Langella* has distinctive anastomosing peritremes. It is noted that Meyer (1974) reestablished the generic status for *Langella*. She separated *Langella* from *Paraplonobia* on the basis of the distinct peritremata and the relative distance of DC_4, " as widely spaced as the fourth pair of dorsolateral setae on nearly so ". I have examined some North American specimens of the species she placed under *Langella* with respect to the position of DC_4 and found that in several instances this pair is separated as DC_3, not in line with the fourth dorsolaterals.

The new species of *Anaplonobia* described below, has DC_4 slightly closer than remaining DC's. Otherwise, it is a typical *Langella* in many respects — e. g. small number of setae on leg segments, anogenital area, and habits.

Anaplonobia algarrobicola González, n. sp.

(Figs. 45-51)

Female (Fig. 45)

Body length, excluding rostrum, 710 (n = 12), range 660-780 ; young females range from 500 to 550 (n = 12). Rostrum reaches distant end femur I. Legs shorter than body, leg I 360.

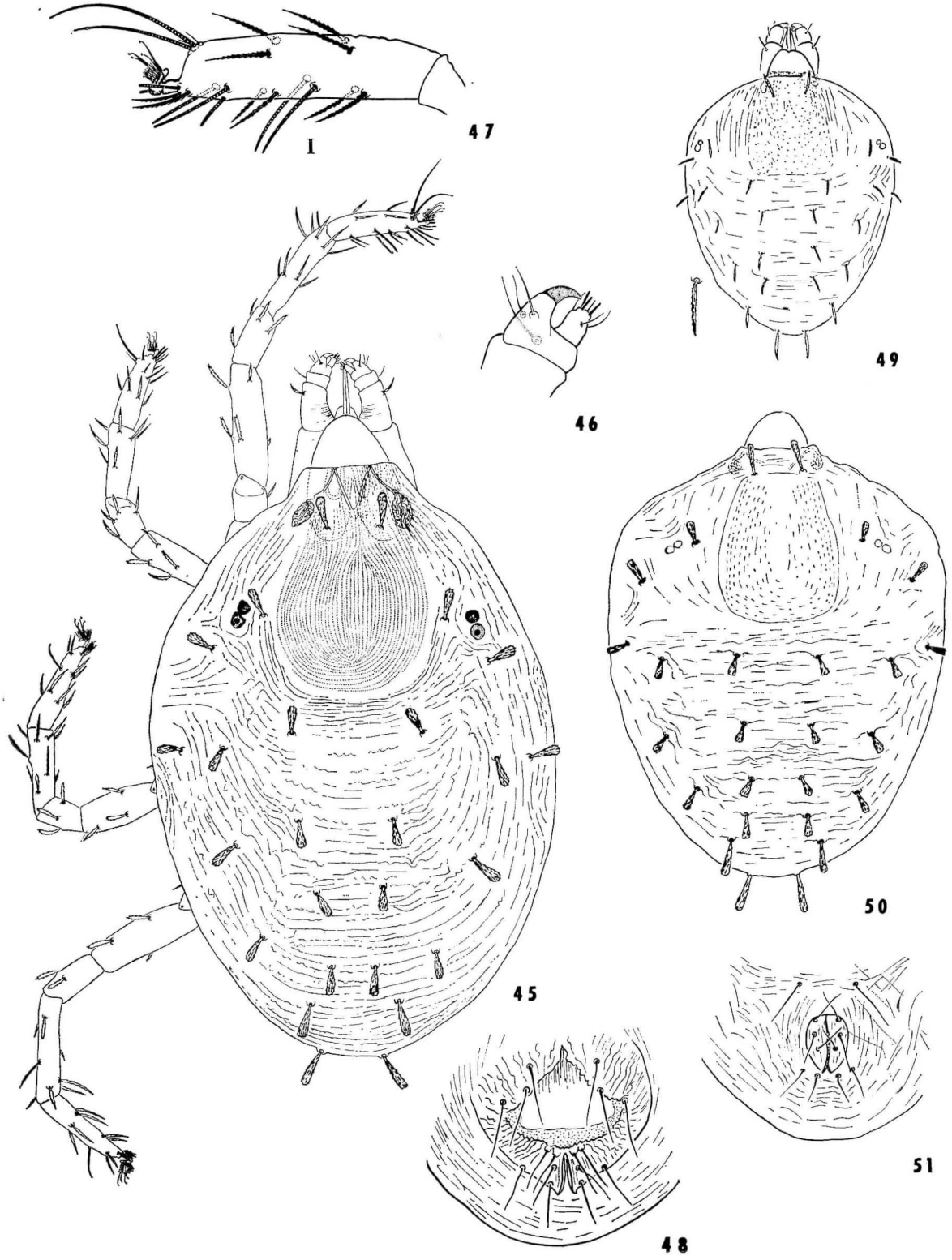


PLATE VI. — **Anaplonobia algarrobicola** n. sp. (figs. 45-51) : female, dorsal view ; tip of palpus ; **tarsus** I ; anogenital area of female ; larva (fig. 49) ; deutonymph (fig. 50) ; anogenital area of deutonymph.

Stylophore not emarginate distally. Peritremes anastomosing distally. Palptarsus with 3 sensory rods and 4 setae (Fig. 46). Propodosoma with a tenuous pattern of vertically oriented striae in the mediodorsal area ; hysterosoma with transverse striae in the median area ; striae in younger females deeply folded. Dorsal setae subpalmate when flattened, serrate, borne on small tubercles. First propodosomal setae and last two pairs of hysterosomals the longest of dorsal series, 40 each ; remaining setae 28-30. DC_4 slightly closer than DC_3 ; fourth dorsolateral hysterosomal almost in line with *DC* series. Number of setae on leg segments as follows :

I :	2	1	5	4 (5)	10 (11)	19
II :	2	1	5	4	7	14
III :	0	1	3	3	9	11
IV :	0	1	3	2	8	11

Coxae III-IV lack setae on coxal plate ; however, one seta mesal to each plate is present. The number of setae on genus I varied according to the collection site. Tarsus I with 5 sensory setae on the ventral side, and 4 tactil setae proximal to the duplex setae (Fig. 47). Empodia over twice as long as pad-like claws. Anogenital area with flagellate setae as illustrated (Fig. 48).

Larva (Fig. 49)

Body length 190-200 with dorsal setae lanceolate, serrate.

Deutonymph (Fig. 50)

Body length 360-380 ; setal pattern basically as in adult female ; anogenital area as illustrated (Fig. 51).

Male — Not known.

Holotype

Ex *Prosopis chilensis*, " algarrobo ", a mesquite tree in the desert of northern Chile, Quillagua, Antofagasta, 26 September 1967.

Paratypes

Eight females, 3 immatures, same data as above ; fifteen females and 5 immatures Bosque La Tirana, Tarapacá, 19 November 1966 (L. E. Campos) ; six females Pampa El Tamarugal, associated to *Aegyptobia* sp. (Tenuipalpidae), June 15, 1967. Ten females, 3 immatures, Canchones, Tarapacá, 25 September 1970. All specimens collected on twigs of *P. chilensis* ; search for additional specimens on *Prosopis tamarugo*, which grows in mixed stand with the former species, was unsuccessful.

Diagnosis

A. algarrobicola is related to *Langella prosopis* (Tuttle and Baker). Major differences refer to the size of dorsal setae (smaller in *prosopis*), stylophore (more elongate in *prosopis*) and number of setae on leg segments. The fourth pair of dorsocentrals in *prosopis* is slightly wider than DC_3. Thus, the validity of both assigned genera is uncertain in these marginal species. It may be quite possible that *algarrobicola* should be placed eventually under *Langella*.

Biological observations

Females lay clusters of eggs on the underside of algarrobo twigs. Eggs are red, with longitudinal striae and a white dorsal pedicel. They are characterized by a delicate, transparent membrane borne on the equatorial area of corion ; the membrane is disposed as an inverted umbrella (Fig. 6). Eggs were refrigerated and transferred onto potted algarrobo plants under greenhouse conditions in Santiago. About 25 percent of the eggs hatched, reaching adulthood in about 45 days. Mites feed on the leaves producing a slight stippling and drop of terminal leaflets. Larvae transferred to *Prosopis tamarugo* failed to survive.

Under field conditions, a red apterous thrips, *Anaphothrips* sp. was found to feed on egg masses. The calligonellid mites, *Molothrognathus fulgidus* Summers and Schlinger and a new species of *Neophyllobius* were also found associated to *A. algarrobicola*.

Genus *Hystrichonychus* McGregor

Hystrichonychus McGregor, 1950 : 272 ; Tuttle and Baker, 1968 : 20
Type species : *Tetranychus gracilipes* Banks

This is a clear-cut genus characterized by having 3 pairs of dorsopropodosomal setae and 12 pairs of hysterosomals ; dorsolateral hysterosomals are grouped in pairs. Humerals are missing. All dorsal setae are long, robust and set on strong tubercles. Peritremes anastomose distally or have a simple, hooked structure. Claws and empodia are pad-like, with a pair of tenent hairs.

Al known species have been described from S.W. United States, Northern Mexico and Southern USSR.

Hystrichonychus atacamensis, González, n. sp.
(Figs. 52-55)

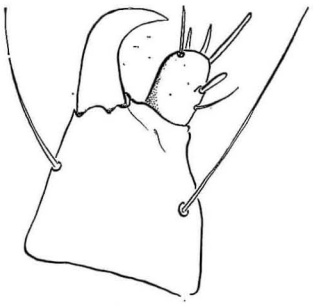
Female (Fig. 52)

Body length 470-490. Dorsal setae very strong, with denticulate margin and rounded tips. Peritremes not anastomosing distally. Stylophore slightly emarginate. Palptarsus (Fig. 53 with 5 sensory elements ; dorsal seta of palpfemur simple, not barbed. The three pairs of anterocentral hysterosomal setae, the longest of dorsal series. Setae of leg segments, denticulate, with acute tips ; duplex setae on tarsus I, with extremely short proximal member. Counts for setae on leg segments, as follows :

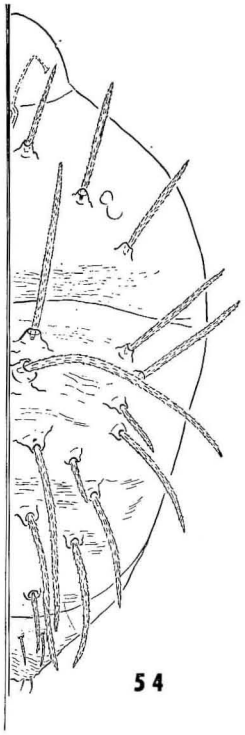
I : 2 — 1 — 10 — 4 — 14 — 17
II : 2 — 1 — 6 — 4 — 9 — 13
III : 1 — 1 — 4 — 4 — 9 — 11
IV : 1 — 1 — 3 — 3 — 9 — 11

Male (Fig. 54)

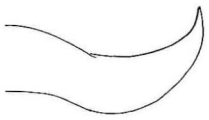
Body length, excluding rostrum, 360 ; leg I, 425. Aedeagus strong, bent upwards (Fig. 55).



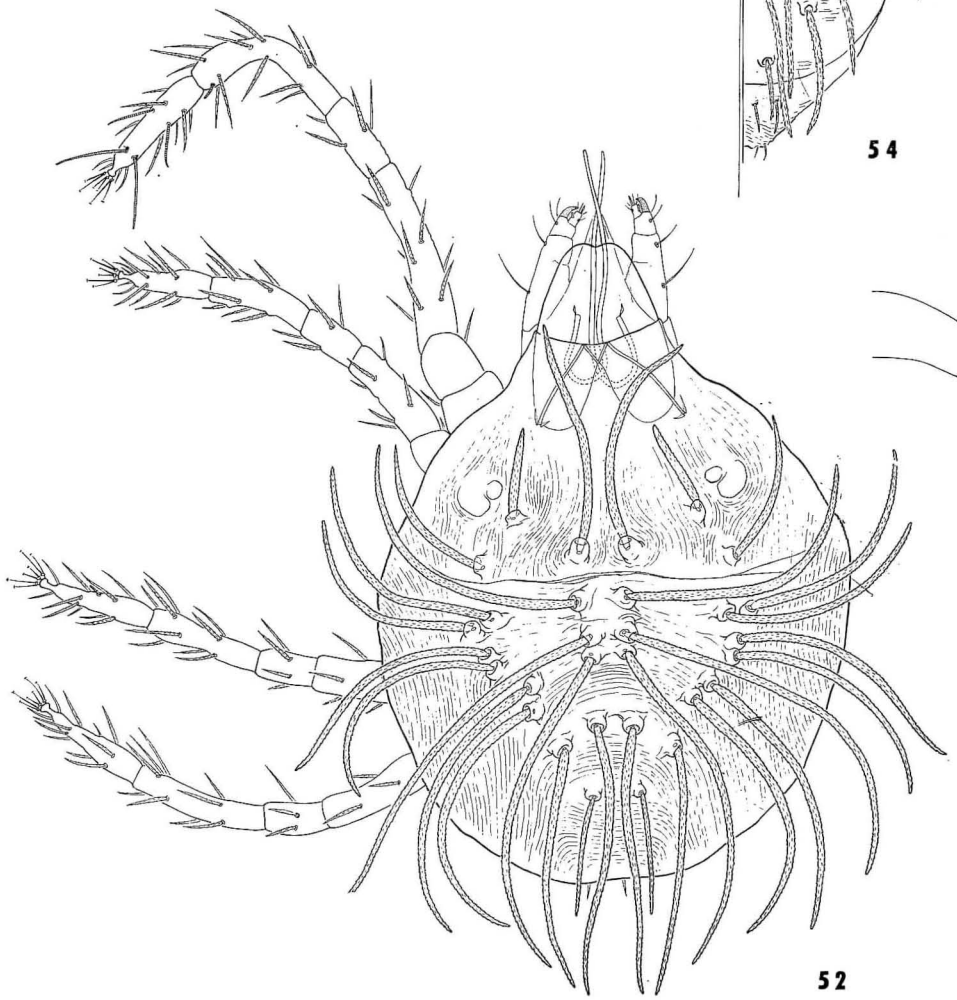
53



54



55



52

PLATE VII. — **Hystrichonychus atacamensis** n. sp. (figs. 52-55) : female, dorsal view ; tip of female palpus ; male (fig. 54) and aedeagus.

Holotype and allotype

Ex *Encelia tomentosa* Walp., 18 km south of Vallenar, Coquimbo, Chile (January 7, 1967).

Paratypes

Nineteen females and 2 males, same data as above.

Diagnosis

The female resembles *H. spinosus* Tuttle and Baker (1968), in that the first pair of propodosomal setae is born on a transversal line well behind the second pair, the latter being much shorter than the first and third propodosomals. However, the femora bear respectively 10-6-4-3 setae in *atacamensis* and only 6-4-2-2 in *spinosus*. The dorsal idiosomal setae in *atacamensis* are comparatively much shorter and more robust than in *spinosus*.

Habitat

Color in life, orange yellow. This species feeds on the underside of leaves of *Encelia tomentosa* Walp. (Compositae) locally known as " corona de fraile ". The type locality is 20 km south of Vallenar, a chaparral association of *Eulichnia*, *Proustia* and *Cassia*. The mites *Tetranychus desertorum* Banks and the stigmaeid, *Agistemus collyerae* González, were found associated to *H. atacamensis*.

This is the first record for the genus in the Southern Hemisphere.

Abstract

The only species of Bryobiinae so far known in Chile was the brown mite, *Bryobia rubrioculus* (Scheuten), a pest of deciduous fruit trees. In the present study the following species are reported : *B. kissophila* van Eyndhoven, *B. cristata* (Dugès), *B. repensi* Manson, *B. magallanica* n. sp., *B. nothofagi* n. sp. *B. fuegina* n. sp., *Petrobia latens* (Müller), *Anaplonobia algarrobicola* n. sp. and *Hystrichonychus atacamensis* n. sp. The three new species of *Bryobia* were found to occur in the southernmost part of Chile, whilst *A. algarrobicola* and *H. atacamensis* are described from the desert area in the north.

Resumen

La única especie de Bryobinae conocida en Chile era la arañita parda, *Bryobia rubrioculus* (Scheuten), plaga de frutales de hoja caduca. En este trabajo, se agregan las siguientes especies : *B. kissophila* van Eyndhoven, *B. cristata* (Dugès), *B. repensi* Manson, *B. magallanica* n. sp., *B. fuegina* n. sp., *B. nothofagi* n. sp., *Petrobia latens* (Müller), *Anaplonobia algarrobicola* n. sp. y *Hystrichonychus atacamensis* n. sp. Las tres especies nuevas de *Bryobia* proceden del extremo austral de Chile, mientras que *A. algarrobicola* y *H. atacamensis* son del desierto en el norte del país.

REFERENCES

González (R. H.), 1961. — Contribución al conocimiento de los ácaros del manzano en Chile central. — Univ. Chile, Est. Exp. Agron., Bol. Técn. No. **11**, 58 p.

Kramer (P.), 1898. — Acariden. *In* : Hamburger Malgalhensische Sammelreise, Hamburg, p. 11.

Livshitz (I. Z.) & (V. I.) Mitrofanov, 1971. — The mites of the genus *Bryobia* (in Russian). — The All-Union V. I. Lenin Acad. Agric. Sc. Proc., **51**, 108 p.

MANSON (D. C. M.), 1967. — The spider mite family Tetranychidae in New Zealand. I : The genus *Bryobia*. — Acarologia, **9** (1) : 76-123.

MATHYS (G.), 1962. — *Bryobia alpina*, nouvelle espèce du groupe « *borealis* », Mitt. Schweiz. Ent. Gess., **35** : 170-184.

MEYER (K. P. Smith), 1974. — A revision of the Tetranychidae of Africa with a key to the genera of the world, Dept. Agric. Tech. Serv., Ent. Memoir, No. **36**, 291 p.

MITROFANOV (V. I.), 1971. — On the taxonomy of the Briobiidae. — Proc. 3rd Int. Cong. Acarology, Prague, pp. 297-8.

TUTTLE (D. M.) & (E. W.) BAKER, 1968. — Spider mites of the S. W. United States and a revision of the family Tetranychidae. — The Univ. Arizona Press, 143 p.

WAINSTEIN (B. A.), 1960. — Tetranychid mites of Kazakhstan. — Kasakh. Akad. Sel'sk Navk., **5**, 275 pp.