



EDWARD W. BAKER  
AND DONALD M. TUTTLE

*New Species and Further  
Notes on the Tetranychoidae  
Mostly from the  
Southwestern United States  
(Acarina: Tetranychidae and  
Tenuipalpidae)*

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## ABSTRACT

Baker, E. W., and D. M. Tuttle. New Species and Further Notes on the Tetranychidae Mostly from the Southwestern United States (Acarina: Tetranychidae and Tenuipalpidae). *Smithsonian Contributions to Zoology*, number 116, 37 pages, 70 figures. 1972.—Three new genera are described, family Tetranychidae: *Mcgregorella* from southwestern United States and *Palmanychnus* from Florida; Tenuipalpidae: *Raoiellana* from Turkey intercepted at New York Quarantine Station. Descriptions and illustrations of thirty-nine new species are presented in this study as follows: family Tetranychidae; *Pseudobryobia canescens*, *Hystrichonychnus hymenoclea*, *Tetranychopsis potentilla*, *Mcgregorella incana*, *M. trifida*, *Monoceronychnus bouteloua*, *Paraplonobia* (*Paraplonobia*) *bouteloua*, *Paraplonobia* (*Langella*) *berberis*, *P. (L.) brickellia*, *P. (L.) artemisia*, *P. (L.) allionia*, *Neopetrobia bouteloua*, *Georgiobia trifida*, *Oligonychnus* (*Reckiella*) *saccharoides*, *Oligonychnus* (*Pritchardinychnus*) *macrostachyus*, and *Tetranychus* (*Armenychnus*) *cobrensis*: family Tenuipalpidae; *Aegyptobia cupressus*, *A. fallugia*, *A. crotonae*, *A. baccharis*, *A. alpinensis*, *A. lacida*, *A. antenostoma*, *A. flourensis*, *A. torreyi*, *A. physalis*, *A. erigonum*, *A. haplopappus*, *A. acacia*, *Pseudoleptus panicum*, *P. tridens*, *P. hilaria*, *P. bouteloua*, *Brevipalpus ceanothus*, *B. parthenium*, *B. portalis*, *Tenuipalpus crassula*, *Raoiellana allium*, and *Dolichotetranychus muhlenbergia*.

New information is given for the following twenty-six species: family Tetranychidae; *Bryobiella desertorum*, *Hystrichonychnus spinosus*, *H. gracilipes*, *H. sidae*, *Georgiobia ambrosiae*, *G. haploppapi*, *Schizonobia sycophanta*, *Neotrichobia arizonensis*, *Eutetranychus banksi*, *Palmanychnus steganus*, *Oligonychnus* (*Homonychnus*) *platani*, *Tetranychus* (*Tetranychus*) *urticae*, and *Tetranychus* (*Armenychnus*) *mcdanieli*: family Tenuipalpidae; *Aegyptobia pseudoleptoides*, *A. bibbyi*, *A. baptus*, *A. desertorum*, *A. franseriae*, *A. hymenoclea*, *A. macswaini*, *A. nomus*, *A. thujae*, *Pentamerismus erythreus*, *Brevipalpus punicans*, *Dolichotetranychus ancistrus*, *D. apaches*, and *Colopalpus eriophyoides*.

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*Edward W. Baker  
and Donald M. Tuttle*

# New Species and Further Notes on the Tetranychoidae Mostly from the Southwestern United States (Acarina: Tetranychidae and Tenuipalpidae)

## Introduction

This study of the Tetranychoidae mites includes three new genera, thirty-nine new species, and notes on twenty-six other species. These belong either to the families Tetranychidae or Tenuipalpidae, which were collected mostly from southwestern United States (particularly Arizona).

The authors previously described fourteen new species of Tetranychidae from Arizona in 1964 (Tuttle and Baker, 1964). This study also included all of the species of spider mites known for Arizona at that time (a total of 51 species). In a similar publication "The False Spider Mites of Arizona (Acarina: Tenuipalpidae)" by Baker and Tuttle, 1964, forty species are listed, including descriptions of twenty new species. A book by Tuttle and Baker appearing in 1968, "Spider Mites of Southwestern United States and a Revision of the Family Tetranychidae," presented a new tribe, three new genera, and thirty-two new species.

Revised keys have been omitted from the present study because available keys are at present adequate.

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However, recent publications and studies of new materials in progress will require revised keys for both families, Tetranychidae and Tenuipalpidae.

We are indebted to Dr. Charles T. Mason, Jr., and Mrs. Caryl L. Sager, Department of Botany, University of Arizona, for plant determinations and verifications. Appreciation is extended to Mr. George L. Arvizo for his assistance in the preparation and recording of slide material.

All collections were made by Donald M. Tuttle unless otherwise stated.

## Superfamily TETRANYCHOIDEA Reck

Tetranychoidae Reck, 1952:419.

This superfamily is composed of five families, Allochaetophoridae Reck, Linotetranychidae Baker and Pritchard, Tuckerellidae Baker and Pritchard, Tetranychidae Donnadieu, and Tenuipalpidae Berlese.

Tetranychidae and Tenuipalpidae contain most of the known species and are the only families dealt with in this paper.

## Family TETRANYCHIDAE Donnadieu

Tetranychidae Donnadieu, 1875:9.

Tetranychidae.—Murray 1877:93, 97.—Pritchard and Baker 1955:4.—Wainstein 1960:88.

There are two subfamilies, Bryobiinae and Tetranychinae.

### Subfamily BRYOBIINAE Berlese

Bryobiini Berlese, 1913:17.

Bryobiinae.—Reck 1950:122.—Pritchard and Baker 1955:12.—Wainstein 1960:91.

The Bryobiinae has four tribes, the Bryobiini, Hystrichonychini, Petrobiini, and Neotrichobiini.

### Tribe BYROBIINI Reck

Bryobiinae Reck, 1952:423.

Bryobiini.—Pritchard and Baker 1955:14.—Wainstein 1960:93.

The genera *Pseudobryobia* and *Bryobiella* are discussed here.

### Genus *Pseudobryobia* McGregor, new status

*Pseudobryobia* McGregor, 1950:366.

This genus is distinctive in having hooked claws and padlike empodia; in possessing four pairs of propodosomal setae; in that there are no prominent projections over the rostrum; in that the dorsocentral setae of the hysterosoma are in the normal longitudinal dorsal position and are not marginal; and in that the coxal setae pattern is 2-2-1-1.

TYPE-SPECIES.—*Pseudobryobia bakeri* McGregor, 1950, by original designation.

This genus was synonymized with *Bryobia* by Pritchard and Baker (1955). Wainstein (1950) placed it under *Bryobia* as a subgenus. At present we feel it should have full generic status.

The following species belong in the genus *Pseudobryobia*.

*P. bakeri* McGregor

*P. curiosae* (Summers)

*P. drummondi* (Ewing)

*P. ephedrae* (Tuttle and Baker), new combination

*P. filifoliae* (Tuttle and Baker), new combination

*P. longisetis* (Reck)

### *Pseudobryobia canescens*, new species

FIGURES 1-4

The long, large clavate dorsal body setae are distinctive.

FEMALE.—Rostrum small; palpi short and strong, femur with short, serrate seta. Stylophore broadly rounded without anterior cleft; peritremes anastomosing distally. Propododorsoma without projections over rostrum; first pair of setae set slightly on line posterior to second pair; all dorsal body setae, except first pair, set on strong tubercles; a few striae on margins of propododorsoma. Hysterosoma with few transverse striae. Leg I about as long as body; legs II-IV short; leg setae short and serrate. Tarsus I with either 2 or 3 short solenidia; tibia I with a single short distal solenidion; tarsus and tibia II without solenidia; tarsus III with a distal solenidion. Two sets of duplex setae on tarsus I of unequal length; a single set on tarsus II that are short and of about equal length. Coxal setae count is 2-2-1-1. Claws hooked and each with single pair of tenent hairs; empodia short and each with single pair of tenent hairs. Length of body, including rostrum, 542 $\mu$ .

MALE.—Not known.

HOLOTYPE.—Female, USNM 3441, ex *Atriplex canescens* (Pursh) Nuttall, Portal, Arizona, 23 August 1969.

PARATYPE.—One female with the above data.

### Genus *Bryobiella* Tuttle and Baker

*Bryobiella* Tuttle and Baker, 1968:15.

TYPE-SPECIES.—*Bryobiella desertorum* Tuttle and Baker, by original designation and monotypy.

### *Bryobiella desertorum* Tuttle and Baker

*Bryobiella desertorum* Tuttle and Baker, 1968:15.

Specimens of this mite were taken on *Coldenia palmeri* Gray, 14 May 1964; and *Bouteloua aristoides* (Humboldt, Bonpland, and Kunth) Grisebach, 13 September 1969. It was originally described from specimens taken on *Euphorbia albomarginata* Torrey and Gray.

### Tribe HYSTRICHONYCHINI Pritchard and Baker

Hystrichonychini Pritchard and Baker, 1955:35.—Wainstein 1960:120.

The following genera are discussed: *Hystrihonychus* McGregor, *Tetranychopsis* Canestrini, *McGregorella*, new genus, *Monoceronychus* McGregor, *Paraplonobia*

Wainstein, *Neopetrobia* Wainstein, and *Georgiobia* Wainstein.

### Genus *Hystrichonychus* McGregor

*Hystrichonychus* McGregor, 1950:272.—Pritchard and Baker 1955:37.—Wainstein 1960:121.  
*Neotetranychopsis* Bagdasarian, 1951:370.

TYPE-SPECIES.—*Tetranychus gracilipes* Banks, by original designation and monotypy.

### *Hystrichonychus spinosus* Tuttle and Baker

*Hystrichonychus spinosus* Tuttle and Baker, 1968:21.

Specimens of this species were collected in Arizona on *Encelia farinosa* Gray, 23 October 1969; *Sphaeralcea coccinea* (Pursh) Rydberg, Prescott, 19 August 1965; *S. orcuttii* Rose, Yuma, 23 October 1969; and *S. laxa* Wooton and Standley, Prescott, 19 August 1965. Records from Santa Rosa, New Mexico, 10 July 1969, include: *Aster tanacetifolius* Humboldt, Bonpland, and Kunth, *Berlandiera lyrata* Benth, *Sphaeralcea digitata* (Green) Rydberg, and *Ulmus parvifolia* Jacquin.

### *Histrichonychus gracilipes* Banks

*Tetranychus gracilipes* Banks, 1900:72.  
*Hystrichonychus gracilipes*—Tuttle and Baker 1964:8; 1968:27.

Additional plant hosts of this mite from Arizona collections are: *Sphaeralcea ambigua* Gray, Quartzite, 9 June 1965, and Alpine, 28 July 1966; *S. emoryi* Torrey, 16 August 1963; and *S. laxa* Wooton and Standley, Portal, 23 August 1965. It was also taken on *S. digitata* (Greene) Rydberg, Santa Rosa, New Mexico, 10 July 1969.

### *Hystrichonychus sidae* Pritchard and Baker

*Hystrichonychus sidae* Pritchard and Baker, 1955:40.—Tuttle and Baker 1968:8; 1968:21.

This species was collected on *Sida procumbens* Swartz, Portal, Arizona, 27 August 1969, a new record.

### *Hystrichonychus hymenoclea*, new species

FIGURES 5, 6

This species is distinctive in having the first pair of propodosomal setae set on a transverse line posterior to the second pair, which are subequal in length with the third pair.

FEMALE.—Anterior pair of propodosomal setae set on a transverse line posterior to the second pair; first pair long, much longer than second and third pairs, which are subequal in length. Propodosomal setae set on prominent tubercles. Hysterosomal setae long, slender and set on strong tubercles, all of about equal length except for  $D_5$  setae that are much shorter. All dorsal body setae serrate. Rostrum of moderate size; seta of femur of palps simple; stylophore broadly rounded and cleft anteriorly; peritremes anastomosing distally. Dorsal leg setae strong, serrate and much longer than in *H. spinosus* Tuttle and Baker. Length of body  $478\mu$ ; including rostrum  $574\mu$ ; leg I  $415\mu$ .

HOLOTYPE.—Female, USNM 3401, ex *Hymenoclea pentalepis* Rydberg, Casa Grande, Arizona, 16 September 1967.

A nymph was also collected.

### Genus *Tetranychopsis* Canestrini

*Tetranychopsis* Canestrini, 1889:495, 504.—Pritchard and Baker 1955:34.—Wainstein 1960:116.—Tuttle and Baker 1968:27.

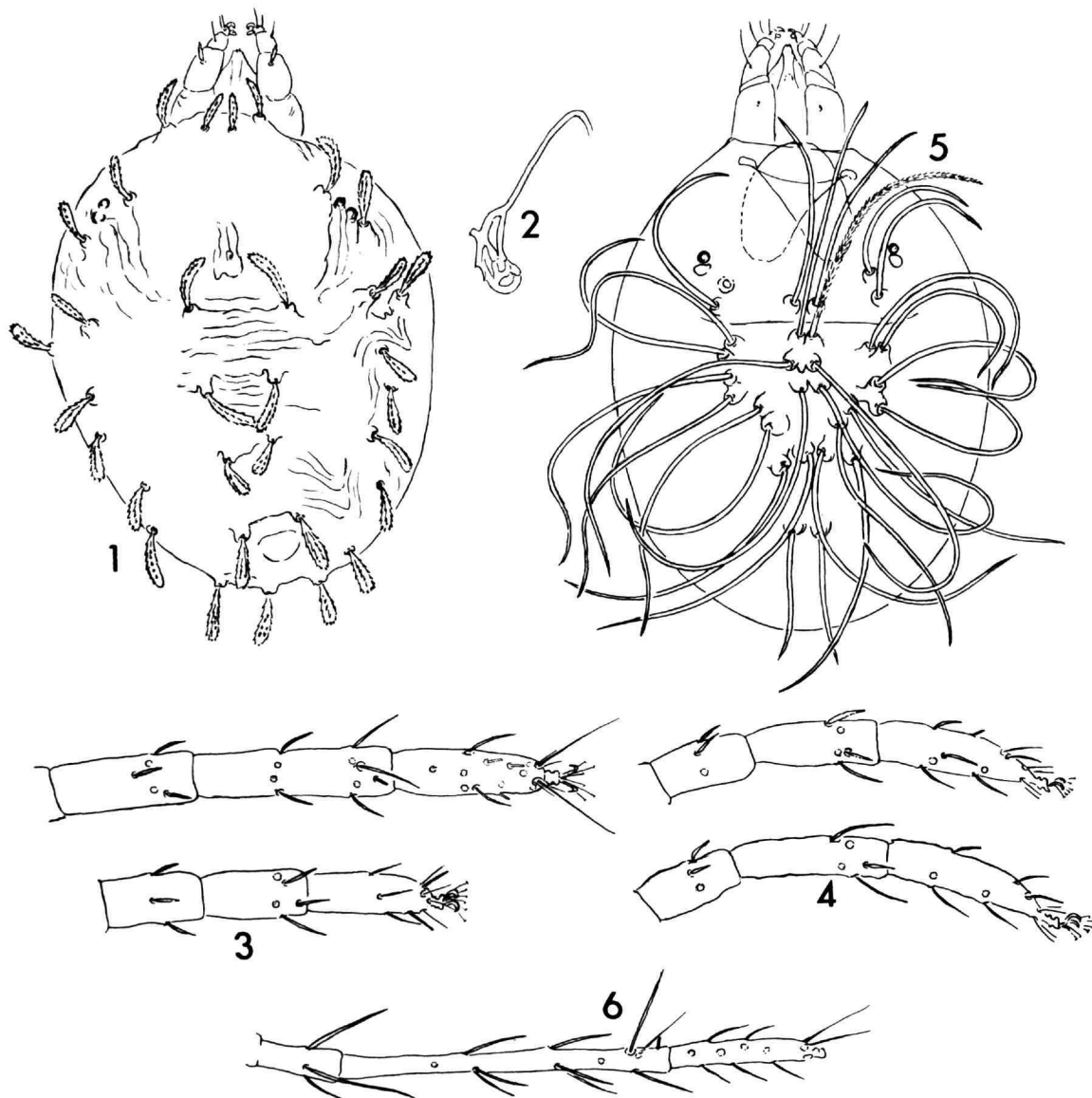
TYPE-SPECIES.—*Tetranychus horridus* Canestrini and Fanzago, by monotypy and subsequent designation.

### *Tetranychopsis potentilla*, new species

FIGURES 7–12

This species is distinctive in that the first paired marginal setae of the hysterosoma are unequal in length; the other paired marginal setae are subequal in length. In *T. horridus* (Canestrini and Fanzago) all three sets are unequal in length.

FEMALE.—Rostrum short and broad; stylophore broad and slightly indented anteriorly; peritremes anastomosing and elongate distally. First pair of setae longer, but not as long as other dorsal body setae; third and fourth pair long, subequal in length to the dorsal setae of the hysterosoma. All dorsal body setae except humerals very long; humerals about two-thirds



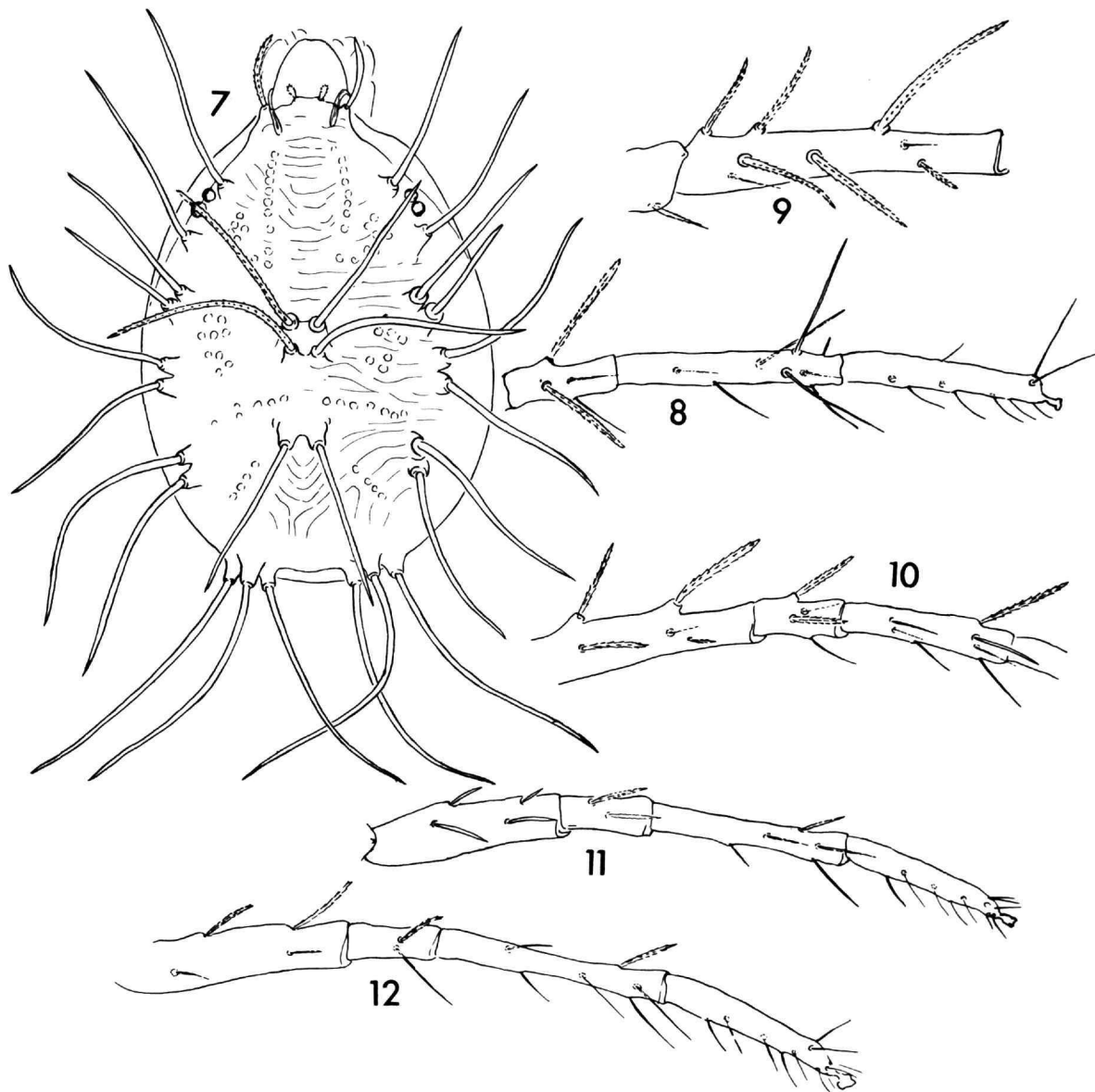
FIGURES 1-6.—*Pseudobryobia canescens*, new species; 1, dorsum of female; 2, peritreme; 3, legs I and II of female; 4, legs III and IV of female. *Hystrichonychus hymenoclea*, new species; 5, dorsum of female; 6, leg I of female.

as long as  $L_1$  setae. All dorsal body setae serrate and set on prominent tubercles except for the first two pairs of propodosomals, which are set on much smaller protuberances. Body with few striae; with characteristic pores forming a definite pattern. All

legs with some strong dorsal setae as figured. Length of body  $548\mu$ ; including rostrum  $612\mu$ ; leg I  $478\mu$ .

HOLOTYPE.—Female, USNM 3402, ex *Potentilla argentea* Linnaeus, Estey, Michigan, 13 July 1962.

PARATYPES.—Six females with the above data.



FIGURES 7-12.—*Tetranychopsis potentilla*, new species: 7, dorsum of female; 8, leg I of female; 9, femur I of female; 10, leg II of female; 11, leg III of female; 12, leg IV of female.

### Genus *Mcgregorella*, new genus

This genus belongs to the Hystrichonychini in having padlike claws and empodia. It is characterized by having three pairs of propodosomal setae and nine

pairs of hysterosomal setae; all setae except the anterior propodosomals are set on prominent tubercles. Its nearest relative is probably *Porcupinychus* Anwarullah.

TYPE-SPECIES.—*Mcgregorella incana*, new species.



*McGregorella incana*, new species

FIGURES 13-15

FEMALE.—Anterior pair of propodosomal setae strong, with many denticles, and about half as long as other dorsal body setae; set on small tubercles. Other dorsal body setae long, strong, subequal in length and set on prominent tubercles; denticles of these setae few and distinctive. Stylophore short and broadly rounded anteriorly; peritremes ending distally in an elongate anastomosing enlargement; palpal thumb elongate. Hysterosoma with nine pairs of setae. A few striae present, lateral of propodosomal shield area and posterior to third pair of dorsocentral setae. Legs short; setae formula of legs (coxa to tarsus):

1. 2-1-2-3-6-8+duplex
2. 2-0-3-3-5-8+duplex
3. 1-1-2-2-5-8
4. 1-0-2-2-5-8

Empodium a short pad bearing at least two pairs of tenent hairs; claw a short pad bearing a single pair of tenent hairs. Body 382 $\mu$  long; including rostrum 478 $\mu$ .

HOLOTYPE.—Female, USNM 3442, *ex Bernardia incana* Morton, Portal, Arizona, 23 August 1968.

PARATYPES.—Thirteen females with the above data.

A long series of females and some nymphs were collected on *Aloysia wrightii* (Gray) Heller, Portal, Arizona, 30 August 1969.

*McGregorella trifida*, new species

FIGURE 16

This species is similar to the preceding one in having three pairs of propodosomal setae and nine pairs of hysterosomal setae; the anterior pair of propodosomals are not set on tubercles. The bases of setae  $D_3$  and  $D_4$  of the propodosoma are contiguous.

FEMALE.—Rostrum short; stylophore broad and rounded anteriorly; peritremes anastomosing distally. Propodosoma with few marginal striae; shield area without distinct markings; first and third pair of propodosomal setae shorter than second pair and subequal in length. Humeral setae of hysterosoma on small tubercles laterad and slightly anterior to  $L_1$  setae;  $D$  and  $L$  setae of hysterosoma all strong and long, of about equal length, with weak denticles, and

set on prominent tubercles. Legs slender; setal formula as follows:

1. 2-1-8-5-14-17+duplex
2. 2-1-6-5-9-14+duplex
3. 1-1-5-5-9-15
4. 1-1-5-4-9-15

Empodium and claws padlike and of equal length; empodium with a double row of tenent hairs; claws with a single pair of tenent hairs each. Length of body 453 $\mu$ ; including rostrum 523 $\mu$ .

HOLOTYPE.—Female, USNM 3404, *ex Ambrosia trifida* Linnaeus, Riley, Kansas, 13 June 1965.

PARATYPES.—Two females with the above data.

Genus *Monoceronychus* McGregor

*Monoceronychus* McGregor, 1945:100.—Pritchard and Baker 1955:74.—Wainstein 1960:123.—Tuttle and Baker 1968:30.

TYPE-SPECIES.—*Monoceronychus californicus* McGregor, by original designation and monotypy.

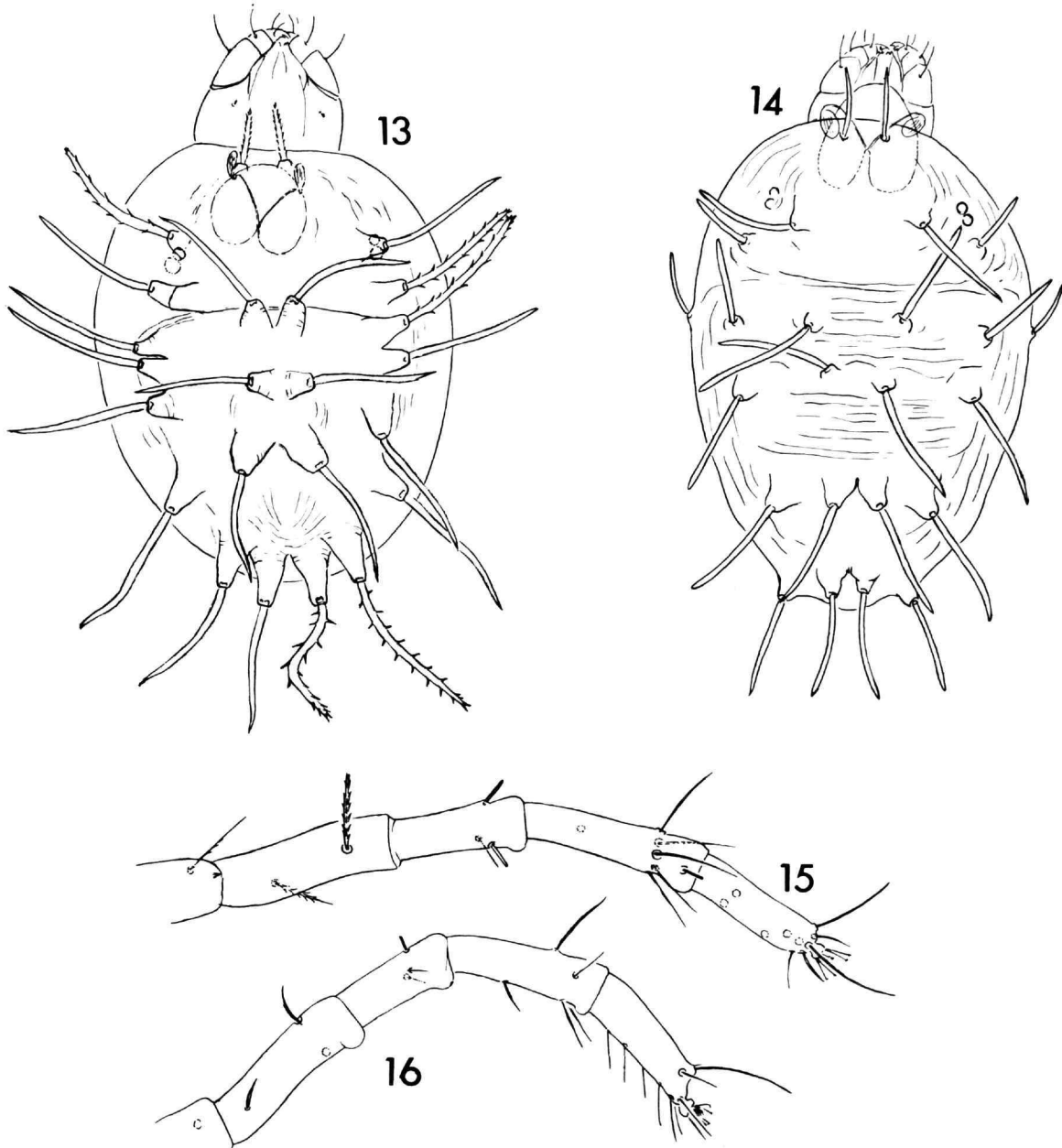
*Monoceronychus bouteloua*, new species

FIGURES 17, 18

This species is closely allied to *M. boreus* Krantz (1962), differing in being consistently larger and in having stronger setae on all legs; also, the body and palpal femoral setae of this species are more densely serrate.

FEMALE.—Rostrum extending beyond base of femur I; dorsal seta of femur of palpus short, strong and strongly serrate; stylophore slender and acuminate anteriorly; peritremes anastomosing and enlarged distally. Anterior pair of propodosomal setae on small tubercles and broadly lanceolate, serrate and longer than other propodosomal setae; propodosomal shield covered with minute tubercles; median projection of propodosoma longer than lateral tubercles. Setae of hysterosoma varying in size and broadening distally;  $D_1$ ,  $L_1$ – $L_3$  subequal in size;  $D_2$  and  $D_3$  smaller;  $L_4$  and  $D_4$ – $D_5$  larger than others and set on small tubercles; hysterosomal shield with small tubercles and a few weak longitudinal striae. Legs shorter than body; femur, genu, and tibia of all legs with short, strong serrate dorsal setae. Length of body 472 $\mu$ ; including rostrum 530 $\mu$ ; leg I 300 $\mu$ .

HOLOTYPE.—Female, USNM 3405, *ex Bouteloua*



FIGURES 13-16.—*Mcgregorella incana*, new species: 13, dorsum of female; 14, leg I of female; 15, leg II of female. *M. trifida*, new species: 16, dorsum of female.

*gracilis* (Humboldt, Bonpland, and Kunth) Lagasca, Casa Grande, Arizona, 16 September 1967.

PARATYPES.—Two females with the above data.

Two other females and a nymph were also collected at the above locality.

### Genus *Paraplonobia* Wainstein

*Aplonobia* (*Paraplonobia*) Wainstein, 1960:140.

*Paraplonobia*—Tuttle and Baker, 1968:48.

### Subgenus *Paraplonobia* (*Paraplonobia*) Wainstein

*Aplonobia* (*Paraplonobia*) Wainstein, 1960:140.

*Paraplonobia* (*Paraplonobia*)—Tuttle and Baker 1968:50.

TYPE-SPECIES.—*Aplonobia* (*Paraplonobia*) *echinopsile* Wainstein, by original designation.

### *Paraplonobia* (*Paraplonobia*) *boutelouae*, new species

#### FIGURE 19

The anteriorly incised stylophore, the strongly tuberculate striae, and the minute, slightly serrate dorsal body setae are distinctive.

FEMALE.—Rostrum elongate, not broad; stylophore long, tapering anteriorly and with a distinct incision anteriorly; peritremes ending in a slightly expanded bulb. Dorsal body setae short and slightly serrate; propodosomal setae, especially  $P_2$ , longer than dorso-central hysterosomal setae; setae  $D_4$ ,  $D_5$ , and  $L_4$  strong and serrate. Paired eyes large, prominent and filling space between  $P_2$  and  $P_3$  setae. Ventral body setae short and nude; striae transverse on venter of propodosoma and on hysterosoma to 1st pair of ventral setae; striae longitudinal between 1st and 2nd pairs of ventral setae; striae transverse between 2nd and 3rd pairs of ventral setae; and longitudinal between 3rd pair and posterior to genitalia. Leg setae long, slender, and slightly serrate; empodia padlike and with double row of tenent hairs; claws padlike, short, and each with a pair of tenent hairs. Length of body  $345\mu$ ; including rostrum  $415\mu$ . Length of leg I  $191\mu$ .

HOLOTYPE.—Female, USNM 3406, *ex Bouteloua aristidoides* (Humboldt, Bonpland, and Kunth) Grisebach, Gila Bend, Arizona, 13 September 1969.

A nymph was also collected at the same locality.

### Subgenus *Paraplonobia* (*Langella*) Wainstein

*Langella* Wainstein, 1961:607.

*Paraplonobia* (*Langella*)—Tuttle and Baker 1968:54.

TYPE-SPECIES.—*Aplonobia dyschima* Beer and Lang, by original designation and monotypy.

### *Paraplonobia* (*Langella*) *berberis*, new species

#### FIGURES 20–23

This species is similar to *P. coldeniae* (Tuttle and Baker), but has shorter dorsal body setae and relatively shorter leg segments; the long serrate seta on the distal portion of genu IV is not present.

FEMALE.—Rostrum strong and broad; stylophore short and broadly rounded anteriorly; peritreme ending in a small anastomosing bulb. Propodosomal shield composed of small elongate tubercles; striae lateral of shield tuberculate; posterior of hysterosoma without striae but not shieldlike. Striae between propodosoma and hysterosoma small, with tubercles; striae posterior to setae  $L_1$  and  $D_1$  composed of broad folds covered with tubercles. Dorsal body setae long, tapering distally, and reaching past base of setae of next row, but not as long as the setae of *P. coldeniae*; setae not set on tubercles. Legs relatively short; segments short; all leg setae short and serrate; leg III without long conspicuous seta as in *P. coldeniae*. Length of body  $447\mu$ ; including rostrum  $543\mu$ . Leg I  $223\mu$  long. Tarsus I  $48\mu$ ; tibia I  $48\mu$ ; genu I  $32\mu$ .

MALE.—Not known.

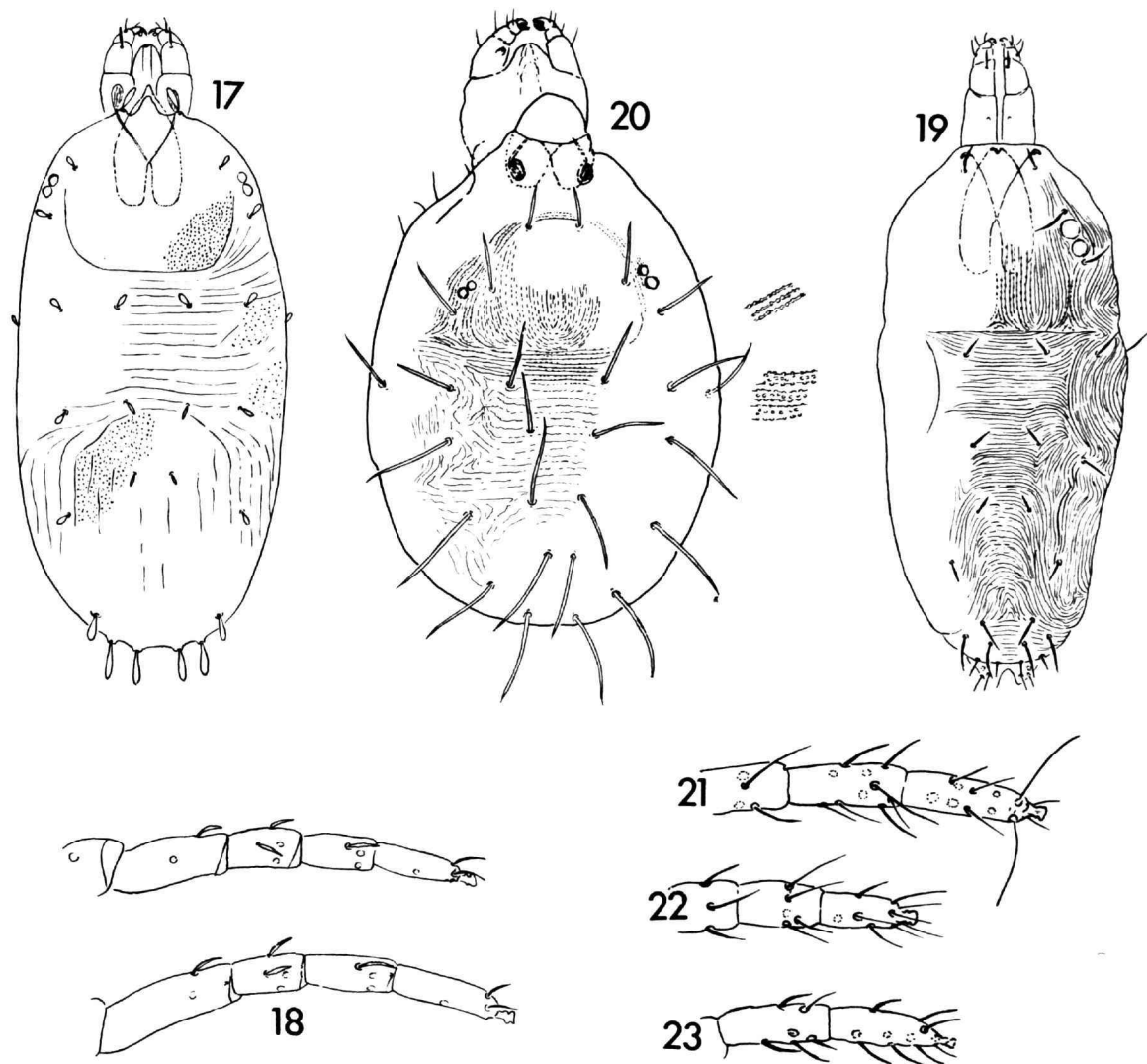
HOLOTYPE.—Female, USNM 3407, *ex Berberis haematocarpa* Wootton, Portal, Arizona, 2 September 1967.

### *Paraplonobia* (*Langella*) *brickellia*, new species

#### FIGURES 24, 25

The dorsal setal pattern is distinctive. The mite is related to *P. (L.) boutelouae* Tuttle and Baker, but differs from that species in having a simple seta on the femur of the palps and in having the first pair of dorsocentral setae much larger than the 2nd and 3rd pairs.

FEMALE.—Rostrum elongate, nearly reaching to base of tibia I; stylophore strongly tapering anteriorly and without distal incision; peritremes ending in strong round anastomosing mass distally. Dorsal body setae short and serrate; propodosomal setae not



FIGURES 17-23.—*Monoceronychus bouteloua*, new species: 17, dorsum of female; 18, legs III and IV of female. *Paraplonobia (Paraplonobia) bouteloua*, new species: 19, dorsum of female. *Paraplonobia (Langella) berberis*, new species: 20, dorsum of female; 21, leg I of female; 22, leg II of female; 23, leg IV of female.

strongly expanded distally; hysterosomal setae  $D_1$ ,  $D_4$ ,  $D_5$  and  $L_1$ - $L_4$  strongly expanded and of equal size; setae  $D_2$  and  $D_3$  small and lanceolate; setae  $D_4$  contiguous. Propodosomal shield covered with strong tubercles or lobes; lateral of the eyes integument wrinkled and with few lobes. Hysterosoma with transverse wrinkled striae covering area between  $D_1$ - $D_3$

setae, without lobes; area posterior to  $D_3$  setae free of striae; striae lateral of  $L_1$  and  $L_2$  setae with few lobes. Ventral setae slender and nude. Leg setae slender, with two to many branches; empodia short, padlike; claws padlike and longer than empodium. Body broad, legs short; length of body  $415\mu$ ; including rostrum  $543\mu$ . Leg I  $287\mu$  long.

**MALE.**—Setal pattern of body similar to that of female, differing in that the setae, except for  $D_2$  and  $D_3$ , are strongly lanceolate and serrate. Rostrum elongate; dorsal setae of palpal femur with single barb. Sculpture in irregular pattern. Body  $294\mu$  long; including rostrum  $415\mu$  long.

**HOLOTYPE.**—Female, USNM 3408, *ex Heterotheca subaxillaris* (Lamarck) Britton and Rusby, Globe, Arizona, 7 July 1967.

**PARATYPES.**—Four males and six females with the above data.

One specimen was collected from *Brickellia californica* (Torrey and Gray) Gray, Portal, Arizona, 30 August 1969.

Specimens were also taken on *Hymenothrix wislezni* Gray, Portal, Arizona, 29 August 1969.

#### *Paraplonobia (Langella) artemisia*, new species

FIGURES 26–29

The striation pattern is distinctive in that the propodosomal shield area is composed of short, longitudinal irregular striae; the striae laterad of the shield and separating the propodosoma and hysterosoma are fine and tuberculate; the striae of the hysterosoma are broad tuberculate folds of the integument. The body setae are long, slender, and almost blunt distally.

**FEMALE.**—Rostrum small, elongate; stylophore broadly round and without anterior incision; peritremes ending in an anastomosing elongate bulb. Dorsal body setae long, slender, serrate, and about equal in length, although caudally they tend to become longer. Propodosomal shield consists of short, irregular, broken longitudinal striae; striae in area laterad of shield fine, close together, tuberculate, and similar to striae separating propodosoma from hysterosoma. Hysterosoma striae consisting of broad transverse folds of integument that are tuberculate. Leg setae slender; with few strong dorsal setae; empodia padlike and slightly longer than padlike claws and with a double row of tenent hairs; claws with a single pair of tenent hairs. Length of body  $383\mu$ ; including rostrum  $477\mu$ ; leg I  $225\mu$  long.

**MALE.**—Dorsal setal pattern similar to that of female. Rostrum more elongate in relation to body length; stylophore short and broadly rounded anteriorly; peritremes ending in a weak anastomosing structure. Propodosomal shield as in female; lateral

and transverse striae between propodosoma, as in female. Hysterosomal striae transverse; posterior setae as in female tend to be longer than others. Leg I with slender setae; all legs with few stronger dorsal setae; tibia I with three solenidia; tarsus I with three sets of duplex setae and five solenidia; empodia padlike and with two pairs of tenent hairs; claws padlike and with a single pair of tenent hairs. Length of body  $280\mu$ ; including rostrum  $364\mu$ ; leg I  $236\mu$  long.

**HOLOTYPE.**—Female, USNM 3409, *ex Artemisia ludoviciana* Nuttall, Portal, Arizona, 2 September 1967.

**PARATYPES.**—One male and eight females with the above data.

#### *Paraplonobia (Langella) allionia*, new species

FIGURE 30

This species has a distinctive propodosomal shield covered with strong tubercles. The striae of the body are finely lobed.

**FEMALE.**—Rostrum strong; palpal femur with strongly serrate seta; stylophore rounded anteriorly; peritreme ending distally in a small anastomosing elongate bulb. Propodosomal shield elongate, consisting of distinct elongate tubercles arranged in a longitudinal pattern. Hysterosoma covered with finely lobed striae in a transverse pattern as figured. Dorsal body setae short, barely reaching to base of next row, slender and serrate; the posterior setae longer than others. Legs relatively short; empodium longer than claws and with a paired row of tenent hairs; claws short, padlike, each with a pair of tenent hairs. Length of body  $478\mu$ ; including rostrum  $625\mu$ ; leg I  $255\mu$ .

**MALE.**—Two specimens in poor condition are in the collection. Setal pattern similar to that of female. Aedeagus typical for genus.

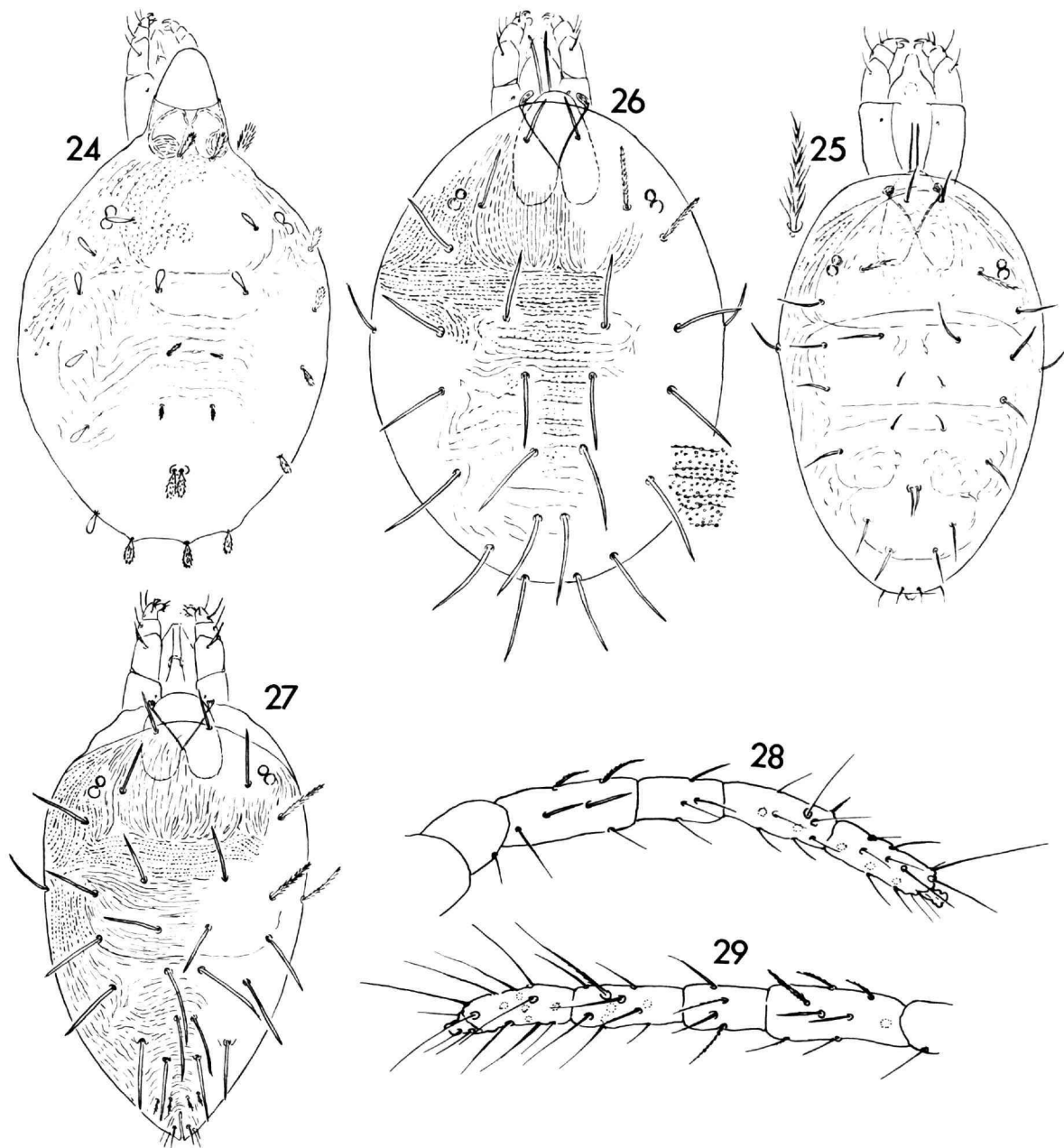
**HOLOTYPE.**—Female, USNM 3410, *ex Allionia incarnata* Linnaeus, Quartzsite, Arizona, 28 October 1966.

**PARATYPES.**—Eight females and two males with the above data.

#### Genus *Neopetrobia* Wainstein

*Neopetrobia* Wainstein, 1956:151.—Tuttle and Baker 1968: 57.

**TYPE-SPECIES.**—*Neopetrobia dubinini* Wainstein, by original designation and monotypy.



FIGURES 24-29.—*Paraplonobia (Langella) brickellia*, new species: 24, dorsum of female; 25, dorsum of male. *Paraplonobia (Langella) artemisia*, new species: 26, dorsum of female; 27, dorsum of male; 28, leg I of female; 29, leg I of male.

*Neopetrobia bouteloua*, new species

## FIGURE 31

This species is similar to *N. mcgregori* (Pritchard and Baker), but differs in having no distinct hysterosomal plate and in having 9 tactile setae and 1 solenidion on tibia I and in having 6 tactile setae proximal to the duplex setae on tarsus I; the setae on tibia II are much longer than those of *N. mcgregori*.

**FEMALE.**—Rostrum reaching past distal end of femur I; stylophore slender, rounded and with a well-delineated emargination anteriorly; peritremes with relatively small distal enlargements. Propodosomal shield narrow, consisting of lobes arranged in longitudinal pattern; lateral striae covered with small lobes. Hysterosoma without dorsal shield and covered with lobed striae as figured. Propodosomal setae longer than others and distinctly serrate; hysterosomal setae shorter, more slender and lightly serrate. Anal opening terminal and dorsal. Length of body 408 $\mu$ ; including rostrum 498 $\mu$ ; leg I 223 $\mu$ .

**HOLOTYPE.**—Female, USNM 3411, *ex Bouteloua gracilis* (Humboldt, Bonpland, and Kunth) Lagasca, Casa Grande, Arizona, 16 September 1967.

**PARATYPE.**—A female with the above data.

Genus *Georgiobia* Wainstein

*Georgiobia* Wainstein, 1960:138.—Tuttle and Baker 1968:58.

**TYPE-SPECIES.**—*Petrobia shirakensis* Reck, by original designation.

*Georgiobia ambrosiae* Tuttle and Baker

*Georgiobia ambrosiae* Tuttle and Baker, 1968:59.

A single female was collected from *Kochia scoparia* (Linnaeus) Schrader, a new host record, at Pinetop, Arizona, 18 July 1966.

*Georgiobia haplopappi* Tuttle and Baker

## FIGURE 32

*Georgiobia haplopappi* Tuttle and Baker, 1968:62.

*Georgiobia dyssodiae* Tuttle and Baker, 1968:64 [new synonymy].

This species was originally described from a single

female collected on *Haplopappus gracilis* Nuttall, McNary, Arizona, in 1963. Recently a small series was collected on the same host at Portal, Arizona, 23 and 30 August 1969. These mites show a considerable degree of variation in the length of the D<sub>1</sub> to D<sub>3</sub> setae of the hysterosoma.

In the holotype the D<sub>1</sub>–D<sub>3</sub> setae are large, subequal in length and similar to the L<sub>1</sub> setae.

A single specimen of the present series has a similar pattern on one side but the other row of D set become progressively smaller posteriorly.

Two females have the setae of the D series becoming progressively smaller posteriorly in both rows.

Two females have the D<sub>1</sub> setae large, the D<sub>2</sub> and D<sub>3</sub> setae being very small and subequal in size.

There is some variation in the size and shapes of the other dorsal body setae.

Two males were also in the series, one of which is figured. The D<sub>1</sub>–D<sub>3</sub> setae became progressively smaller posteriorly; other dorsal body setae were more slender than those of the female, and not expanded distally. The distal bulb of the peritreme is not as large as that of the female and is elongate. The aedeagus is long and slender, narrowing at the distal third to a pencil-like tip. Tarsus I has 4 sets of duplex setae and 5 solenidia; tibia I possesses 9 solenidia; tarsus II has one set of duplex setae and 2 solenidia. Length of body 319 $\mu$ ; including rostrum 396 $\mu$ ; leg I 332 $\mu$ .

*Georgiobia trifida*, new species

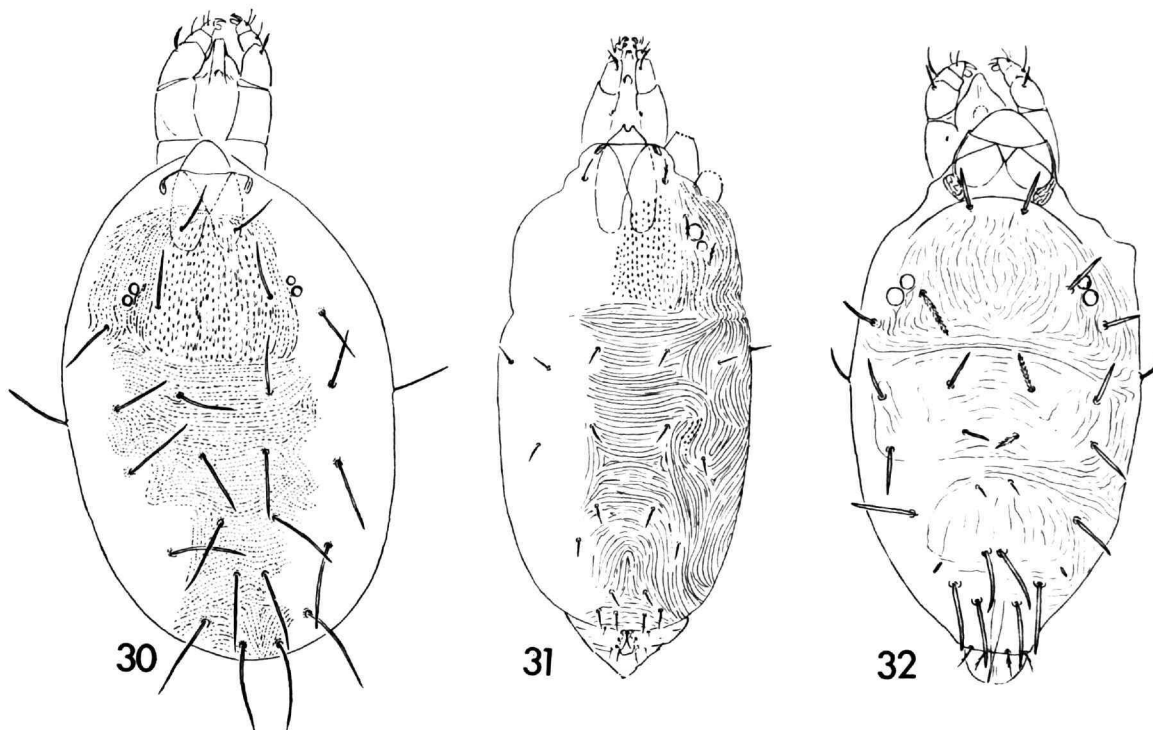
## FIGURE 33

This species is similar to *G. deina* Pritchard and Baker in having long dorsal body setae; however, these setae are much shorter and are not tapering throughout their length as in *G. deina*.

**FEMALE.**—Rostrum short, broad; stylophore short and broadly rounded anteriorly; peritreme anastomosing distally in elongate bulb. No obvious dorsal striate pattern. Dorsal body setae strong and not tapering until distal portion; propodosomal setae 1 and 3 shorter than 2: L<sub>1</sub> and humeral setae shorter than other hysterosomal setae; all setae except P<sub>1</sub> and humerals set on prominent tubercles. Leg setae short, trichobothrium of tibia I much larger than other leg setae. Length of body 447 $\mu$ ; including rostrum 555 $\mu$ .

**HOLOTYPE.**—Female, USNM 3412, *ex Ambrosia trifida* Linnaeus, Riley, Kansas, 13 June 1965.





FIGURES 30-32.—*Paraplonobia (Langella) allionia*, new species: 30, dorsum of female. *Neopetrobia bouteloua*, new species: 31, dorsum of female. *Georgiobia haplopappi* Tuttle and Baker: 32, dorsum of male.

### Tribe PETROBIINI Reck

*Petrobiinae* Reck, 1952:423.

*Petrobiini*—Pritchard and Baker 1955:42.—Wainstein 1960:131.—Tuttle and Baker 1968:71.

*Schizonobia* is the only genus in this tribe represented in this study.

### Genus *Schizonobia* Womersley

*Schizonobia* Womersley, 1940:251.—Pritchard and Baker 1955:56.—Wainstein 1960:138.

TYPE-SPECIES.—*Schizonobia sycophanta* Womersley, established by monotypy and subsequent designation.

### *Schizonobia sycophanta* Womersley

FIGURE 34

*Schizonobia sycophanta* Womersley, 1940:251.

The genus is recognized in having three pairs of propodosomal setae, a clawlike empodium with a pair of tenent hairs, and padlike true claws, each possessing a pair of tenent hairs.

The female rostrum is not strong and is not much longer than broad; the palpal femoral seta is slender and with faint serrations; the stylophore is broad and round anteriorly; the peritreme ends in a large ball-like anastomosing unit that is characteristic. The dorsal body setae are long, strong, arising from prominent tubercles, and with small denticles. The propodosomal shield is present and without obvious ornamentation. The rest of the dorsal body surface is covered with coarse striae; the hysterosomal striae are transverse dorsally between setae  $D_1$  and  $D_2$ , and longitudinal between the  $D_3$  setae and forming a diamond-shaped pattern between the  $D_3$  and  $D_4$  setae; the striae are longitudinal between the  $D_4$  setae and form a V-pattern between the  $D_5$  setae. The distal pair of genual setae are long, slender, and with a few faint serrations or denticles.

The male is similar to the female. The aedeagus is long, slender, straight, and tapering distally to a point.

One male and seven females were collected from "squirrel burrow," Orange County, Santa Ana Heights, California, 3 May 1965, by F. Meacham.

These have been checked with specimens from Hobart, Tasmania, and are conspecific.

### Tribe NEOTRICHOBIIINI Tuttle and Baker

*Neotrichobiini* Tuttle and Baker, 1968:73.

There is only one genus for the tribe, *Neotrichobia* Tuttle and Baker.

### Genus *Neotrichobia* Tuttle and Baker

*Neotrichobia* Tuttle and Baker, 1968:73.

TYPE-SPECIES.—*Neotrichobia arizonensis* Tuttle and Baker, by original designation and monotypy.

### *Neotrichobia arizonensis* Tuttle and Baker

*Neotrichobia arizonensis* Tuttle and Baker, 1968:74.

Additional specimens of this species were collected in Arizona as follows: *Acacia greggii* Gray and *Allionia incarnata* Linnaeus, Quartzsite, 29 October 1966; *Pectis papposa* Harvey and Gray, 12 September 1962; and *Plantago insularis* Eastwood, Gila Bend, 27 February 1968.

### Subfamily TETRANYCHINAE Berlese

Tetranychini Berlese, 1913:17.

Tetranychini—Reck 1950:123.—Pritchard and Baker 1955:96.—Wainstein 1960:145.—Tuttle and Baker 1968:80.

The three tribes comprising the Tetranychinae are Eurytetranychini, Tenuipalpoidini, and Tetranychini.

### Tribe EURYTETRANYCHINI Reck

Eurytetranychinae Reck, 1950:123.—Wainstein 1960:223.

Eurytetranychini—Pritchard and Baker 1955:100.—Tuttle and Baker 1968:81.

*Eutetranychus* and a new genus, *Palmanychnus*, are treated here.

### Genus *Eutetranychus* Banks

*Neotetranychus* (*Eutetranychus*) Banks, 1917:197.

*Eutetranychus*—McGregor 1950:267.—Pritchard and Baker 1955:111.—Wainstein 1960:226.—Tuttle and Baker 1968:82.

TYPE-SPECIES.—*Tetranychus banksi* McGregor, by subsequent designation.

### *Eutetranychus banksi* (McGregor)

*Tetranychus banksi*, McGregor, 1914:358.

*Neotetranychus* (*Eutetranychus*) *banksi*—Banks 1917:177.

*Eutetranychus banksi*—Pritchard and Baker 1955:115.—Tuttle and Baker 1968:82.

The Texas citrus mite was first found in California on lemon leaves at Bard on 20 April 1968 by John Simms. The first record for Arizona was from a lemon grove at Yuma, 9 November 1970, from specimens collected by George Arvizo. Previously this mite was known from Florida and Texas in the United States, in addition to several citrus-growing areas from Mexico to South America.

### Genus *Palmanychnus*, new genus

TYPE-SPECIES.—*Eotetranychus steganus* Pritchard and Baker (1955:167).

Pritchard and Baker (1955) separated the Bryobiinae from the Tetranychinae by two sets of characters. In the Bryobiinae the empodium possessed tenent hairs, and the female had three pairs of anal setae and the male had five pairs of genitoanal setae; in the Tetranychinae the empodium (sometimes absent) is without tenent hairs, and the female had two pairs of anal setae and the male four pairs of genitoanal setae. Rimando (1966) erected the genus *Aponychus*, which is closely related to *Eutetranychus*, for a mite that possessed a single pair of anal setae in the female and three pairs of genitoanal setae in the male. We now have the second aberrant genus in the *Tetranychinae*, an *Eotetranychus* with the same genitoanal setal formula as *Aponychus*, as well as having a reduced number of setae on certain of the leg segments.

At present the two subfamilies may be easily separated by the presence or absence of tenent hairs on the empodia.

The new genus may be described as follows. It is distinct from *Eotetranychus*, to which it appears similar, in having a single pair of anal setae and in lack-

ing the proper number of setae on tarsus I. The duplex setae are set close together in the female, but are well separated in the male. The dorsal setal pattern is typical; the setae are longer than the intervals between their bases; the striae of the propodosoma are longitudinal and those of the hysterosoma transverse. The aedeagus of the male is a long, dorsally bent stylet.

Setal counts of the legs are as follows (asterisk denotes solenidia):

♀	Tarsus	Tibia	Genu	Femur	Trochanter	Coxa
I	1*+7	1*+6	5	6	1	2
II	5	5	4	5	1	1
III	1*+3	3	2	1	1	1
IV	1*+3	4	2	0	1	1
♂	Tarsus	Tibia	Genu	Femur	Trochanter	Coxa
I	3*+7	5+6	5	7	1	2
II	1*+5	1+5	4	4	1	1
III	1*+3	3	2	1	1	1
IV	1*+3	3	2	0	1	1

#### Tribe TENUIPALPOIDINI Pritchard and Baker

Tenuipalpoidini Pritchard and Baker, 1955:97.—Wainstein 1960:145.

There is only one genus, *Tenuipalpoides* Reck and Bagdasarian.

#### Genus *Tenuipalpoides* Reck and Bagdasarian

*Tenuipalpoides* Reck and Bagdasarian, 1948:183.—Pritchard and Baker 1955:97.—Wainstein 1960:147.

TYPE-SPECIES.—*Tenuipalpoides zizyphus* Reck and Bagdasarian, by original designation and monotypy.

#### *Tenuipalpoides dorychaeta* Pritchard and Baker

*Tenuipalpoides dorychaeta* Pritchard and Baker, 1955:99.—Wainstein 1960:147.—Tuttle and Baker 1968:83.

Specimens were collected on *Amorpha fruticosa* Linnaeus, Show Low, Arizona, 3 August 1966.

#### Tribe TETRANYCHINI Reck

Tetranychinae Reck, 1950:123.

Tetranychini—Pritchard and Baker 1955:124.—Wainstein 1960:147.—Tuttle and Baker 1968:83.

The genus *Oligonychus* Berlese and *Tetranychus* Dufour are treated here.

#### Genus *Oligonychus* Berlese

*Oligonychus* Berlese, 1886:24.—Pritchard and Baker 1955:270.—Wainstein 1960:203.—Tuttle and Baker 1968:116.

TYPE-SPECIES.—*Heteronychus brevipodus* Targioni Tozzetti, by monotypy and subsequent designation.

The subgenera *Homonychus* Wainstein, *Reckiella* Tuttle and Baker, and *Pritchardinychus* Wainstein are treated here.

#### Subgenus *Oligonychus* (*Homonychus*) Wainstein

*Oligonychus* (*Homonychus*) Wainstein, 1960:216.—Tuttle and Baker 1968:119.

TYPE-SPECIES.—*Tetranychus peruvianus* McGregor, by designation and monotypy.

#### *Oligonychus* (*Homonychus*) *platani* (McGregor)

*Paratetranychus platani* McGregor, 1950:349.

*Oligonychus platani*—Tuttle and Baker 1964:36; 1968:120.

A single female was collected from *Artemisia filifolia* Torrey at Portal, Arizona, 23 August 1968.

#### Subgenus *Oligonychus* (*Reckiella*) Tuttle and Baker

*Oligonychus* (*Reckiella*) Tuttle and Baker, 1968:122.

TYPE-SPECIES.—*Tetranychus pratensis* Banks, by original designation.

#### *Oligonychus* (*Reckiella*) *saccharoides*, new species

##### FIGURE 35

This species is similar to *O. mexicanus* McGregor and Ortega, but the neck of the aedeagus is shorter and the head is larger.

FEMALE.—Typical for subgenus. Rostrum extends to middle of genu I. Peritremes end in simple bulb. Length of body 351 $\mu$ ; including rostrum 460 $\mu$ .

MALE.—Typical for subgenus. Rostrum as in subgenus. Peritremes ending simply distally. Aedeagus upturned with short neck, and small head not much broader than neck; head with slight anterior and posterior angulations; head at slight angle to axis of shaft. Length of body 255 $\mu$ ; including rostrum 351 $\mu$ .

HOLOTYPE.—Male, USNM 3413, ex *Andropogon saccharoides* Schwartz, Santa Rosa, New Mexico, 16 July 1969.

PARATYPES.—Male and female with the above data.

Other specimens with the above data were also studied.

**Subgenus *Oligonychus* (*Pritchardinychus*) Wainstein**

*Oligonychus* (*Pritchardinychus*) Wainstein, 1960:217.—Tuttle and Baker 1968:124.

TYPE-SPECIES.—*Paratetranychus pritchardi* McGregor, by original designation.

***Oligonychus* (*Pritchardinychus*) *macrostachyus*, new species**

**FIGURE 36**

This subgenus includes *O. calcis* Baker and Pritchard, *O. hovo* Gutierrez, *O. biharensis* (Hirst), *O. pritchardi* (McGregor), *O. hadrus* Pritchard and Baker, *O. propetes* Pritchard and Baker, *O. mimosae* Baker and Pritchard, and *O. verameræ* Baker and Pritchard. This new species is distinguished by the shape of the aedeagus.

FEMALE.—Typical to the subgenus; peritremes hooked distally. Length of body 351 $\mu$ ; including rostrum 491 $\mu$ .

MALE.—Peritremes hooked distally. Ventral hairs of empodium I coalesced to form ventral spur; ventral hairs of other empodia free. Aedeagus sharply upturned with broadly rounded anterior angulation; head at least twice as large as neck and at a distinct angle to axis of shaft. Length of body 294 $\mu$ ; including rostrum 402 $\mu$ .

HOLOTYPE.—Male, USNM 3414, *ex Setaria macrostachya* Humboldt, Bonpland, and Kunth, Portal, Arizona, 23 August 1968.

PARATYPES.—Two males and one female with the above data.

Other specimens with the above data are in the collection.

**Genus *Tetranychus* Dufour**

*Tetranychus* Dufour, 1832:276.—Pritchard and Baker 1955:373.—Wainstein 1960:149.—Tuttle and Baker 1968:124.

TYPE-SPECIES.—*Tetranychus lintearius* Dufour, by monotypy and subsequent designation.

The subgenera *Tetranychus* and *Armenychus* are discussed.

**Subgenus *Tetranychus* (*Tetranychus*) Dufour**

*Tetranychus* (*Tetranychus*) Dufour, 1836:276.—Wainstein 1960:149.—Tuttle and Baker 1968:126.

***Tetranychus* (*Tetranychus*) *urticae* Koch**

*Tetranychus urticae* Koch, 1836:10.—Tuttle and Baker 1968:129.

This species was collected on *Monarda menthaefolia* Graham, Alpine, Arizona, 29 July 1966.

**Subgenus *Tetranychus* (*Armenychus*) Wainstein**

*Tetranychus* (*Armenychus*) Wainstein, 1960:149.—Tuttle and Baker 1968:131.

TYPE-SPECIES.—*Tetranychus armeniaca* Bagdasarian, by designation and monotypy.

***Tetranychus* (*Armenychus*) *mcdanieli* McGregor**

*Tetranychus mcdanieli* McGregor, 1931:193.—Tuttle and Baker 1964:41; 1968:131.

Specimens were collected from *Phleum pratense* Linnaeus (timothy) at Alpine, Arizona, 29 July 1966. Usually the aedeagus has a small anterior angulation but in these specimens, as in the holotype, the angulation is not present and the distal portion of the aedeagus is strongly sigmoid.

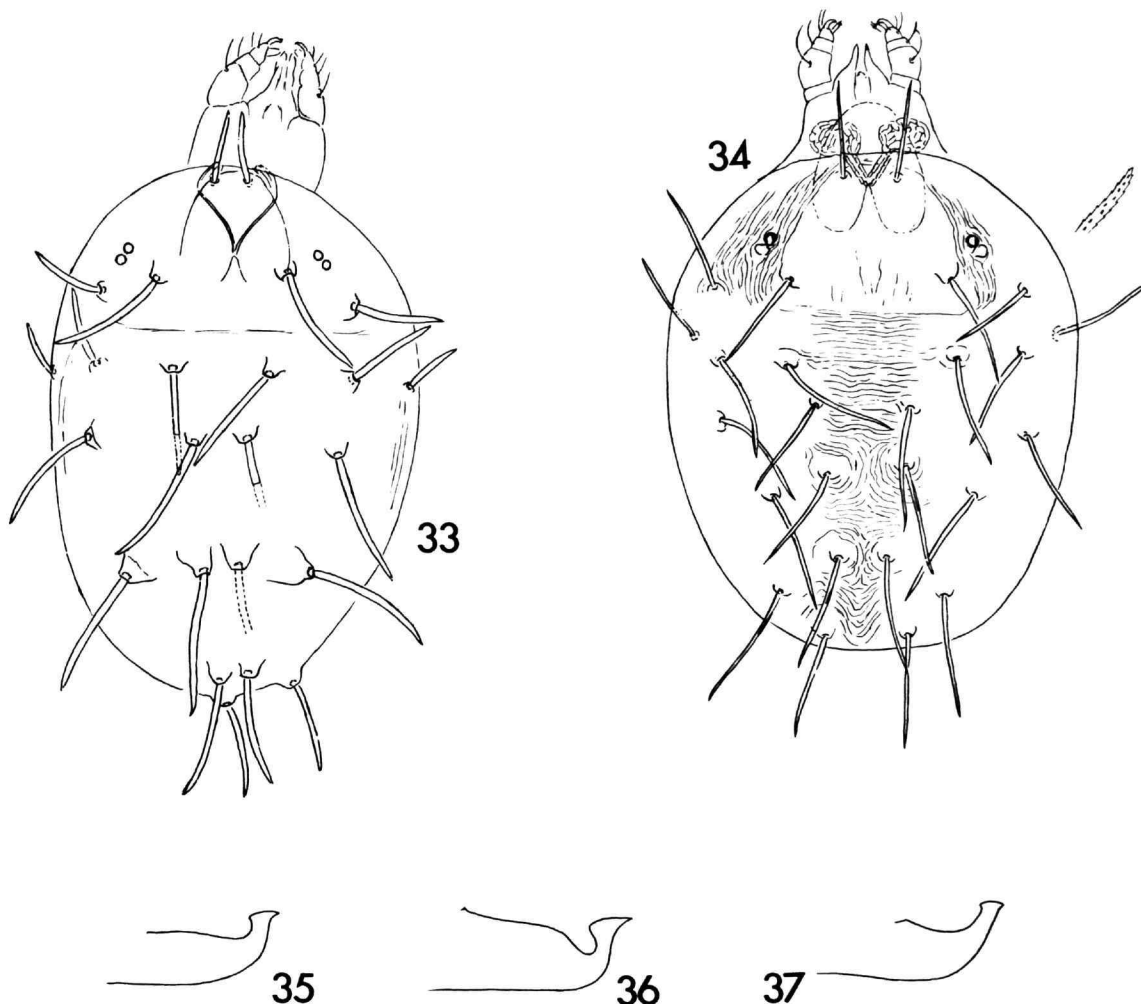
***Tetranychus* (*Armenychus*) *cobrensis*, new species**

**FIGURE 37**

The striae of the female are transverse, which is typical for the subgenus; the head of the aedeagus is very small, the anterior and posterior angulations being minute.

FEMALE.—Dorsal hysterosomal striae transverse; dorsal body setae long and slender, as are the coxal and ventral setae; rostrum reaching to middle of genu; palps reaching to distal end of genu; stylophore tapering distally and rounded. Leg setae typical for subgenus and long and slender. Length of body 287 $\mu$ ; including palpus 364 $\mu$ .

MALE.—Body and leg setae similar to those of



FIGURES 33-37.—*Georgiobia trifida*, new species: 33, dorsum of female. *Schizonobia sycophanta* Womersley: 34, dorsum of female. *Oligonychus* (*Reckiella*) *saccharoides*, new species: 35, aedeagus. *Oligonychus* (*Pritchardinychus*) *macrostachyus*, new species: 36, aedeagus. *Tetranychus* (*Armenychus*) *cobrensis*, new species: 37, aedeagus.

female. Rostrum and palpus about length of those of female. Empodium I with a strong dorsomedian spur and three pairs of coalesced ventral hairs; empodium II with dorsomedian spur and free ventral hairs. Aedeagus upturned; head only slightly wider than short neck; anterior and posterior angulations of head minute and about equal; head set at a slight angle to axis of shaft. Length of body  $223\mu$ ; including palpus  $332\mu$ .

HOLOTYPE.—Male, USNM 3415, ex *Lithospermum cobrense* Greene, Pinedale, Arizona, 25 July 1966.

PARATYPES.—Male and female with the above data.

Other specimens with the same data were studied.

#### Family TENUIPALPIDAE Berlese

Tenuipalpini Berlese, 1913:17.

Tenuipalpidae Sayed, 1950:1015.—Baker and Pritchard 1956:357.

The Tenuipalpidae (false spider mites) have a simple palpus, without a spur on the fourth segment, and often with reduced segmentation. Usually the body is flattened dorsoventrally and the integument is ornately sculptured.

Genera of the Tenuipalpidae treated here are: *Aegyptobia* Sayed, *Pentamerismus* McGregor, *Pseudoleptus* Bruyant, *Brevipalpus* Donnadieu, *Tenuipalpus* Donnadieu, *Dolichotetranychus* Sayed, *Raoiella* Hirst, *Raoiellana*, new genus, and *Colopalpus* Pritchard and Baker.

### Genus *Aegyptobia* Sayed

*Aegyptobia* Sayed, 1950:1015.—Pritchard and Baker 1958:179.—Baker and Tuttle 1964:3.

TYPE-SPECIES.—*Aegyptobia trāgārdhi* Sayed, by monotypy and subsequent designation.

### *Aegyptobia pseudoleptoides* (Baker and Pritchard)

*Pentamerismus pseudoleptoides* Baker and Pritchard, 1954:357.

*Aegyptobia pseudoleptoides* (Baker and Pritchard), 1958:180.

This species was originally described from *Bouteloua gracilis* (Humboldt, Bonpland, and Kunth) Lagasca, Modena, Utah. It has been collected in Arizona as follows: *Bouteloua aristidoides* (Humboldt, Bonpland, and Kunth) Grisebach, at Tucson; *Panicum capillare* Linnaeus, Gila Bend; and *Tridens pulchellus* (Humboldt, Bonpland, and Kunth) Hitchcock, Portal.

### *Aegyptobia bibbyi* Baker and Tuttle

*Aegyptobia bibbyi* Baker and Tuttle, 1964:27.

Originally described from material collected from *Atriplex canescens* (Pursh) Nuttall at Yuma, Arizona, specimens have also been taken from *A. lentiformis* (Torrey) Watson, at Arlington, Arizona.

### *Aegyptobia baptus* (Pritchard and Baker)

*Pentamerismus baptus* Pritchard and Baker, 1952:10.

*Aegyptobia baptus* (Pritchard and Baker), 1958:181.—Baker and Tuttle 1964:21.

This species infests a number of hosts (see Baker and Tuttle 1964). New Arizona records are; *Atriplex confertifolia* (Torrey and Fremont) Watson, at Marana; *Chrysothamnus depressus* Nuttall, at Big Lake; *Artemisia ludoviciana* Nuttall, at Portal; and *Ambrosia confertiflora* (De Candolle) Ryberg, at Winkelman.

### *Aegyptobia cupressus*, new species

FIGURE 38

This species is similar to *A. nina* Pritchard and Baker, differing in that the dorsal genual I and II setae are present; also, the hysterosomal striae are longitudinal between setae D<sub>1</sub> and D<sub>3</sub>.

FEMALE.—Body elongate-elliptical. Rostrum prominent, broad, reaching anteriorly to proximal edge of tarsus I; stylophore strong and broadly rounded anteriorly. Striae of propodosoma forming a V-pattern; that of hysterosoma longitudinal dorsomedially; a swirl pattern is present dorsolaterally between setae D<sub>1</sub>–D<sub>2</sub> and DM<sub>1</sub> and DM<sub>2</sub> (dorsomedian setae). All dorsal body setae slender, lanceolate, serrate, and of about equal size. Legs short and stout; true claws uncinat; dorsal setae of genua and femora I and II present, slender and serrate. Length of body 236μ; including rostrum 294μ.

HOLOTYPE.—Female, USNM 3416, *ex Cupressus forbesii* Jepson, Alpine, California, 26 July 1963.

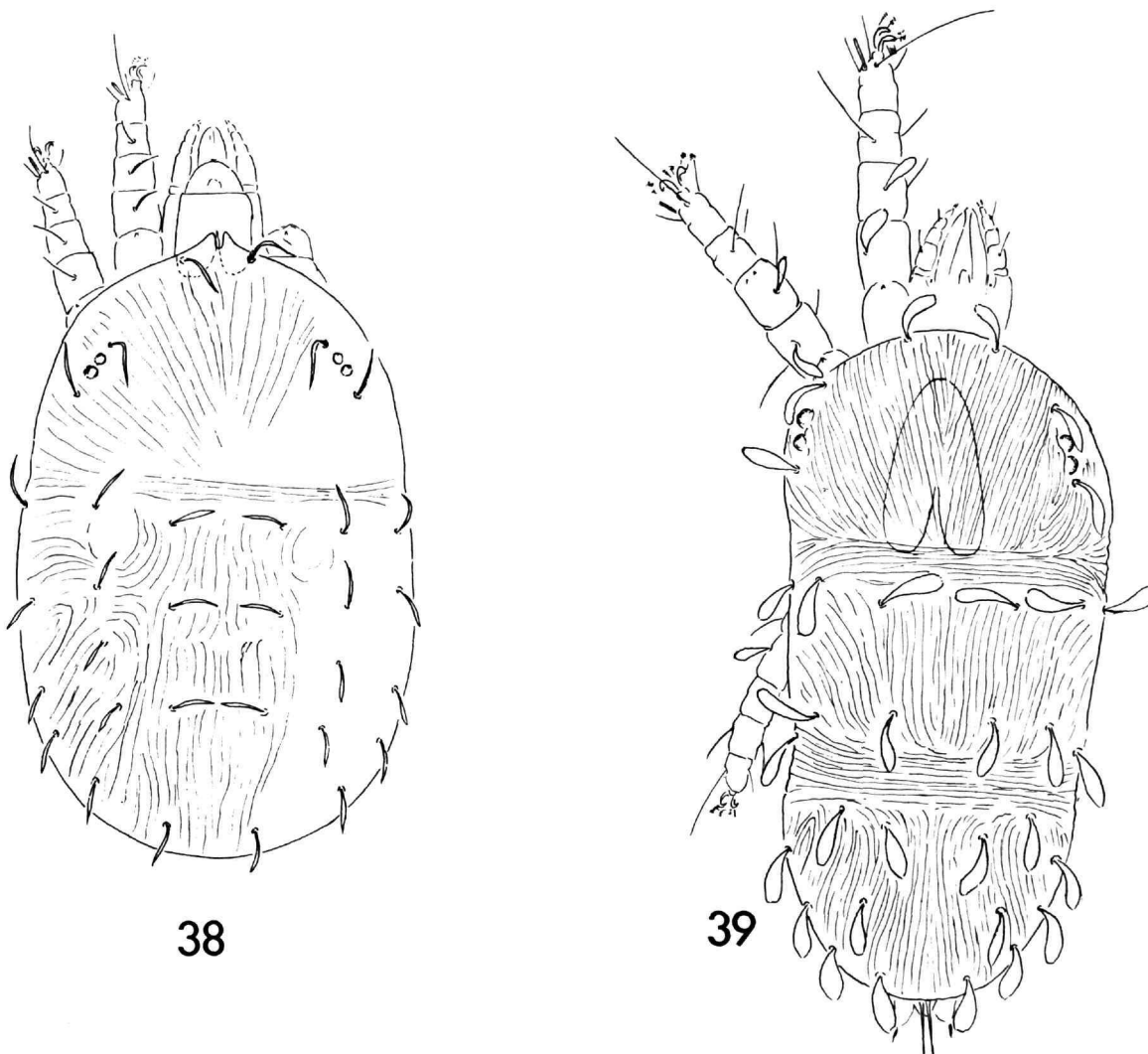
Other specimens were collected from California nutmeg, Eldorado County, California, 8 November 1967, by R. Miller.

### *Aegyptobia desertorum* Baker and Tuttle

FIGURE 39

*Aegyptobia desertorum* Baker and Tuttle, 1964:23.

This species was described from specimens collected from *Atriplex canescens* (Pursh) Nuttall at Dome Valley, Yuma County, Arizona. In a series collected from *A. torreyi* Watson at Red Rock Canyon, Kern County, California, the femora and genua I and II setae, which were described as being broadly clavate, vary from slender to clavate, and striae are also present on the genital and ventral plates of the female. Another series collected on *A. polycarpa* (Torrey) Watson, Arlington, Arizona, 13 September 1969, contained males and females. The male is here described and figured.



FIGURES 38-39.—*Aegyptobia cupressus*, new species: 38, dorsum of female. *Aegyptobia desertorum* Baker and Tuttle: 39, dorsum of male.

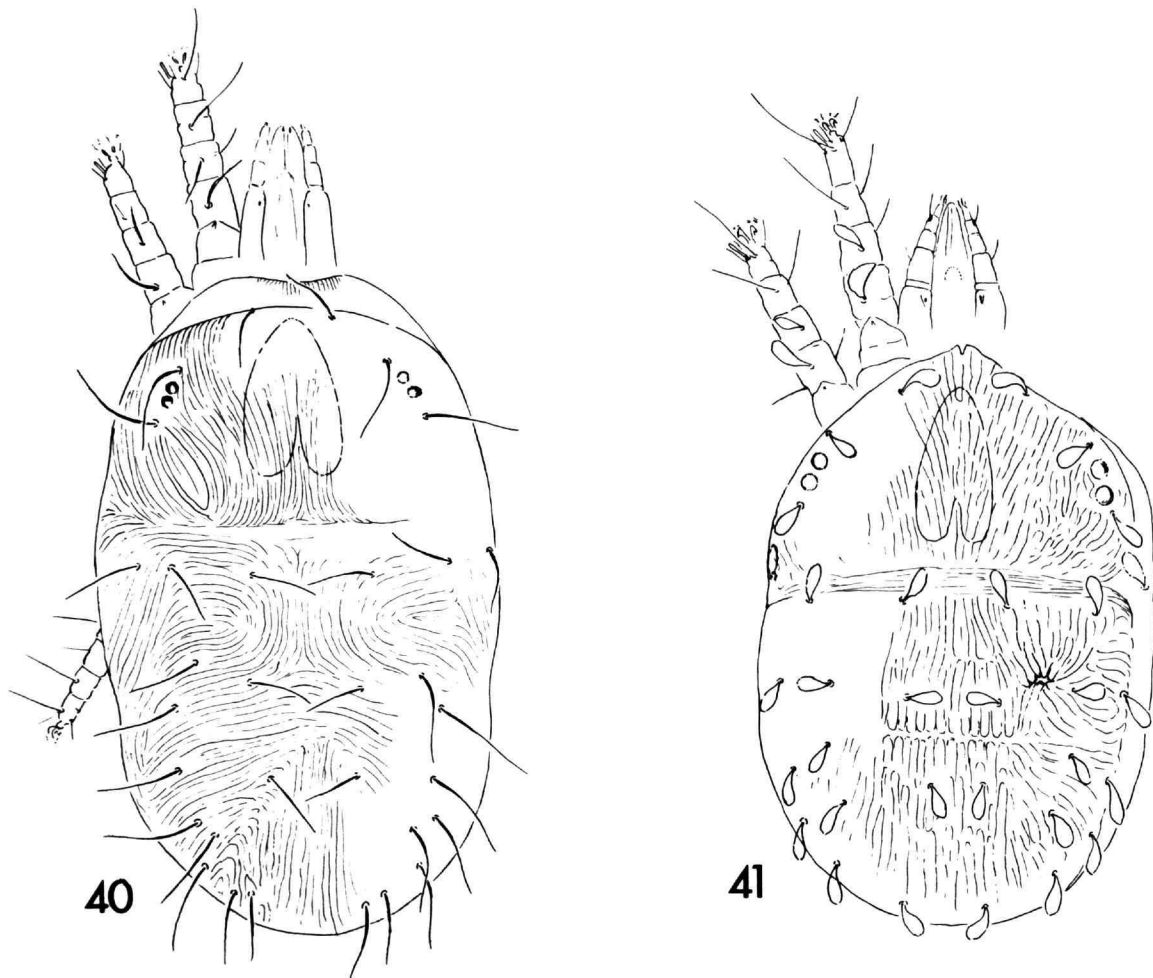
**MALE.**—Striation pattern and setae similar to those of female; striae longitudinal on all three dorsal body divisions; setae strongly expanded distally and slightly serrate. True claws unciniate. Dorsal femoral and genual I and II setae expanded and serrate distally. Rostrum small and elongate; stylophore elongate and rounded anteriorly. Length of body  $191\mu$ ; including rostrum  $223\mu$ ; leg I  $96\mu$ .

#### *Aegyptobia franseriae* Baker and Tuttle

*Aegyptobia franseriae* Baker and Tuttle, 1964: 18.

This mite was described from specimens collected on *Ambrosia ilicifolia* Gray (*Franseria ilicifolia* Gray) in the Gila Mountains. Further Arizona collections are: *Solidago altissima* Linnaeus, Portal, 29 August 1969; *Selloa glutinosa* Sprengel, Portal, 23 August





FIGURES 40-41.—Dorsum of female: 40, *Aegyptobia fallugia*, new species; 41, *A. crotonae*, new species.

1964; *Hymenopappus lugens* Greene, Picacho, 9 July 1966.

Males were found in the latter collection. They are similar to the females but possess longer striae. Males of the genus are very similar to each other.

***Aegyptobia fallugia*, new species**

**FIGURE 40**

This mite is closely related to *A. ephedrae* Baker and Tuttle, differing in that the dorsal setae are longer,

especially the hysterosomal caudal setae; the striation pattern in the area between setae  $D_1$ - $D_2$  and  $DM_1$  and  $DM_2$  is transverse rather than longitudinal.

**FEMALE.**—Rostrum slender, reaching to tibia I; stylophore long, slender, and rounded anteriorly. Rostral shield absent; anterior margin of propodosoma rounded. Striae of propodosoma in a longitudinal pattern as figured, with a tendency to form an elongate-circular pattern posterior to the eyes; striae of hysterosoma longitudinal between setae  $D_1$  and  $D_2$ , and between and posterior to the  $D_3$  setae; pattern transverse between the  $D_1$ - $D_2$  and  $DM_1$  and

DM<sub>2</sub> setae; striae laterad of female genitalia longitudinal as in *A. ephedrae* Baker and Tuttle. All dorsal setae long, slender, serrate, those on caudal and marginal section of hysterosoma longer than others. Legs short; claws and empodium padlike. Length of body 255 $\mu$ ; including rostrum 326 $\mu$ .

HOLOTYPE.—Female, USNM 3417, *ex Fallugia paradoxa* (David Don) Endlicher, Portal, Arizona, 2 September 1967.

PARATYPES.—Two females with the above data.

### *Aegyptobia crotonae*, new species

#### FIGURE 41

The presence of a rostral shield, the striation pattern, and the smooth dorsal body setae are typical.

FEMALE.—Rostrum slender, reaching to center of tibia I; stylophore long, slender, and rounded anteriorly. Rostral shield present, broad and slightly edentate anteriorly. Dorsal body setae broadly rounded and smooth. Striae of propodosoma broken, forming a faint V-pattern as figured; striae of hysterosoma longitudinal dorsomedially, broken behind setae D<sub>2</sub>, and transverse in area of DM<sub>2</sub> and L<sub>2</sub> setae; small pore present. Striae laterad of genital plate forming circular pattern. Legs short, stout; claws uncinat; tibia I and II and genua I and II each with an expanded seta. Length of body 236 $\mu$ ; including rostrum 300 $\mu$ .

HOLOTYPE.—Female, USNM 3418, *ex Croton corymbulosus* Engelm., Portal, Arizona, 2 September 1967.

PARATYPES.—Females with the above data; also females collected 23 August 1969 with the above host.

A male is in this series but appears to be identical with that of *A. desertorum* Baker and Tuttle.

Three females, a male, and a nymph were also collected from *Ambrosia confertiflora* (De Candolle) Rydberg, at Riverside, California, 23 June 1966.

### *Aegyptobia baccharis*, new species

This species is related to *A. crotonae*, new species, in having a rostral shield and a similar striation pattern, but differs in having the broadly spatulate body setae serrate.

FEMALE.—Similar to *A. crotonae*, new species, but

with serrate body setae. Length of body 280 $\mu$ ; including rostrum 370 $\mu$ .

HOLOTYPE.—Female, USNM 3419, *ex Baccharis glutinosa* Persoon, Tucson, Arizona, 18 October 1968.

### *Aegyptobia hymenocleae* Baker and Tuttle

*Aegyptobia hymenocleae* Baker and Tuttle, 1964:25.

This species was first described from *Hymenoclea pentalepis* Rydberg, Casa Grande. It has since been collected on *Cucurbita digitata* Gray at Arlington, Arizona.

### *Aegyptobia macswaini* (Pritchard and Baker)

#### *Pentamerismus macswaini* Pritchard and Baker

*Pentamerismus macswaini* Pritchard and Baker, 1951:8  
*Aegyptobia macswaini* (Pritchard and Baker), 1958:180.—  
Baker and Tuttle 1964:4.

This species, which possesses padlike true claws and nude dorsal body setae, has been taken on *Euphorbia albomarginata* Torrey and Gray at Arlington, Arizona, and *Eriogonum polycladon* Benth at Portal, Arizona.

### *Aegyptobia nomus* (Baker and Pritchard)

*Pentamerismus nomus* Baker and Pritchard, 1953:361.  
*Aegyptobia nomus* (Baker and Pritchard), Pritchard and Baker, 1958:180.

This mite was originally described from material collected on *Bouteloua gracilis* (Humboldt, Bonpland, and Kunth) Lagasca, Mandan, North Dakota. It has also been collected on *Distichlis* sp. in Utah. A collection was also made at Gila Bend, Arizona, on *Oxybaphus comatus* (Small) Weatherby, 24 September 1964.

### *Aegyptobia thujae* Baker and Tuttle

#### FIGURE 42

*Aegyptobia thujae* Baker and Tuttle, 1964:13.

This mite was described from material collected on *Thuja occidentalis* Linnaeus, *Ambrosia deltoidea* Torrey, and *Datura stramonium* Linnaeus. A recent

collection from *Ambrosia deltoidea* Torrey at Picacho, Arizona, 8 July 1966, included a single male, which is here figured and briefly described.

**MALE.**—Without rostral shield; reticulate pattern of body, in general, more elongate than broad; dorsal body setae broadly spatulate and serrate; femora and genua I and II each with a spatulate, serrate dorsal seta.

*Aegyptobia alpinensis*, new species

FIGURE 43

This species possesses a distinct rostral shield, lacks hysterosomal pores, has narrowly lanceolate dorsal body setae, and the striae, in general, are longitudinal.

**FEMALE.**—With distinct emarginated rostral shield; rostrum elongate, reaching to tarsus I; stylophore broadly rounded anteriorly. Setae of femora and genua I and II short and only slightly lanceolate, serrate. Claws uncinat. Dorsal body setae short, narrowly lanceolate and serrate. Striation pattern of propodosoma simple, V-like; that of hysterosoma longitudinal except for a swirl area between setae  $D_1$  and  $DM_1$ . Striae lateral of genitalia forming swirl pattern. True tarsal claws strongly hooked. Length of body  $255\mu$ ; including rostrum  $306\mu$ .

**HOLOTYPE.**—Female, USNM 3420, *ex Phoradendron bolleanum* (Seemann) Eichler, Alpine, California, 26 July 1963.

*Aegyptobia lacida*, new species

FIGURE 44

This species is similar to *A. haplopappi* Baker and Tuttle. The body setae are nude, there are no hysterosomal pores, and the striae are longitudinal dorsally. It differs in that there are obviously fewer striae and in having smaller body and leg setae.

**FEMALE.**—Rostrum broad, reaching only to tibia I; with a small and indented rostral shield. Dorsal body setae smooth, without serrations, those on propodosoma longer than others; hysterosomal setae small, slender, and nude. Dorsal striae of body longitudinal, widely spaced and elongate. Setae of femora and genua I and II short, slender, and nude. Empodia padlike; true claws strongly hooked. Length of body  $230\mu$ ; including rostrum  $294\mu$ .

**HOLOTYPE.**—Female, USNM 3421, *ex Gutierrezia*

*lacida* Greene, Prescott, Arizona, 19 August 1968.

**PARATYPES.**—Three females with the above data.

*Aegyptobia antenostoma*, new species

FIGURE 45

This mite is distinctive in lacking hysterosomal pores, in that the dorsal body setae are broadly spatulate and smooth, and in having longitudinal dorsal striae.

**FEMALE.**—Rostrum strong and reaching to tarsus I; rostral shield not present. Dorsal body setae broadly spatulate and smooth, all of about equal size. Striae of propodosoma longitudinal with few reticulations near eyes; striae of hysterosoma longitudinal with reticulate pattern in region of dorsomedial setae; hysterosomal pores lacking. Striae laterad of genitalia forming swirl pattern. Femora and genua I and II with broadly spatulate dorsal setae; without serrations except for that on genu I. Empodia padlike; claws hooked. Length of body  $210\mu$ ; including rostrum  $262\mu$ .

**HOLOTYPE.**—Female, USNM 3422, *ex Antenostoma fasciculatum* Hooker and Arnott, Alpine, California, 22 June 1966.

A nymph was also collected.

*Aegyptobia flourensia*, new species

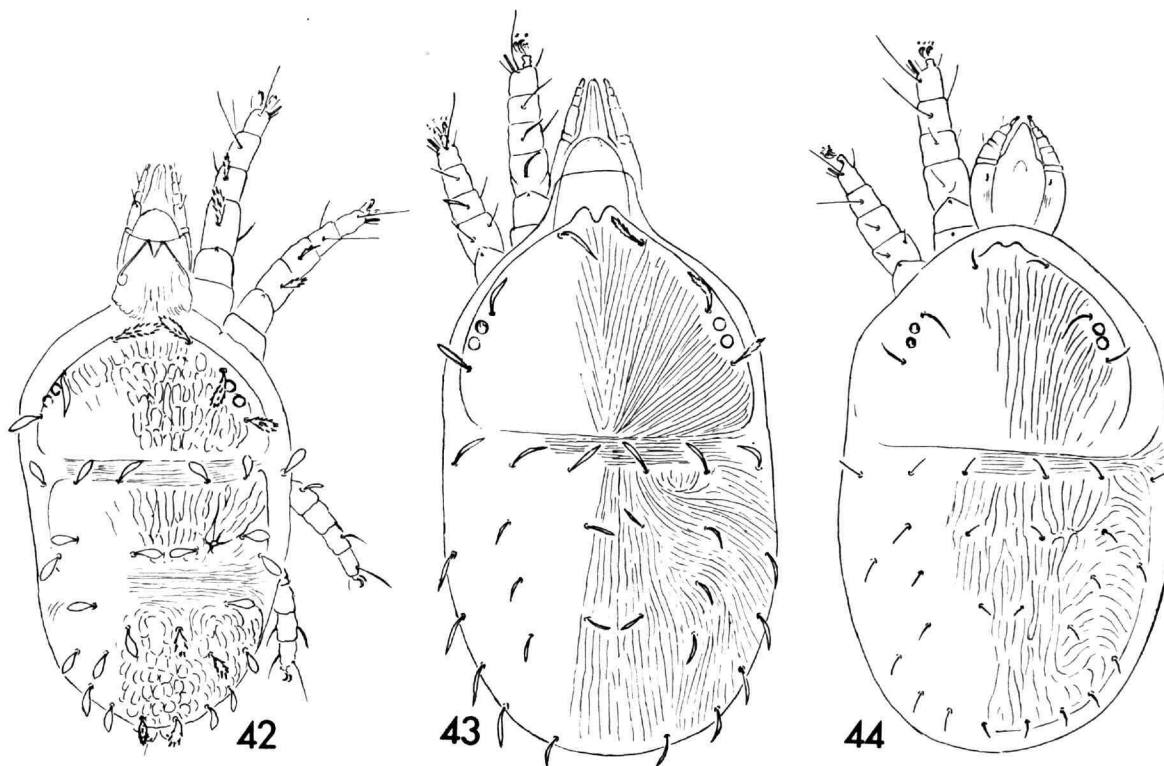
FIGURE 46

This species possesses a strong circular pore posterior to  $DM_2$  seta, the body setae are broadly spatulate and smooth, the rostrum is elongate, and the reticulate pattern is composed of small units.

**FEMALE.**—Rostrum elongate; reaching to distal tip of tarsus I; with broadly indented rostral shield. Dorsal body setae broadly spatulate and smooth, and subequal in size. Propodosoma covered with small reticulations arranged in longitudinal V-pattern; hysterosoma with similar pattern except longitudinal; large, conspicuous pore posterior to  $DM_2$  setae. Tarsal claws uncinat; empodia padlike; femora and genua I and II each with strongly spatulate, smooth dorsal seta. Length of body  $287\mu$ ; including rostrum  $364\mu$ .

**HOLOTYPE.**—Female, USNM 3423, *ex Flourensia cernua* De Candolle, Portal, Arizona, 2 September 1967.

**PARATYPES.**—Two females with the above data.



FIGURES 42-44.—*Aegyptobia thujae* Baker and Tuttle: 42, dorsum of male. *Aegyptobia alpinensis*, new species: 43, dorsum of female. *Aegyptobia lacida*, new species: 44, dorsum of female.

### *Aegyptobia torreyi*, new species

#### FIGURE 47

This mite is distinctive in having the serrate, slender dorsal body setae of varying lengths.

**FEMALE.**—Rostrum short, relatively broad, and reaching only to distal end of femur I. Dorsal setae of femora, genua, and tibiae I and II slender and lightly serrate; legs short and stout; true claws and empodia padlike. No rostral shield. Striae of propodosoma light and forming a V-pattern; that of hysterosoma light and forming an inverted V-pattern. Propodosomal setae subequal in length, the anterior two pairs slightly serrate, and the third pair strongly serrate. Hysterosomal margin and humeral setae similar to those of propodosoma; D dorsocentral and DM dorsomedian setae short, slender, and nude. Venter of hysterosoma lightly striated and without swirls

laterad of genitalia. Length of body  $262\mu$ ; including rostrum  $306\mu$ .

**HOLOTYPE.**—Female, USNM 3424, *ex Muhlenbergia torreyi* (Kunth) Hitchcock, McNary, Arizona, 22 July 1965.

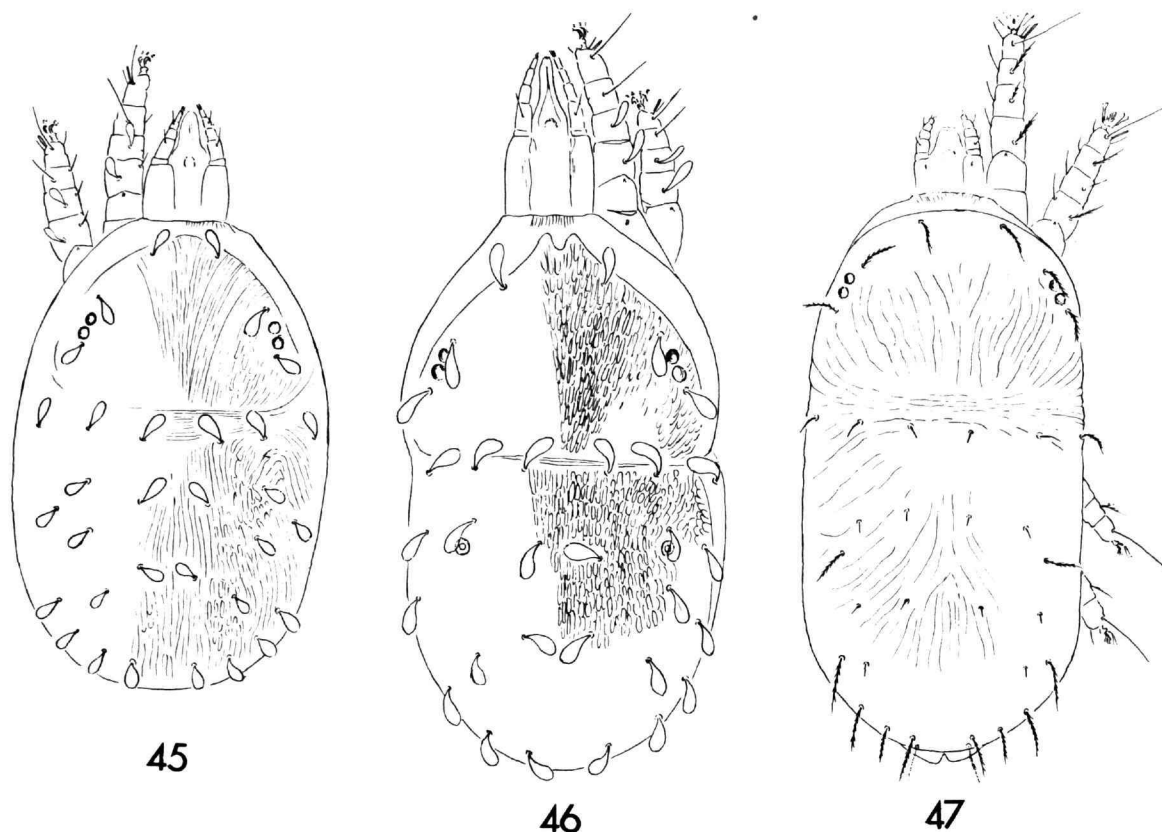
**PARATYPES.**—Two females on the same slide as the holotype.

### *Aegyptobia physalis*, new species

#### FIGURE 48

The smooth, broadly expanded dorsal body setae and the strongly reticulate striation pattern are typical.

**FEMALE.**—Rostrum slender, reaching to base of tibia I; rostral shield present, slightly indented and broadly rounded. All dorsal body setae rounded, smooth, and of equal size. Reticulate pattern composed of small units; those on propodosoma in a



FIGURES 45-47.—Dorsum of female: 45, *Aegyptobia antenostoma*, new species; 46, *A. flour-ensia*, new species; 47, *A. torreyi*, new species.

longitudinal pattern; those on hysterosoma more irregular; mediolateral groove present. Striae form swirls laterad of genitalia. Tarsal claws hooked. Femora and genua I and II each with smooth, expanded seta dorsally. Length of body  $249\mu$ ; including rostrum  $312\mu$ .

**MALE.**—Typical for genus. Without rostral shield; reticulate pattern longitudinal on propodosoma and anterior portion of hysterosoma; smaller reticulate pattern on posterior portion of hysterosoma. Length of body  $191\mu$ ; including rostrum  $261\mu$ .

**HOLOTYPE.**—Female, USNM 3425, *ex Physalis wrightii* Gray, Marana, Arizona, 27 October 1967.

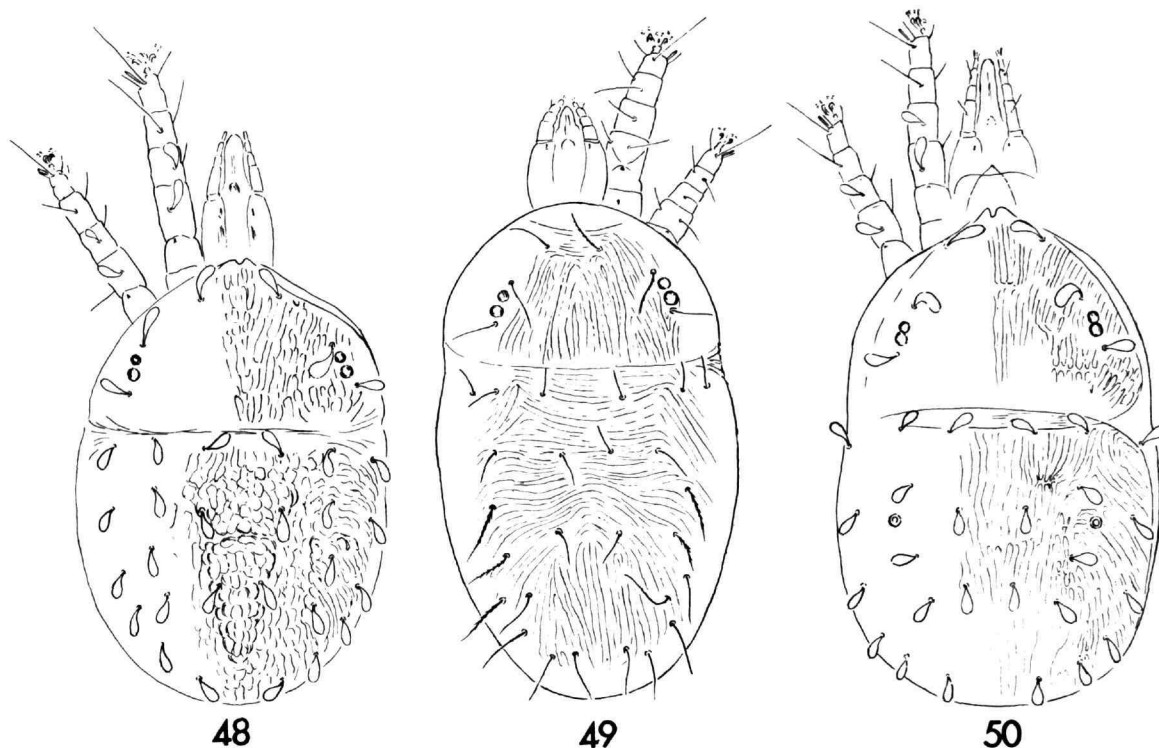
**PARATYPES.**—Twenty-three females and one male with the above data.

#### *Aegyptobia eriogonum*, new species

##### FIGURE 49

This species is similar to *A. fallugia*, new species, in general appearance, but differs in that the hysterosomal striae are transverse between setae  $D_1$ - $D_3$ .

**FEMALE.**—Rostrum short and broadly rounded and reaching to base of tibia I, rostral shield not present; anterior margin of propodosoma rounded. Striae of propodosoma elongate and forming an inverted V-pattern; striae of hysterosoma transverse between setae  $D_1$ - $D_3$  and longitudinal posterior to setae  $D_3$ . All dorsal body setae long, slender, and serrate, those on hysterosoma with stronger serrations; leg setae slender. Tarsal claws hooked. Striae



FIGURES 48-50.—Dorsum of female: 48, *Aegyptobia physalis*, new species; 49, *A. eriogonum*, new species; 50, *A. haplopappus*, new species.

lateral of genital not forming swirls. Length of body  $313\mu$ ; including rostrum  $370\mu$ .

MALE.—Typical for genus. Setae as in female. Length of body  $185\mu$ ; including rostrum  $236\mu$ .

HOLOTYPE.—Female, USNM 3426, ex *Eriogonum wrightii* Torrey, Portal, Arizona, 28 August 1964.

PARATYPES.—Two females and one male with the above data.

#### *Aegyptobia haplopappus*, new species

##### FIGURE 50

This species is similar to *A. baptus* (Pritchard and Baker) in having smooth, expanded dorsal setae and a large, circular pore posterior to setae  $DM_2$ . It differs in that the striae are much closer together and much more broken laterally on the hysterosoma.

FEMALE.—Rostrum long, slender, reaching to proximal end of tarsus I; stylophore pointed acutely anteriorly; rostral shield present and slightly edentate.

Striae of propodosoma elongate and longitudinal, and broken posteriorly and medially from the eyes; striae of hysterosoma longitudinal medially, broken behind  $D_2$  setae, and decidedly broken and short in area of  $DM_2$ – $DM_4$  setae. Dorsal body setae broadly spatulate and smooth; dorsal setae of femora and genua I and II similar. Tarsal claws hooked; empodia padlike. Striae form a swirl pattern lateral of genitalia. Length of body  $268\mu$ ; including rostrum  $351\mu$ .

HOLOTYPE.—Female, USNM 3427, ex *Haplopappus spinulosus* (Pursh) De Candolle, Pinedale, Arizona, 23 July 1966.

#### *Aegyptobia acacia*, new species

##### FIGURE 51

This species is unique in that the striae divide the hysterosoma transversely at the  $D_2$  setae, giving the female the superficial appearance of a male.

**FEMALE.**—Rostrum long, reaching to the distal end of tarsus I; stylophore tapering distally; rostral shield not present; anterior margin of propodosoma bowed posteriorly. Striae of body not strong; that of propodosoma light, longitudinal laterally and not present dorsally; striae transverse on hysterosoma at  $D_2$  setae and form inverted U-pattern posteriorly; no striae dorsally between  $D_3$ – $D_4$  setae. Dorsal body setae slender and slightly serrate, of about equal length; setae of femora and genua I and II similar. Tarsal claws hooked; empodia padlike. Striae not forming swirls lateral of genitalia. Legs short and stout. Length of body  $236\mu$ ; including rostrum  $306\mu$ .

**HOLOTYPE.**—Female, USNM 3428, *ex Acacia greggii* Gray, Quartzsite, Arizona, 29 October 1966.

**PARATYPE.**—Female with the above data.

### Genus *Pentamerismus* McGregor

*Pentamerismus* McGregor, 1949:23.—Pritchard and Baker 1952:8.—Baker and Pritchard 1954:353.—Baker and Tuttle 1964:30.

*Brevipalpoides* Reck, 1951:290.

**TYPE-SPECIES.**—*Tenuipalpus erythreus* Ewing, by original designation.

### *Pentamerismus erythreus* (Ewing)

*Tenuipalpus erythreus* Ewing, 1917:152.

*Pentamerismus erythreus*—Pritchard and Baker 1958:188.

A new locality record for this mite is Datil, New Mexico, 18 July 1964. The host is *Juniperus deppeana* Steudel.

### Genus *Pseudoleptus* Bruyant

*Pseudoleptus* Bruyant, 1911:340.—Pritchard and Baker 1958:184.—Baker and Tuttle 1964:30.

**TYPE-SPECIES.**—*Pseudoleptus arechavaletae* Bruyant, by monotypy and subsequent designation.

### *Pseudoleptus panicum*, new species

#### FIGURE 52

The very short dorsocentral hysterosomal setae and the presence of large tubercles on the transverse striation area between the propodosoma and hysterosoma only are distinctive for this species. The opisthosoma

is a single unit and not divided into three sections by striae.

**FEMALE.**—Rostrum short, not reaching to distal end of femur I; palpus typical for genus. Femora, genua, and tibiae I and II each with a small dorsal seta about as long as width of segment. Rostral shield strongly bifurcate, the lobes long and slender but not reaching to distal end of trochanter I. All dorsal body setae slender and with few serrations, those on propodosoma and caudal margin of opisthosoma longer. Transverse striae between propodosoma and hysterosoma with large tubercles made up of broken striae; other striae simple, without lobes or tubercles; dorsally the opisthosoma is a single unit without antero-lateral platelets. Ventrally the striae are typical in having small lobes. Length of body including rostrum  $312\mu$ .

**HOLOTYPE.**—Female, USNM 3429, *ex Panicum obtusum* Humboldt, Bonpland, and Kunth, Portal, Arizona, 27 August 1969.

**PARATYPES.**—Nineteen females with the above data.

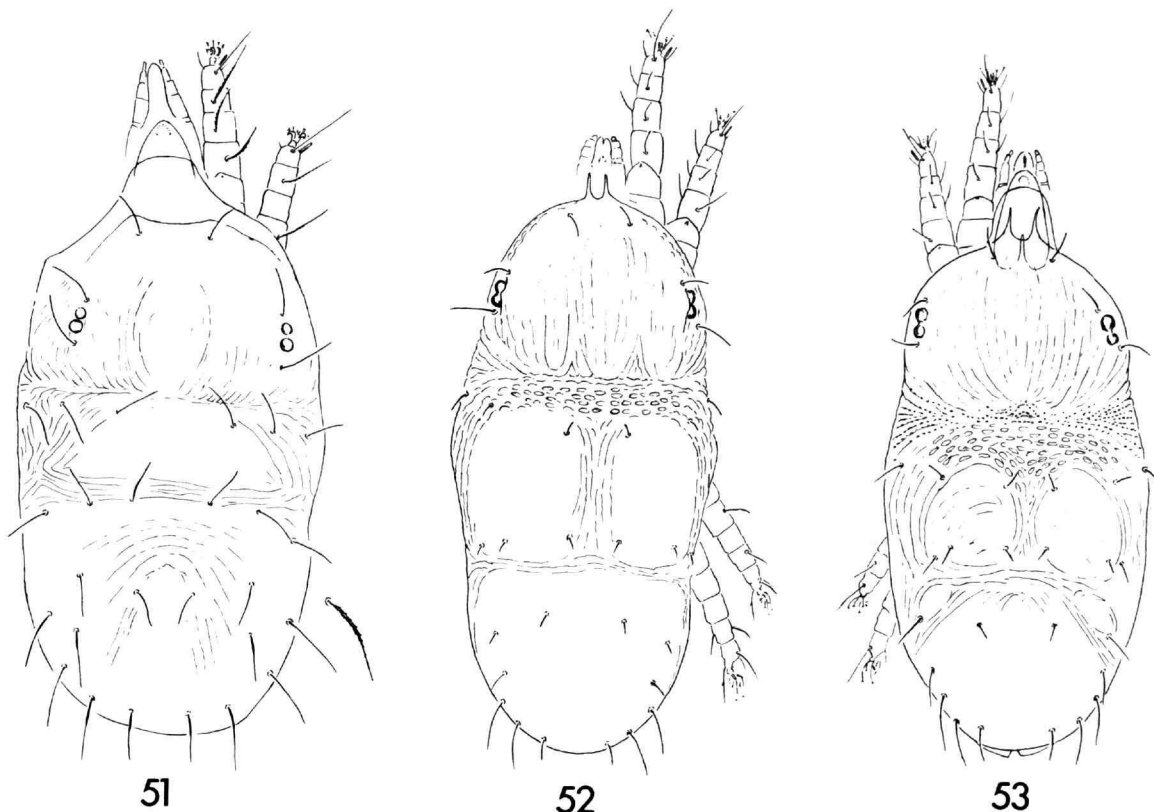
### *Pseudoleptus tridens*, new species

#### FIGURE 53

The long propodosomal lobes and the large tubercle-like transverse striae between the propodosoma and hysterosoma are distinctive.

**FEMALE.**—Rostrum short, not reaching to distal end of femur I; palpus five-segmented, the second and fourth segments each with a single seta, and the distal segment with three terminal setae; palpal segments four and five coalesced. Femora, genua, and tibiae I and II each with a short dorsal seta about as long as width of segment; tarsi II and III each with a distal solenidion; all tarsal claws padlike, not hooked. Rostral shield strongly bifurcate; lobes slender and reaching to middle of trochanter I. All dorsal body setae short and with few serrations; the four posterior caudal pairs longer than others. Dorsal body striae pattern typical for genus, dividing body transversely into three units. Propodosoma with few elongate longitudinal striae without lobes; striae between propodosoma and metapodosoma with small lobes anteriorly; posteriorly striae broken into large characteristic lobes; metapodosoma divided by striae into two platelike units; opisthosoma delineated by several strong transverse striae which separate to form two small, marginal platelets. Ventrally the mite is





FIGURES 51-53.—Dorsum of female: 51, *Aegyptobia acacia*, new species. 52, *Pseudoleptus panicum*, new species; 53, *P. tridens*, new species.

typical for the genus. Length of body including rostrum  $287\mu$ .

**HOLOTYPE.**—Female, USNM 3430, *ex Tridens pulchellus* (Humboldt, Bonpland, and Kunth) Hitchcock, Picacho, Arizona, 6 June 1967.

**PARATYPES.**—Seven females with the above data.

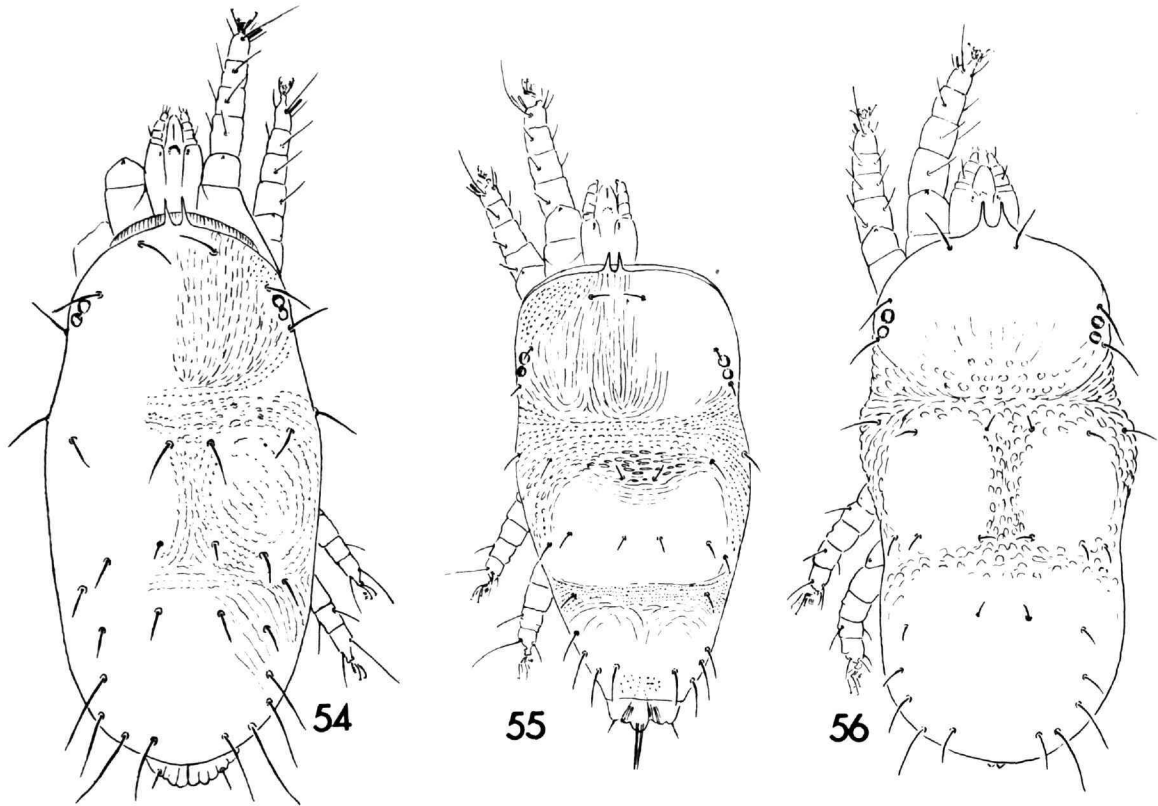
Also studied were specimens collected on *Hilaria rigida* (Thurber) Bentham, Dateland, Arizona, 4 June 1965, and on the same host at Palm Canyon, Arizona, 19 June 1965. Another collection was made on the same host at Quartzsite, Arizona, 25 and 28 October 1966. A collection was also made from *Panicum obtusum* Humboldt, Bonpland, and Kunth at Portal, Arizona, 27 August 1969.

***Pseudoleptus hilaria*, new species**

FIGURES 54, 55

The tuberculate pattern of the striae is distinctive.

**FEMALE.**—Rostrum short, reaching to the distal end of femur I: palpus typical, 4th and 5th segments coalesced. Dorsal setae of femora, genua, and tibiae I and II short and simple, about as long as width of segment. Rostral shield strongly bifurcate, lobes long and slender but not reaching to trochanter I. All dorsal body setae slender and only faintly serrate; posterior four caudal pairs longest. Dorsal body striae pattern typical for genus. Propodosoma with short, broken, longitudinal striae except for tuberculate area anterior to eyes; transverse striae between propodosoma and hysterosoma with tubercles on anterior and lateral striae; dorsocentral striae short and lobe-like; longitudinal striae of metapodosoma with small lobes; striae between metapodosoma and opithosoma with small lobes. Ventrally typical for genus. Length of body including rostrum  $332\mu$ .



FIGURES 54-56.—*Pseudoleptus hiliaria*, new species: 54, dorsum of female; 55, dorsum of male. *Pseudoleptus bouteloua*, new species: 56, dorsum of female.

**MALE.**—Similar to female except metapodosoma not divided. Length of body including rostrum  $287\mu$ .

**HOLOTYPE.**—Female, USNM 3431, *ex Hilaria rigida* (Thurber) Bentham, Dateland, Arizona, 4 June 1965.

**PARATYPES.**—One male and two females on same slide with holotype; four other females and a male with same data; four females with same data except collected 19 May 1964; twenty-four females and one male from same host at Quartzsite, Arizona, 25 October 1966.

***Pseudoleptus bouteloua*, new species**

**FIGURE 56**

This species is based on a single female not well mounted. The very large dorsal lobes and their distribution over the body are distinctive.

**FEMALE.**—Rostrum short, reaching slightly past distal end of femur I; palpus short and typical for genus, the 4th and 5th segments coalesced. Dorsal setae of femora, genua, and tibiae I and II short, simple, and about as long as width of segment. Rostral shield strongly bifurcate, the lobes long and slender and not quite reaching to distal end of trochanter I. All dorsal body setae slender and nearly nude, those on propodosoma and metapodosomal margins longer than others. Propodosoma with few large posteromedial lobes; striae between propodosoma and hysterosoma broken into large lobelike sections; the lateral marginal area with few small tubercles; metapodosoma separated into two lateral areas by longitudinal striae broken into large lobes; metapodosoma and podosoma separated by transverse striae consisting of large lobes. Ventral body lobes all large, similar to dorsal lobes. Length of body including ro-

trum 338 $\mu$ .

HOLOTYPE.—Female, USNM 3432, *ex Bouteloua gracilis* (Humboldt, Bonpland, and Kunth) Lagasca, McNary, Arizona, 27 August 1964.

A nymph was also collected.

### Genus *Brevipalpus* Donnadieu

*Brevipalpus* Donnadieu, 1875:116.—Pritchard and Baker 1958:196.—Baker and Tuttle 1964:30.

TYPE-SPECIES.—*Brevipalpus obovatus* Donnadieu, by subsequent designation.

### *Brevipalpus ceanothus*, new species

FIGURE 57

This mite possesses a single solenidion on tarsus II of the female; it has three setae on the distal segment of the palpus; there are six pairs of marginal hysterosomal setae; and the reticulate pattern is crenulate.

FEMALE.—Rostrum broad, reaching almost to distal end of femur I; palpus strong, distal segment with two solenidia and one sensory seta. Tarsus II with a single solenidion; dorsal and inner marginal setae of femora I and II reaching to or past distal end of segment, the dorsal setae broadly lanceolate, the inner marginal setae more narrowly lanceolate; setae strongly serrate; genual setae similar. Rostral shield with striae, not pebbled. Marginal setae of body strongly serrate and lanceolate, those on posterior of hysterosoma shorter; dorsocentral setae of hysterosoma small, broadly lanceolate and serrate. Dorsal reticulate pattern of propodosoma entire, composed of irregular crenulate pattern; area posterior to second pair of dorsocentral hysterosomal setae with irregular transverse pattern; mediolateral depression broad, covered with somewhat longitudinal reticulate pattern; marginal pattern transverse and irregular. Pattern of genital plate transverse; that of ventral plate composed of small reticulations; area anterior to posterior medioventral setae on metapodosoma without striae or reticulate pattern. Length of body 242 $\mu$ ; including rostrum 306 $\mu$ .

MALE.—Setal pattern similar to that of female. Reticulations crenulate. Length of body 210 $\mu$ ; including rostrum 262 $\mu$ .

DEUTONYMPH.—All marginal setae long, slender, lanceolate, and serrate; dorsocentral setae very short and slightly lanceolate.

PROTONYMPH.—Similar to deutonymph.

HOLOTYPE.—Female, USNM 3433, *ex Ceanothus fendleri* Gray, Prescott, Arizona, 18 July 1968.

PARATYPES.—Four females with the above data; two nymphs with the above data; six females from McNary, Arizona, 22 August 1964, 27 February 1964.

### *Brevipalpus punicans* Pritchard and Baker

*Brevipalpus punicans* Pritchard and Baker, 1952:24; 1958:214.—Baker and Tuttle 1964:38.

New records for this mite in Arizona are: *Brickiella californica* (Torrey and Gray) Gray, Prescott and Portal; *Solidago wrightii* Gray, Portal; *Solidago altissima* Linnaeus, Portal; *Gaura coccinea* Nuttall, Portal.

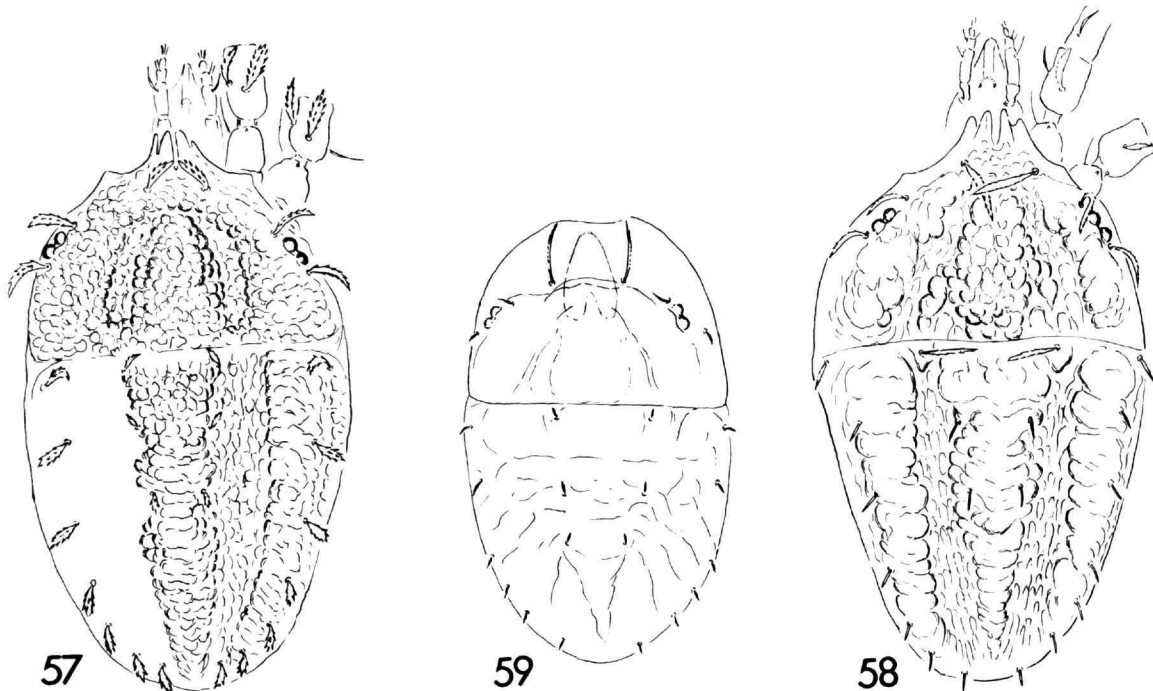
It has also been collected on *Haplopappus* sp. at Santa Rosa, New Mexico.

### *Brevipalpus parthenium*, new species

FIGURES 58, 59

There are six pairs of marginal setae, two setae on the distal palpal segment, and a single solenidion on tarsus II. The propodosomal and first pair of dorsocentral setae are long, lanceolate, and serrate. The striation pattern is typical for the species.

FEMALE.—Rostrum broad, reaching to distal end of femur I; palpus elongate, with two setae on distal segment. Tarsus II with a single distal solenidion; dorsal setae of femora I and II, especially I, strongly lanceolate, serrate, that on I reaching to distal end of segment; genual setae similar but much smaller. Rostral shield with strong reticulate pattern dorsocentrally. First pair of propodosomal setae long—as long as distance between bases; other propodosomal setae similar but shorter; hysterosomal marginal setae and second and third pairs of dorsocentral setae short, slender, and slightly lanceolate and serrate; first pair similar to propodosomal setae. With six pairs of marginal setae plus humeral setae. Dorsal reticulate pattern very distinctive, being composed of rounded reticulations dorsomedially on the propodosoma and transverse ridges on the hysterosoma; dorsomedial grooves deep, distinct, and with longitudinal reticulate pattern; marginal patterns less distinct and in general transverse in design. Genital and ventral plates reticulate, with reticulations anterior to ventral plate; area anterior to posterior medioventral meta-



FIGURES 57-59.—Dorsum of female: 57, *Brevipalpus ceanothus*, new species; 58, *B. parthenium*, new species. Dorsum of nymph I: 59, *B. parthenium*, new species.

podosomal setae without striae. Length of body  $204\mu$ ; including rostrum  $255\mu$ .

**NYMPH I.**—All setae very small except for the elongate, serrate first pair of propodosomals. Femoral setae narrowly lanceolate and serrate.

**HOLOTYPE.**—Female, USNM 3434, *ex Parthenium incanum* Humboldt, Bonpland and Kunth, Portal, Arizona, 2 September 1967.

**PARATYPES.**—One female with the above data. Two females from the same host and locality collected 23 August 1968.

The nymph is from the same host, Portal, Arizona, 22 August 1968.

#### *Brevipalpus portalis*, new species

FIGURE 60

There are six pairs of marginal setae, two setae on the distal palpal segment, and a single solenidion on tarsus II. The propodosomal, dorsocentral, humeral, and first marginal setae are strong, long, lanceolate, and serrate.

**FEMALE.**—Rostrum of normal size and reaching to distal end of femur I; palpus slender and with two setae on the distal segment. Tarsus II with a single solenidion; dorsal femoral setae broadly lanceolate, serrate, and reaching distal end of segment; general setae similar but much smaller. Rostral shield with few striae. All propodosomal setae long, lanceolate, serrate, and longer than distance between bases; dorsocentral, humeral, and first pair of marginal setae of hysterosoma similar to propodosomal setae; other marginal setae progressively shorter posteriorly. Reticulate pattern covering dorsocentral area of propodosoma and hysterosoma; marginal areas with broken pattern; dorsomedial groove of hysterosoma distinct and broad, with longitudinal reticulate pattern. Genital and ventral plates and area anterior to ventral plate with reticulate pattern; area anterior to posterior medioventral metapodosomal setae without striae. Length of body  $236\mu$ ; including rostrum  $306\mu$ .

**NYMPH II.**—All dorsal body setae broadly lanceolate, large, and subequal in size.

**HOLOTYPE.**—Female, USNM 3435, *ex Parthenium*

*incanum* Humboldt, Bonpland, and Kunth, Portal, Arizona, 23 August 1968.

PARATYPES.—Twelve females with the above data.

One nymph with the above data; and a nymph molting into a female collected 2 September 1967.

### *Tenuipalpus* Donnadicu

*Tenuipalpus* Donnadicu, 1875:111.—Pritchard and Baker 1958:235.

TYPE-SPECIES.—(*Tenuipalpus palmatus* Donnadicu) = *T. caudatus* (Dugès), by subsequent designation.

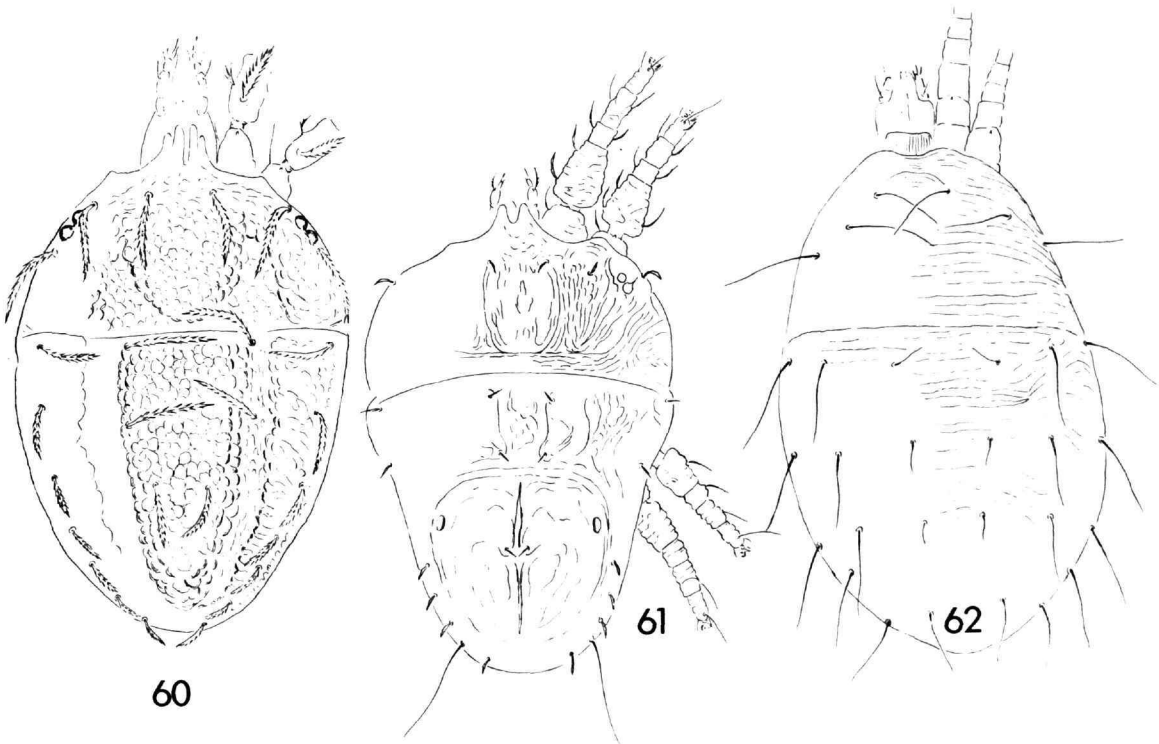
### *Tenuipalpus crassulus*, new species

FIGURE 61

This mite keys out to *Tenuipalpus kobachidzei* Reck (1951) in Pritchard and Baker (1958). It differs in that *T. kobachidzei* has short posterior marginal setae

that are not serrated and that do not overhang the edge of the body. It belongs to those species possessing two pairs of anterior medioventrals on the podosoma and a single pair of posterior medioventrals.

FEMALE.—Gnathosoma with a pair of feathered ventral setae; palpus with three segments, the second with a serrate seta dorsally, the third with a long and short sensillum terminally; stylophore short and narrowing anteriorly. Femur I with inner setae narrowly lanceolate setae. Femur II with outer seta narrowly lanceolate; genu II with similar seta. Femur IV with a single ventral seta; genu IV without seta; tibia IV with three long, narrowly lanceolate setae ventrally. Rostral shield deeply emarginate. Propodosoma with distinct, longitudinal rugose pattern, weak dorsomedially; propodosomal setae short and lanceolate and about equal in size. Dorsocentral setae of hysterosoma minute, of equal size; marginal setae, except for the whiplike setae, small, lanceolate, and serrate; hysterosoma with a pair of strong lateral pores; striae few, transverse behind second pair of dorsocentral setae,



FIGURES 60–62.—Dorsum of female: 60, *Brevipalpus portalis*, new species; 61, *Tenuipalpus crassulus*, new species; 62, *Raoillana allium*, new species.

giving the mite the superficial appearance of a male; a strong, longitudinal groove present on hysterosoma. Ventrally with two pairs of anterior podosomal setae and a single pair of posterior setae. Length of body, including rostrum, 383 $\mu$ .

MALE.—Not known.

HOLOTYPE.—Female, USNM 3443, collected on *Crassula lycopodioides* Lamarck, Holland at Washington, D.C. Quarantine, 13 July 1959, by J. E. Mabry, Jr.

PARATYPES.—Four females, with the above data, on the same slide.

### *Raoiellana*, new genus

With two palpal segments; with padlike claws and empodia, each possessing a double row of tenent hairs; with three pairs of propodosomal setae and twelve pairs of hysterosomal setae (including four pairs of sublateral setae); venter of rostrum without setae; eyes not present; female with three pairs of legs, male with four pairs; female with genital plate and without anterior ventral plate; female with three pairs of ventral setae and none on coxae III; male with two pairs of ventral setae and setae on all coxae.

TYPE-SPECIES.—*Raoiellana allium*, new species.

This genus is related to *Raoiella* Hirst in that there are two palpal segments and four pairs of hysterosomal sublateral setae. It differs in that the female possesses only three pairs of legs, in the lack of eyes in both sexes, and in the ventral setal pattern of the body.

### *Raoiellana allium*, new species

FIGURES 62-64

This species, the only one in the genus, is distinctive in having padlike claws and empodia, no rostral shield, and in having long, whiplike setae.

FEMALE.—Rostrum short and rounded, reaching to distal end of femur I; palpus with two segments, the distal segment with three terminal setae and the basal segment with a single dorsal seta; rostrum without ventral setae. Leg setae slender and slightly serrate. With only three pairs of legs, leg IV not present; tarsal claws and empodia padlike and with double rows of tenent hairs; tarsi I and II each with a single distal outer solenidion. Rostral shield not present; eyes not present; propodosomal setae long, slender,

serrate, and subequal in length. Dorsocentral setae of hysterosoma not more than half as long as sublateral and lateral setae. Striation pattern transverse on both propodosoma and hysterosoma. With two pairs of anal and two pairs of genital plate setae and a single pair of setae anterior to genital plate; a pair of setae between coxae III (no setae on coxae III); a pair of setae on coxa I and a single seta on coxa II; a pair of setae between coxae I. Length of body, including rostrum, 530 $\mu$ .

MALE.—Rostral, dorsal setae pattern, and setae pattern of legs similar to those of female. With four pairs of legs. Femora I and II each with a strong ventral spine, that on II stronger. Striation pattern similar to that of female except hysterosoma divided by a transverse pattern; ventral striae as figured. A pair of setae on coxa I and a single seta on II, III, and IV each; a pair of setae between coxae I and between coxae III. Length of body, including rostrum, 428 $\mu$ .

HOLOTYPE.—Female, USNM 3437, *ex Allium pulchellum* Don, on bulbs, Turkey at New York Quarantine, 18 August 1964, by C. S. Tuthill and J. Fons.

PARATYPES.—Males and females with the above data.

### Genus *Dolichotetranychus* Sayed

*Dolichotetranychus* Sayed, 1938:606.—Baker and Pritchard 1956:357.—Pritchard and Baker 1958:25.—Baker and Tuttle 1964:73.

TYPE-SPECIES.—*Stigmaeus floridanus* Banks, by monotypy and subsequent designation.

### *Dolichotetranychus ancistrus* Baker and Pritchard

*Dolichotetranychus ancistrus* Baker and Pritchard, 1956:365.

A collection of this species was made on *Bouteloua gracilis* (Humboldt, Bonpland, and Kunth) Lagasca, at Pinedale, Arizona, 20 July 1966.

### *Dolichotetranychus apaches* Baker and Pritchard

*Dolichotetranychus apaches* Pritchard and Baker, 1956:379.

This species has been collected in Arizona as follows: *Sorghum halepense* (Linnaeus) Persoon, Marana, 27 October 1967; *Distichlis stricta* (Torrey) Rydberg,

Yuma, 3 November 1960; *Cynodon dactylon* (Linnaeus) Persoon, Casa Grande, 16 September 1967; *Aristida adscensionis* Linnaeus, Portal, 23 August 1968, Dateland, 19 May 1964, and Theba, 20 May 1965. It was also collected on *Hilaria jamesii* (Torrey) Benthams, Pueblo, Colorado, 6 September 1963.

***Dolichotetranychus muhlenbergia*, new species**

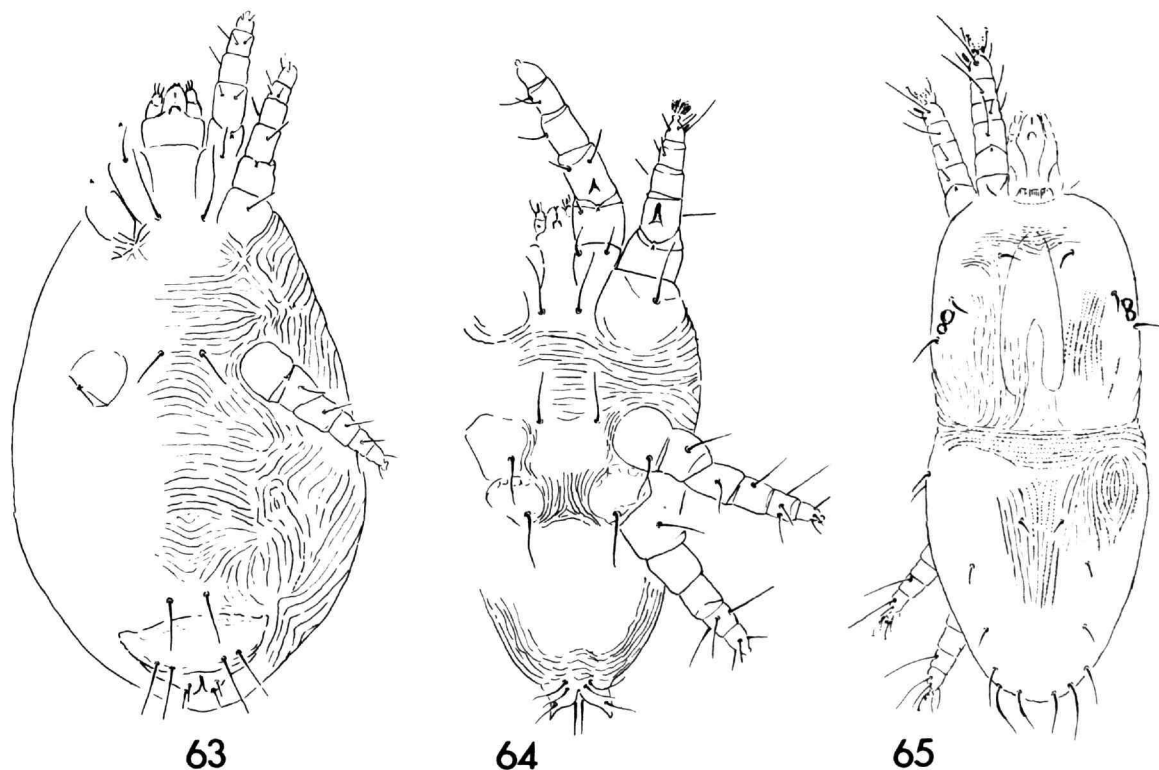
FIGURES 65-67

The female keys out to the *floridanus-australianus* couplet in the key by Baker and Pritchard (1956). The genital striae are somewhat longer than in these two species, and the legs are much shorter in relation to the body. The male keys out to *floridanus* but has much shorter and stouter legs.

**FEMALE.**—Rostrum short, rounded, reaching distal end of femur I; palpus typical for genus; venter of rostrum with a single pair of short setae. Femur I with strong, long, serrate dorsal seta; genu I with

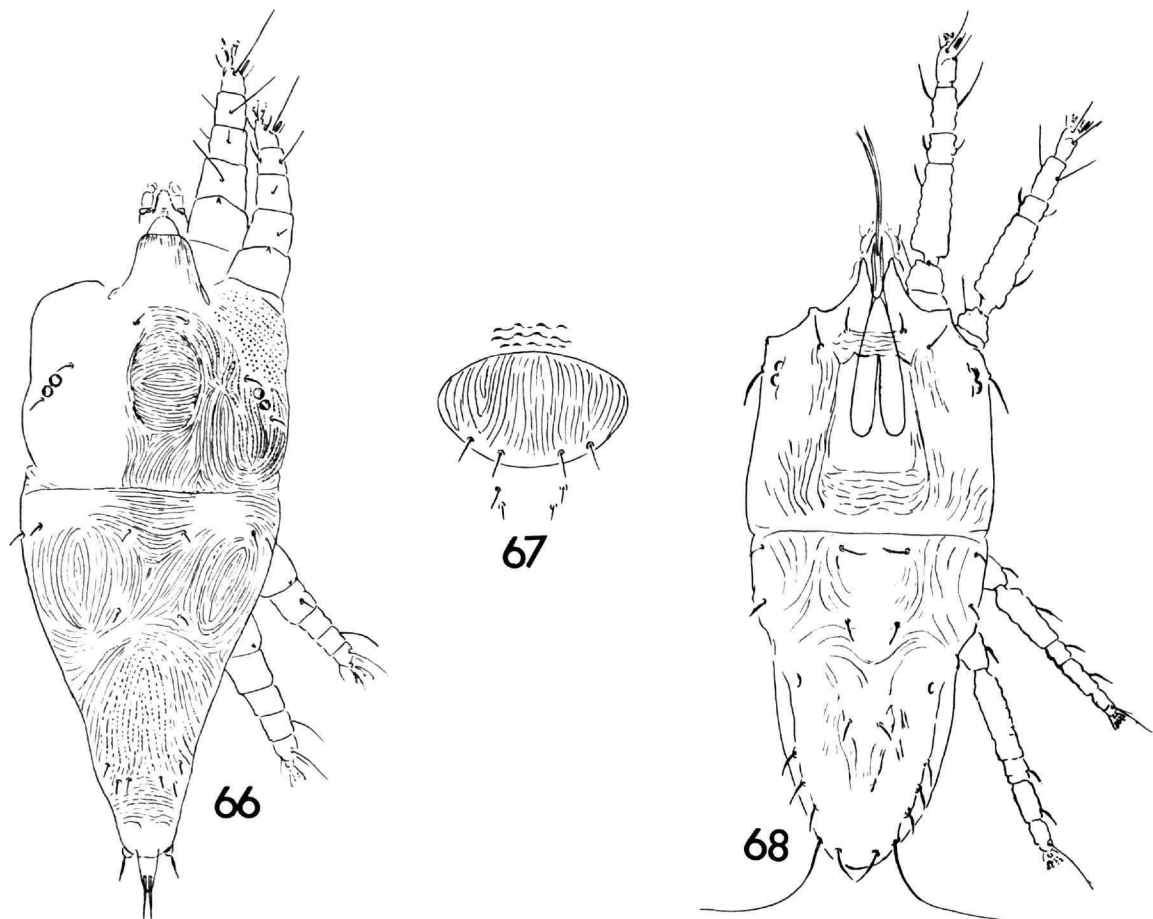
very short simple seta; tibia I with long, slender serrate seta; tarsal claws hooked; femur II with short, simple seta; genu II with similar seta; tibia II with long, slender seta; tarsi I and II each with a single distal solenidion. Propodosoma with three pairs of short, strong serrate setae; striae longitudinal, long and bearing small lobes. Hysterosoma with shorter striae bearing lobes; dorsocentral and margin setae minute; posterior caudal setae long and prominent. Genital and pregenital setae short; two pairs of anal setae and two pairs of genital setae. Genital plate with simple longitudinal striae. Length of body including rostrum 351 $\mu$ .

**MALE.**—Body stout. Rostrum short, reaching to middle of femur I; palpus short, stout, and typical for genus, the distal two solenidia being more equal in length than those of *D. floridanus* (Banks); venter of rostrum with very short pair of setae. Femur and tibia I with long seta each; tarsus II with two distal solenidia; all claws strongly hooked; outer tenent



FIGURES 63-65.—*Raoillana allium*, new species: 63, venter of female; 64, venter of male. *Dolichotetranychus muhlenbergia*, new species: 65, dorsum of female.





FIGURES 66-68.—*Dolichotetranychus muhlenbergia*, new species: 66, dorsum of male; 67, genital-anal area of female. *Colopalpus eriophyoides* (Baker), new combination: 68, dorsum of female.

hairs of claws no longer than inner row; all legs short and stout. Propodosoma with short, stout dorsal setae; striae with lobes; striation pattern divides propodosoma into three areas—two marginal and a single dorsocentral area. Dorsal hysterosomal setae short and stout; striae lobed. With three pairs of genitoanal setae; genital stylets of moderate length; ventral striae with lobes. Length of body including rostrum  $363\mu$ .

**HOLOTYPE.**—Female, USNM 3436, *ex Muhlenbergia torreyi* (Kunth) Hitchcock, McNary, Arizona, 22 July 1965.

**PARATYPES.**—One male and three females with the above data.

### *Colopalpus* Pritchard and Baker

*Colopalpus* Pritchard and Baker, 1958:258.

This genus was described from material collected in the Philippines. It is unique in having a single, distinct genitoventral plate in the female.

**TYPE-SPECIES.**—*Colopalpus matthyse* Pritchard and Baker, by designation and monotypy.



***Colopalpus eriophyoides* (Baker), new combination**

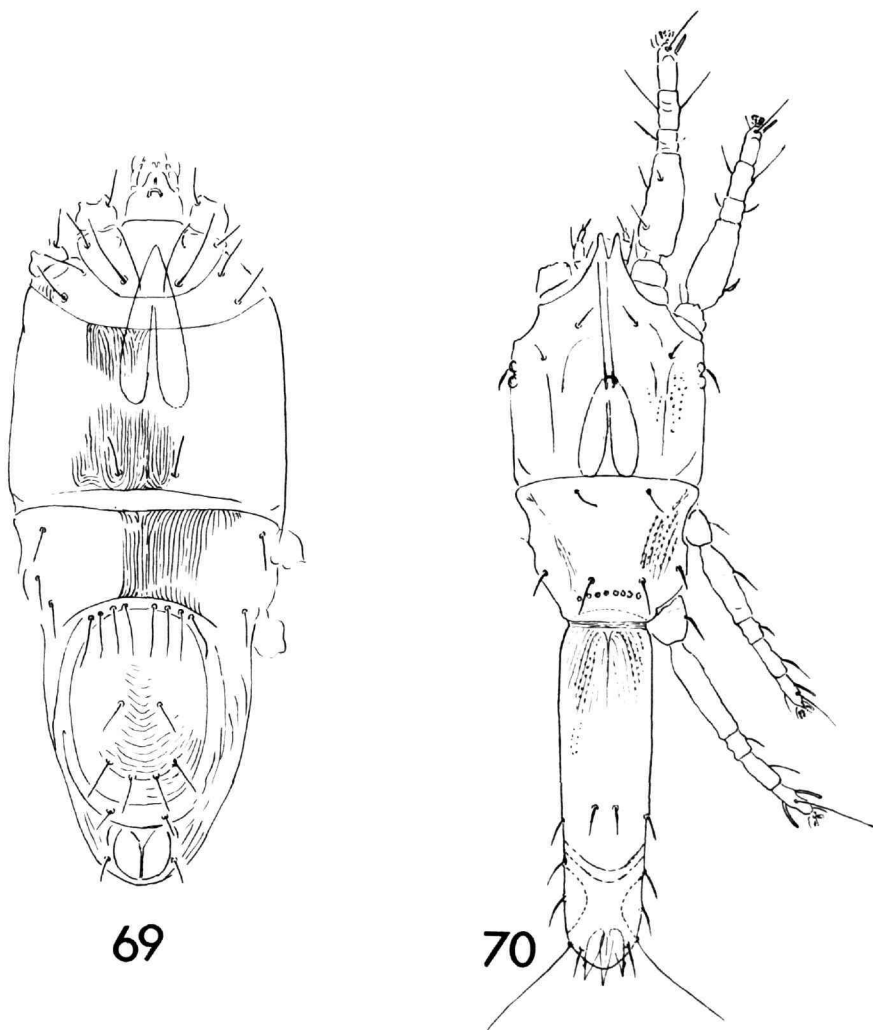
FIGURES 68-70

*Tenuipalpus eriophyoides* Baker, 1948:59.

This species was described from an immature collected in "Mesopotamia," host unknown. The male and female here described were collected on date palm, Bagdad, Iraq, by Dr. I. Ismail Mohamed, to whom we are deeply grateful for sending us specimens.

The general body shape of the female is that of a

*Brevipalpus* but somewhat narrower. The palpus has three segments, with a single seta on the penultimate segment and two on the distal segment; the stylophore is elongate, narrow; there is a pair of ventral setae on the rostrum. The rostral shield is strongly split and does not cover the rostrum. The three pairs of propodosomal setae are short and narrowly lanceolate, the first pair being the shortest; the dorsomedial area of the propodosoma is without striae. Except for the long, whiplike caudal setae, the hysterosomal



FIGURES 69-70.—*Colopalpus eriophyoides* (Baker), new combination: 69, venter of female; 70, dorsum of male.

setae are similar to those of the propodosoma; the striae are few and longitudinal marginally except for the area posterior to the second pair of dorsocentral setae; hysterosomal pores are present. The venter is distinctive in that the propodosoma is divided transversely by apodemes between coxae I and between coxae II; posterior to the coxae II apodeme the ventral striae are longitudinal on the propodosoma and hysterosoma. There is a single pair of anterior medioventral setae and four pairs of posterior medioventral setae. The genitoventral plate is entire and possesses the usual number of setae; the striae of the plate are transverse; there appear to be two pairs of anal setae. The length of body, including rostrum, is 408 $\mu$ .

The male is very distinctive in having an exaggerated elongate body, especially the opisthosoma. The stylophore is shorter and more rounded than that of the female; the rostral shield is deeply cleft and covers the rostrum. The dorsal body setae are similar to those of the female; the striae are few, weak, and covered with lobes, and are longitudinal as figured. Hysterosomal pores apparently are lacking. The ventral striae are, in general, longitudinal as in the female; there appear to be lateral platelets (see figure) posteriorly and just anterior to the genital stylets, which are quite enlarged. There are four pairs of posterior medioventral setae. The transverse apodeme of coxae I meet faintly medially; that of coxae II meet as in the female. Tarsi III and IV each with two long, slender solenidion; tarsi I and II each with a shorter, outer solenidion. Length of body, including rostrum, 510 $\mu$ .

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