

# ERIOPHYID STUDIES B-2

by H. H. KEIFER

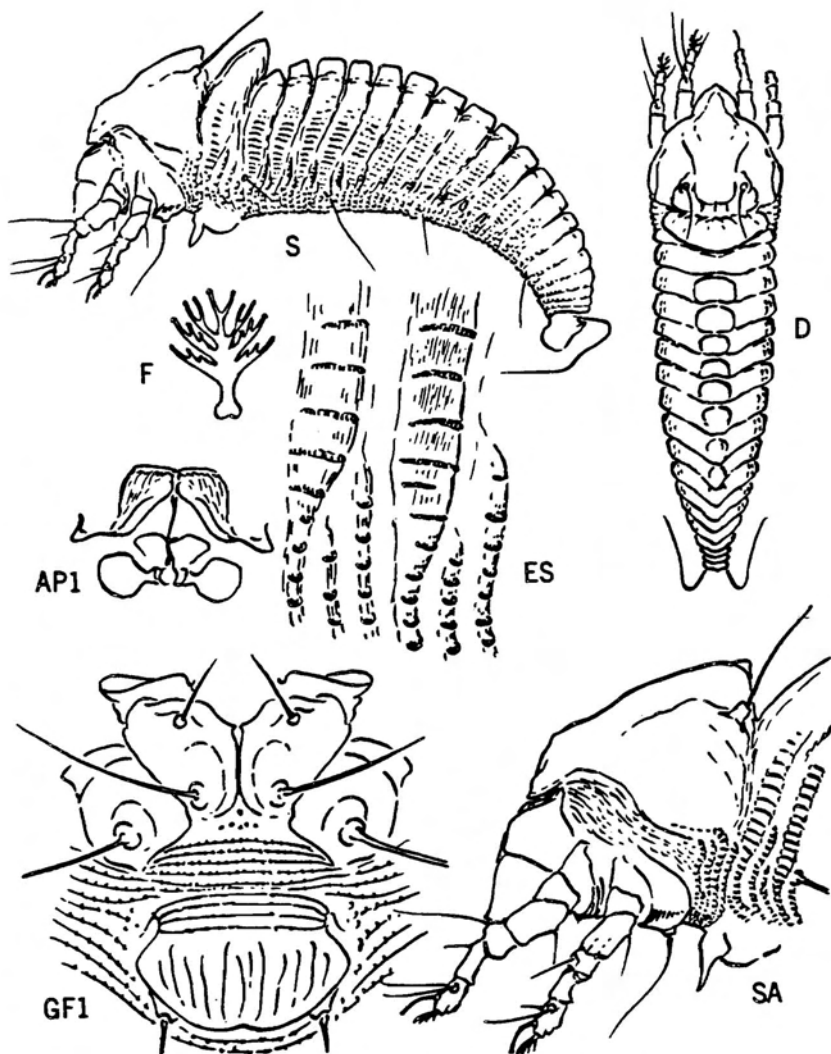


Plate 1 - *Tegenotus fastigatus* Nal.

ISSUED - MAY 1, 1961

## Tegonotus Nalepa, 1890

- 1890 Nalepa - Anz. Ak. Wien, 27:213  
 1891 Nalepa - Nova Acta Ac. Leop., 55:392  
 1892 Nalepa - Zool. Jahrb. Syst., 6:327  
 1898 Nalepa - Das Tierreich 4:60  
 1910 Nalepa - Zoologica 61(H):273  
 1939 Keifer - Bul. Cal. Dept. Agr. 28:153  
fastigatus Nal. set as genotype

Nalepa states in the Das Tierreich reference (1898) that fastigatus has a strongly arched abdomen with steep sides. In his Zoological Jahrbuch reference (1892) he shows a profile figure of the mite which indicates a sharply raised portion of the body just behind the dorsal tubercles. He states this projection is the rear part of the shield, separated from the anterior section by a deep transverse groove. With this interpretation it is impossible to agree due to the relation of this projection to the dorsal tubercles, to the anterior sternites just below it, to the lateral seta, and to the position of the genitalia. The only interpretation I can put on this projection is that it is the first abdominal tergite, which projects up above the level of the remainder of the dorsal abdominal ridge.

The study here described is based on what is believed to be the actual fastigatus. The following generic description derives from this mite.

Body fusiform, abdomen higher than wide. Rostrum moderate in size, projecting down; apical recurved part of the oral stylet short. Cephalothoracic shield subsemicircular in dorsal view anteriorly except for moderate sized central anterior lobe over rostrum; dorsal tubercles near rear shield margin; dorsal setae projecting caudo-centrad. Abdomen with first tergite elevated above remainder of abdomen and slightly higher than shield; remainder of abdomen with central longitudinal ridge, fading caudally. Tergites mostly smooth except for elongate microtubercles laterally; each tergite covering two or three sternites laterally. Sternites completely microtuberculate; all usual leg and abdominal setae present; anterior coxae broadly contiguous centrally. Female genitalia a moderate distance behind coxae; anterior internal apodeme of moderate length.

Genotype: *Tegonotus fastigatus* Nal.

*Tegonotus fastigatus* Nal.

## Plate I

- 1890 Nalepa - Anz. Ak. Wien 27:231  
 1892 Nalepa - Zool. Jahrb. Syst. 6:332 (figs.)  
 1898 Nalepa - Das Tierreich 4:61

In the 1898 reference Nalepa gives the area of occurrence of this species as Middle Europe, and the type host as Acer campestris L. The mite is a type of rust mite. Nalepa states the female body to be 130 $\mu$  long, and 40 $\mu$  wide; the featherclaw 4-rayed. He gives 18 (19?) as the tergite number and is uncertain about the existence of an accessory seta.

Examples of what I believe to be fastigatus are on hand from Norway maple, Acer platanoides L., taken at College Park,

Maryland, on June 21, 1959 by J. P. Keifer, and on July 16, 1959, by J. P. Keifer and the writer. These tiny mites were lurking in the axils of the leaf veins, especially near the leaf bases on the undersides of the leaves. These Maryland examples match fairly well with Nalepa's profile in the 1892 Zoological Jahrbuch, and are at least congeneric with true fastigatus, but other details remain to be harmonized. For example the Maryland mites are 150 $\mu$ -160 $\mu$  long and have a pointed anterior shield lobe. Accessory setae are present and 2 $\mu$  long. In other respects the Maryland mites cannot be compared closely with Nalepa's mite due to numerous details that Nalepa did not impart. A description of the Maryland mite is as follows:

Female 150 $\mu$ -160 $\mu$  long, 40 $\mu$  wide, 50 $\mu$  thick; fusiform; color whitish-yellow. Rostrum 21 $\mu$ -23 $\mu$  long, curved down; antapical seta 3 $\mu$  long. Shield 37 $\mu$  long, 36 $\mu$  wide; subsemicircular in anterior outline, broken by moderately large anterior lobe over rostrum base, this anterior lobe with small apical point. Shield design obsolete, the central part raised and abruptly declivitous behind; sides of the shield with some partial microtuberculate rings. Dorsal tubercles at top of rear declivity, 20 $\mu$  apart; dorsal setae 19 $\mu$ -20 $\mu$  long, slight knob at end, projecting caudocentrad. Forelegs 29 $\mu$  long; tibia 7.5 $\mu$  long, with 4 $\mu$  long seta from 1/4; tarsus 6.5 $\mu$  long; claw 6.5 $\mu$  long, curved, slightly knobbed; featherclaw 4-rayed. Hindlegs 27 $\mu$  long, tibia 5.5 $\mu$  long, tarsus 6.5 $\mu$  long, claw 7.5 $\mu$  long. Anterior coxae broadly contiguous centrally; first setiferous coxal tubercles slightly farther apart than second tubercles, slightly ahead of anterior coxal junction; second coxal tubercles situated on raised area, somewhat ahead of transverse line through third coxal tubercles. Abdomen with about 20 tergites and 50-55 sternites; tergites with elongate microtubercles laterally, covering 2 or 3 sternites each; sternites completely microtuberculate, the microtubercles resting on rear ring margins. Lateral seta 11 $\mu$  long, on about sternite 8 behind shield; first ventral seta 31 $\mu$  long, on sternite 20; second ventral seta 10 $\mu$  long, on sternite 33; third seta 13 $\mu$  long, on sternite 4 from rear. Accessory seta 2 $\mu$  long. Female genitalia 20 $\mu$  wide, 15 $\mu$  long; coverflap with about 12 longitudinal ribs; the genital seta 13 $\mu$  long.

Male 108 $\mu$  long, 30 $\mu$  wide, 40 $\mu$  thick.

This elucidation of the fastigatus type of mite shows it to be actually quite distinct from most other Eriophyids heretofore referred to Tegonotus. The only other species which might be congenerically associated with fastigatus would seem to be collaris Nal.

The next three genera here included, two new, will establish relationships more closely correlated to the actual structures of these various mites.

#### Tegolophus, new genus

This genus is for the reception of leaf vagrant mites which have the dorsal tubercles on the rear shield margin, these tubercles with transverse axes, and directing the dorsal setae straight back or diverging. The abdomen has a middorsal longitudinal ridge, fading caudally, with no tergite project-

ing above others, and there is a weaker lateral ridge extending caudad from the lateral shield lobe. The generic name is roof plus ridge.

Genotype: Epitrimerus califraxini K.

Tegolophus califraxini (K.)

1938 Keifer - Bul. Cal. Dept. Agr. 27:308

Additional California species referable to Tegolophus are: myersi K. and zizyphus K.

Thamnacus Keifer, 1944

1944 Keifer - Bul. Cal. Dept. Agr. 33:27

genotype - Phyllocoptes rhamnnicola K.

Thamnacus rhamnnicola (K.)

1952 Keifer - Bul. Cal. Ins. Surv. UC 2(1):49

In this reference Thamnacus was synonymized with Tegonotus. Since then the exact nature of the anterior shield lobe has been discovered, revealing four small anterior spinules. These spinules, plus the broad central longitudinal ridge and lateral ridges, make the genus quite distinct, so it is here reestablished. Thamnacus rhamnnicola causes conspicuous damage to its host at middle elevations in the Sierra Nevada mountains of California. Shrubs of its host, the glabrous-leaf variety of Rhamnus californicus Esch., show many deformed leaves early in the summer.

Tegoprionus, new genus

This genus is erected to accommodate the apparently unique mite, dentatus Nalepa. I have not seen this mite, but figures of it by Nalepa reveal the tergites projecting up irregularly along the middorsal longitudinal ridge. The name is roof plus saw.

Genotype: Tegonotus dentatus Nalepa 1891

Tegoprionus dentatus (Nal.)

1891 Nalepa - Anz. Ak. Wien 28:199

The host of the mite is said to be Galium verum L.

Key to Tegonotus, etc.

1. One or more abdominal tergites projecting above others along middorsal ridge; lateral ridge present or absent - 2
1. All tergites equal in height; lateral ridge extending caudad from sides of shield - - - - - 3
2. Only the first tergite projecting above the general level; body narrower than high and lacking a distinct lateral ridge - - - - - Tegonotus Nal.



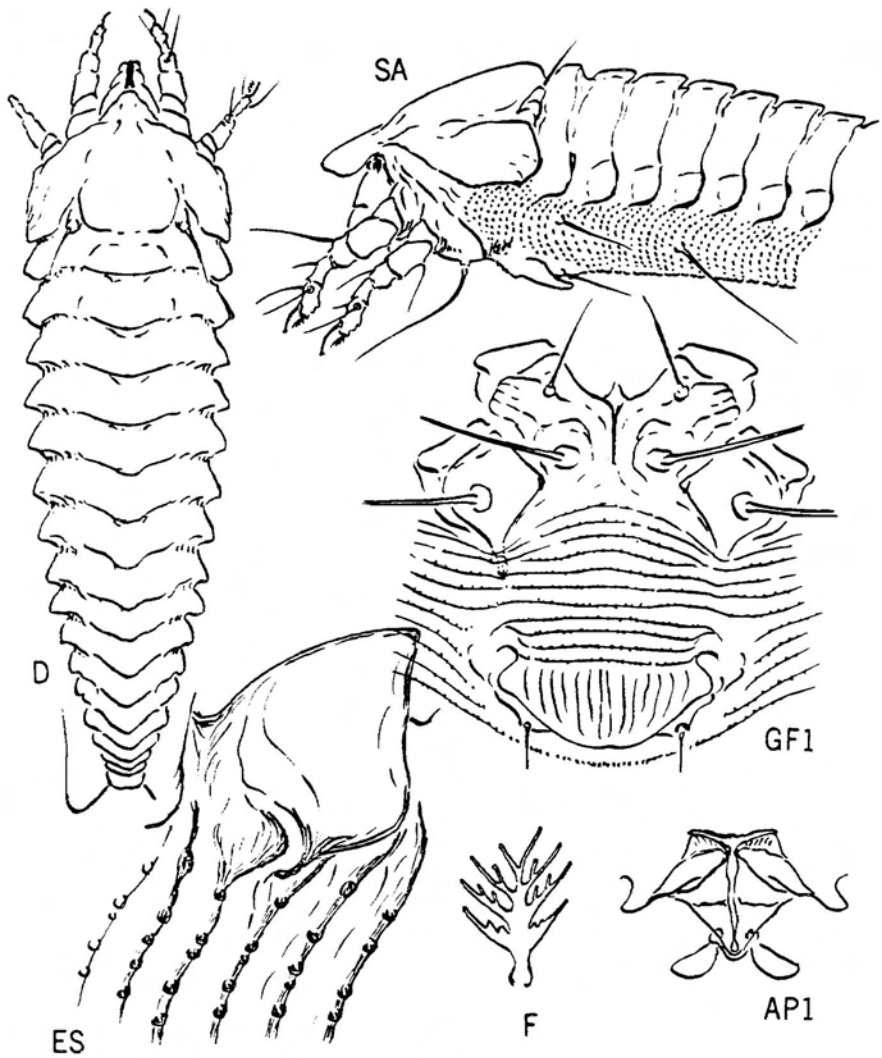


Plate 2 - *Oxypleurites philadelphia*, new species

Host: Philadelphus lewisii Pursh. (Saxifragaceae) syringa

Relation to host: the mites are undersurface leaf vagrants

Type material: as well as a type slide and three paratype slides, there is a vial of leaves in liquid.

#### Oxycenus, new genus

This name is established for one species formerly referred to Oxypleurites. The principle character distinguishing this mite from typical members of Oxypleurites is the prominent caudal depression in the tergites. The rostrum is moderately large, but with short recurved apical portion of oral stylet. The shield is subtriangular, the dorsal tubercles are on the rear shield margin, directing the dorsal setae to the rear and slightly diverging. The tergites are moderately broad, have a middorsal ridge extending caudad about 13 tergites, then ending abruptly at caudal depression which is situated just before the termen. Laterally the tergites project irregularly beyond the main body line, those projecting being approximately the first, fourth and fifth, seventh, and ninth. Each tergite covers three or four sternites laterally. The genus name means sharp plus side.

Genotype: Oxypleurites maxwelli K.

#### Oxycenus maxwelli (K.)

1939 Keifer - Bul. Cal. Dept. Agr. 28:152

The mite is typically found on the upper surface of young olive leaves, especially in the late spring and summer. It may become very numerous in olive blossoms in the spring and is said to produce blossom drop. No leaf damage has appeared in California.

Severely discolored and pitted olive leaves have been received from Algeria, and on recovering mites from the leaf pits, maxwelli proved to be the species present. These Algeria olive leaves were sent me by Madame C. Athias of the Ecole National d'Agriculture.

#### Heterotergum tuttlei, new species

##### Plate 3

The 7-rayed featherclaw, and the pointed microtubercles on the sternites, distinguish this mite from the previous two species already assigned to the genus. The species is named for its collector, D. M. Tuttle, of the University of Arizona. Female 160 $\mu$ -180 $\mu$  long, 40 $\mu$ -45 $\mu$  thick; fusiform; light yellowish in color. Rostrum 23 $\mu$  long, curved down; antapical seta 6.5 $\mu$  long. Shield 33 $\mu$  long, 35 $\mu$  wide; anterior lobe short. Shield design nearly obsolete; admedian lines present only on front half of shield; some lateral lines. Dorsal tubercles large, 26 $\mu$  apart; dorsal setae 21 $\mu$  long, diverging. Forelegs 25 $\mu$  long; tibia 4 $\mu$  long, with seta 6.5 $\mu$  long, from 1/2; tarsus 6.5 $\mu$  long; claw 8.5 $\mu$  long, somewhat curved; featherclaw 7-rayed. Hindlegs 23 $\mu$  long, tibia 3 $\mu$  long, tarsus 6.5 $\mu$  long, claw 8.5 $\mu$  long. Anterior coxae contiguous central-

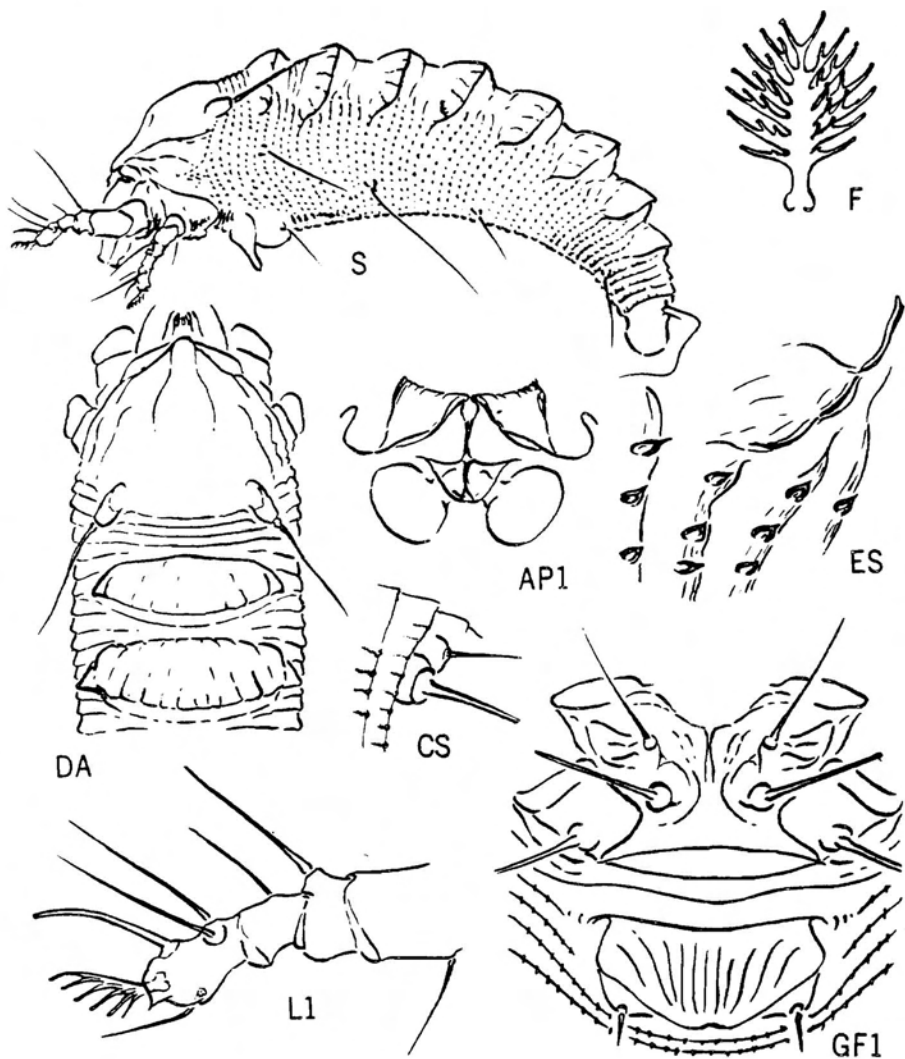


Plate 3 - *Heterotergum tuttlei*, new species



ly, with some lines radiating from tubercle 1; first setiferous tubercles farther apart than second tubercles, behind anterior coxal junction; second tubercles well ahead of transverse line through third tubercles. Abdomen with 8 large tergites, the first preceded behind shield by 4 or 5 narrow rings; some additional rings between other tergites; tergites with faint elongate microtubercles; sternites about 50 in number, completely microtuberculate, the microtubercles pointed. Lateral seta  $40\mu$  long, on about sternite 6 behind shield; first ventral seta  $46\mu$  long, on sternite 17; second ventral seta  $10\mu$  long, on sternite 29; third ventral seta  $15\mu$  long, on sternite 5 from rear. Accessory seta  $3.5\mu$  long. Female genitalia  $23\mu$  wide,  $14\mu$  long; coverflap with 10-12 longitudinal ribs, the outer somewhat diagonal; seta  $20\mu$  long.

Type locality: Palm Canyon, Yuma County, Arizona

Collected: February 3, 1960 by D. M. Tuttle

Host: *Trixis californicus* Kell. (Compositae-Mutisieae)

Relation to host: the mites are vagrants among the leaf and stem hairs.

Type material: as well as a type slide and 6 paratypes there is the dry plant material from which the mites were taken.

#### *Phyllocoptes cribratus*, new species

##### Plate 4

The principle characteristic of *cribratus* is the smooth female genital coverflap. Other features are the 4-rayed featherclaw, the network shield design with central broad lines, and the suppression of the dorsal microtubercles.

Female  $165\mu$ - $180\mu$  long,  $55\mu$  wide,  $55\mu$  thick; fusiform, dull yellowish in color. Rostrum  $25\mu$  long, projecting down; antapical seta  $4.3\mu$  long. Shield  $46\mu$  long,  $50\mu$  wide, anterior lobe short, acuminate, bending down over rostrum. Shield design a network with central lines broad; median line complete; admedian lines sinuate and forming a series of cells with median line by cross lines at  $1/5$ ,  $1/3$ ,  $1/2$ , and  $2/3$ ; first submedian line diverging from central cross line forking in front of dorsal tubercles; additional lines forming cells along sides of shield, some curved lines of microtubercles at lateral shield angles. Dorsal tubercles arising from rear margin,  $35\mu$  apart, inclined forward; dorsal setae  $21\mu$  long, diverging toward front. Forelegs  $40\mu$  long; tibia  $10\mu$  long, with seta  $6.5\mu$  long, from  $1/4$ ; tarsus  $8.5\mu$  long; claw  $7.5\mu$  long, nearly straight, knobbed. Hindlegs  $36\mu$  long, tibia  $7\mu$  long, tarsus  $8.5\mu$  long, claw  $7\mu$  long. Anterior coxae broadly joined centrally; coxae almost unmarked; first setiferous coxal tubercles ahead of second tubercles and opposite anterior coxal junction; second tubercles somewhat ahead of transverse line through third tubercles. Abdomen with about 50 tergites and 70-80 sternites; sternites completely set with microtubercles on rear margins, the tergites with microtubercles laterally but suppressed dorsally. Lateral seta  $17\mu$  long, on about sternite 11 behind shield; first ventral seta  $30\mu$  long, on sternite 27; second ventral  $40\mu$  long, on sternite 48; third ventral  $32\mu$  long, on sternite 6 from rear. Accessory seta absent. Female genitalia  $26\mu$  long,  $18\mu$  wide; coverflap unmarked; gen-

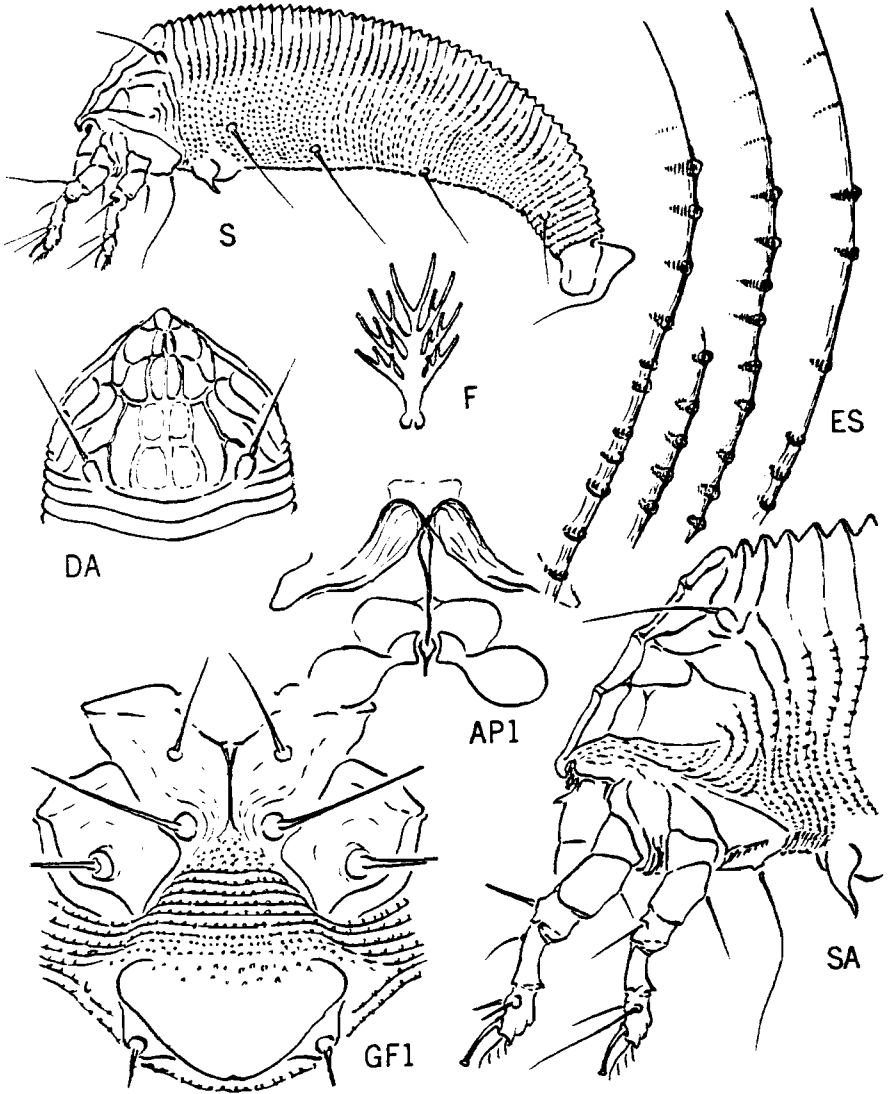


Plate 4 - *Phylloptes cribratus*, new species

(cribratus)  
 ital seta  $9\mu$  long.

Type locality: McLean, Virginia

Collected: June 13, 1960 and submitted to the writer under #60-13339, US Entomology Research Service

Host: Diospyros virginiana L. (Ebenaceae) persimmon

Relation to host: the mites live on the undersides of the leaves and produce rusting.

Type material: as well as the dry leaves from which the slides were made there is a type slide and two paratype slides.

#### Aculus morgani, new species

##### Plate 5

The new species is similar to such species as glabri K. on maple, but in this case differs by having more granular coxae and more diagonal ribs on the female genital coverflap.

Female  $135\mu$ - $165\mu$  long,  $42\mu$  wide,  $40\mu$  thick; short, fusiform; light yellow in color. Rostrum  $24\mu$  long, curved down; antapical seta  $4.5\mu$  long. Shield  $33\mu$  long,  $36\mu$  wide, anterior lobe over rostrum base small. Shield design a variable network; median line weak or absent anteriorly, otherwise complete; admedian lines complete, subparallel, rather close, sinuate, crossed by a transverse line at  $1/3$  and joined to median by a cross line at  $4/5$ ; submedian lines a series of curving lines forming a number of cells in front of dorsal tubercles. Shield sides not prominent, the shield laterally acuminate with partial rings bearing microtubercles running up to dorsal tubercles. Dorsal tubercles  $25\mu$  apart; dorsal setae  $20\mu$  long, diverging to rear. Forelegs  $32\mu$  long; tibia  $7\mu$  long, with seta  $5\mu$  long from  $1/3$ ; tarsus  $7\mu$  long; claw  $8.5\mu$  long, curved; featherclaw 4-rayed. Hindlegs  $27\mu$  long, tibia  $6.5\mu$  long, tarsus  $7\mu$  long, claw  $8.5\mu$  long. Coxae with rows of coarse granules; first setiferous coxal tubercles ahead of second tubercles and a little farther apart, just behind anterior coxal junction; second coxal tubercles almost in a transverse line through third tubercles. Abdomen with 40-45 tergites and about 53 sternites; tergites microtuberculate except rear  $1/3$  which is of smooth tergites; dorsal microtubercles larger and somewhat elongate, reaching rear margins; ventral microtubercles beadlike and reaching rear ring margins. Lateral seta  $15\mu$  long, on sternite 7 behind shield; first ventral seta  $35\mu$  long, on about sternite 18; second ventral  $23\mu$  long, on sternite 31; third ventral  $24\mu$  long, on sternite 6 from rear. Accessory seta  $4\mu$  long. Female genitalia  $18\mu$  wide,  $14\mu$  long; coverflap with about 6 or 7 ribs, more or less diagonally directed inward; genital seta  $10\mu$  long.

Type locality: Vaseaux Lake, British Columbia

Collected: Sept. 8, 1960 and sent to me by C. V. G. Morgan of the Canadian Division of Entomology for whom I am pleased to name the mite.

Host: Rhus glabra L. (Anacardiaceae) smooth sumac

Relation to host: the mites produce severe leaf curling.

Type material: as well as a type slide and six paratypes there is the dry material from which the slides were made.

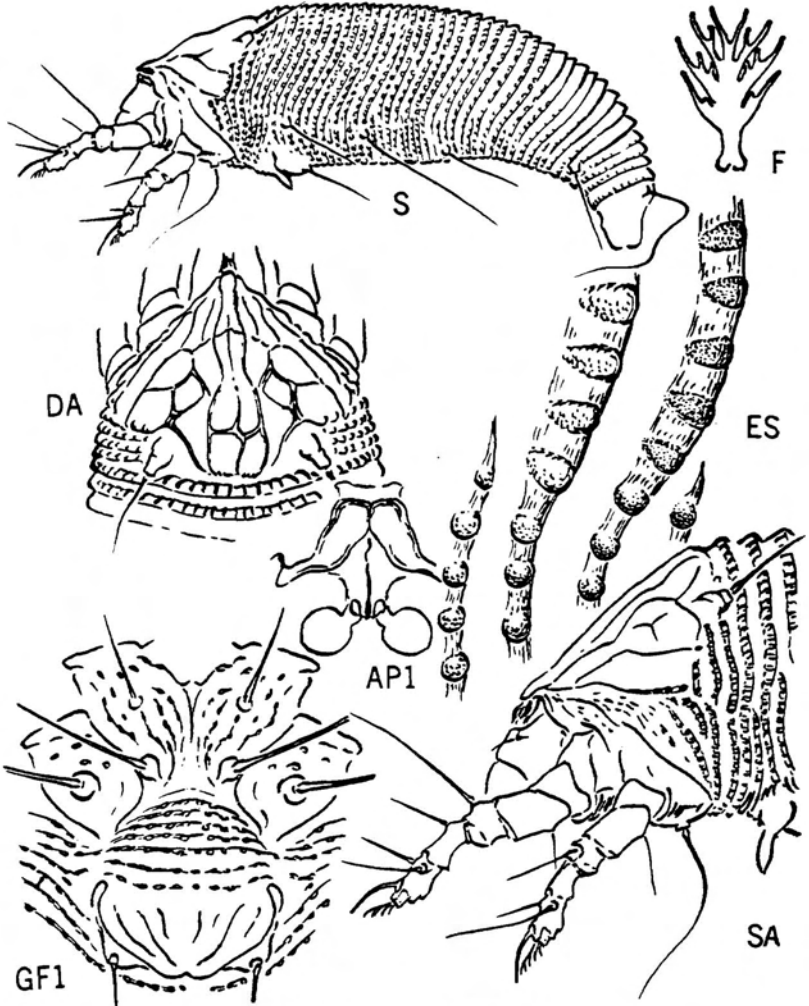


Plate 5 - *Aculus morgani*, new species

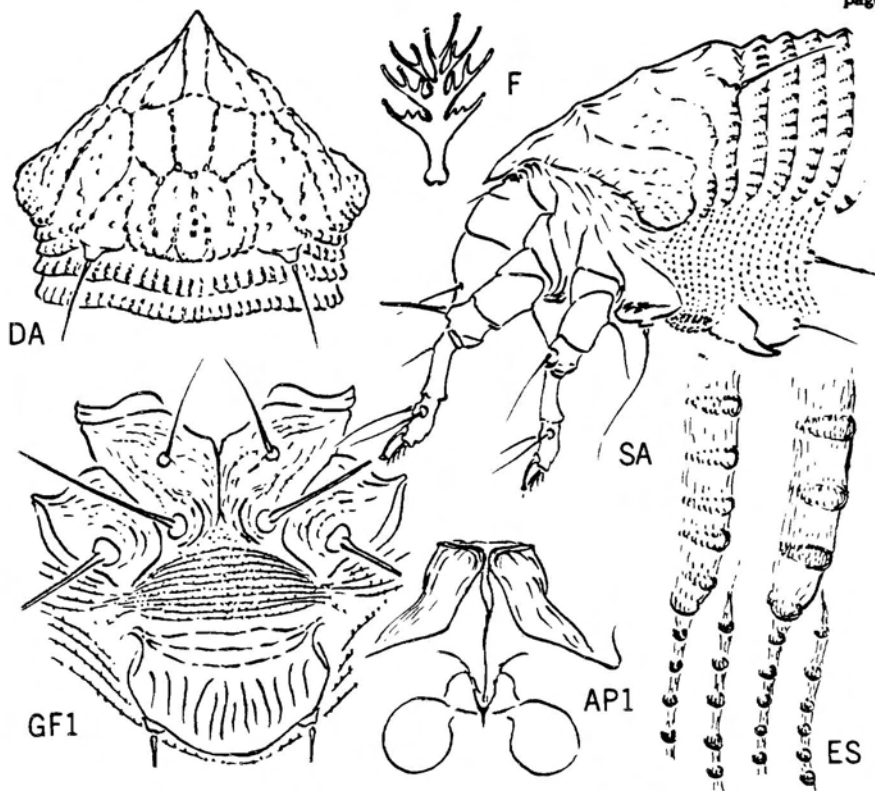


Plate 6 - *Aculus lobuliferus*, new species

*Aculus lobuliferus*, new species

Plate 6

The new species is related to *populivagrans* K., but differs in having the shield design as lines of granules.

Female 180 $\mu$ , 205 $\mu$  long, 56 $\mu$  wide, 50 $\mu$  thick; elongate-fusiform; dull yellowish in color. Rostrum 23 $\mu$  long, curved down; antapical seta 10 $\mu$  long. Shield triangular, wider than body, 43 $\mu$  long, 63 $\mu$  wide; anterior lobe sharply acuminate over rostrum, ending in a sharp point. Design of more or less clear lines of granules. Median line present on rear third; admedian lines complete, subparallel on anterior third, gently converging caudad from anterior third cross line to second transverse line at rear 1/3; outcurving and then slightly converging beside median line and just ahead of rough rear shield margin. Submedian line diverging from sides of anterior lobe, sinuate, meeting transverse lines at 1/3 and 2/3, and diverging to outer side of dorsal tubercles. Lateral

lobes prominent and rounded, roughened with some granules. Dorsal tubercles  $33\mu$  apart; dorsal setae  $16\mu$  long, diverging to rear. Forelegs  $35\mu$  long; tibia attenuate,  $10\mu$  long, with seta  $6.5\mu$  long from near base; tarsus  $8\mu$  long; claw  $5.5\mu$  long, curved down, knobbed; featherclaw 4-rayed. Hindlegs  $31\mu$  long, tibia  $9\mu$  long, tarsus  $7\mu$  long, claw  $6.5\mu$  long. Coxae with curved lines of granules; anterior coxae broadly connate; first setiferous coxal tubercles well ahead of and slightly farther apart than second tubercles, slightly behind anterior coxal junction; second tubercles not far ahead of transverse line through third tubercles. Abdomen with about 30 tergites and about 65 sternites; dorsal microtubercles elongate to rear margins; sternal microtubercles more beadlike and resting on rear ring margins. Lateral seta  $30\mu$  long, on about sternite 12 behind shield; first ventral seta  $52\mu$  long, on about sternite 26; second ventral  $20\mu$  long, on sternite 45; third ventral  $25\mu$  long, on about sternite 5 from rear. Accessory seta  $3\mu$  long. Female genitalia  $23\mu$  wide,  $13\mu$  long; cover-flap with 12-14 longitudinal ribs; seta  $13\mu$  long.

Type locality: Stoneville, Mississippi

Collected: October 12, 1960 by R. C. Morris, Forest Service, US Department of Agriculture

Host: Populus deltoides Bartr. (Salicaceae) eastern cottonwood

Relation to host: the mites rust leaves. In this case the damage was severe on young nursery trees.

Type material: as well as a type slide and seven paratypes, there are many mites in liquid in a vial.

#### *Aculus caryfoliae*, new species

##### Plate 7

The spines on the anterior lobe of the shield on caryfoliae are very small. The species is characterized by the 4-rayed featherclaw, the short dorsal setae, the rough margin of the rear part of the shield, and the elongate microtubercles on the tergites.

Female  $175\mu$ - $190\mu$  long, about  $55\mu$  wide and  $55\mu$  thick; fusiform, dull yellowish in color. Rostrum  $37\mu$  long, projecting down; antapical seta  $6\mu$  long. Shield  $48\mu$  long,  $54\mu$  wide; anterior lobe moderately broad and blunt, the pair of anterior spines very small. Shield design of lines and cells, partly obscure. Median line faintly indicated on rear 3/4; admedian lines complete, fading to rear, sinuate, with central projecting short lines at 1/4, 1/3, and just beyond 1/2; cross lines extending laterally from short central lines, forming rows of cells inside anterior margin and laterally. Lateral lobes moderately prominent, with some granulations. Dorsal tubercles  $40\mu$  apart, the rear margin of the shield semicircular and roughened between them; dorsal setae  $13\mu$  long, diverging to rear. Forelegs  $43\mu$  long; tibia  $16\mu$  long, slender, with seta  $5\mu$  from 1/4; tarsus  $8\mu$  long; claw  $7\mu$  long, knobbed; featherclaw 4-rayed. Hindlegs  $38\mu$  long, tibia  $9.5\mu$  long, tarsus  $8\mu$  long, claw  $7\mu$  long. Coxae with lines of granules, the anterior coxae broadly joined centrally by rather long sternal line; first setiferous coxal tubercles well ahead of second tubercles and a little farther apart; second tubercles a little ahead of transverse line through third tubercles. Abdomen with about

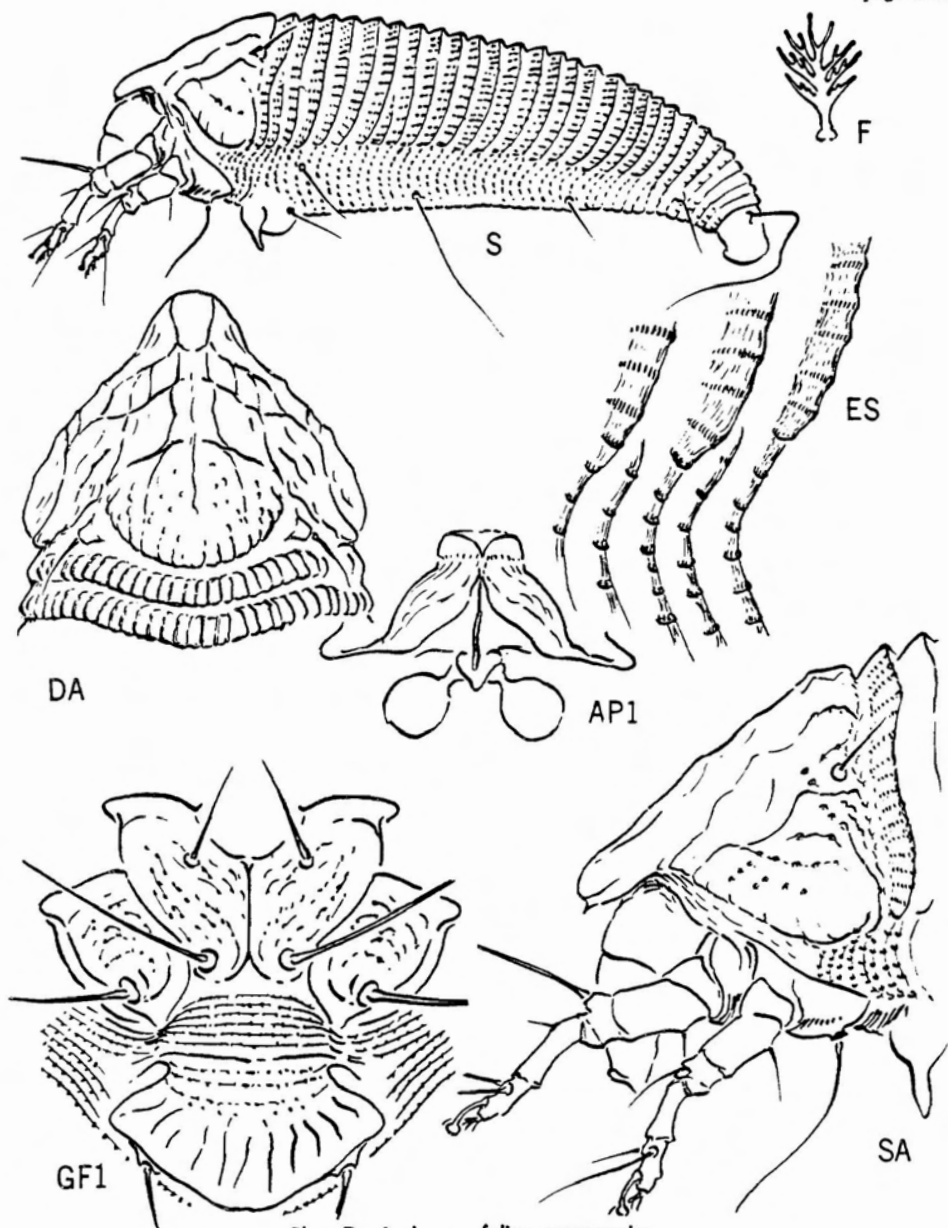


Plate 7 - *Aculus caryfoliae*, new species

28 tergites and 60 sternites; completely microtuberculate, the microtubercles reaching rear ring margins, extended longitudinally dorsally. Lateral seta  $15\mu$  long, on about sternite 9; first ventral seta  $43\mu$  long, on about sternite 23; second ventral  $20\mu$  long, on sternite 41; third ventral  $18\mu$  long, on sternite 4 from rear. Accessory seta minute. Female genitalia  $26\mu$  wide,  $14\mu$  long; coverflap with about 12 longitudinal ribs and some basal rows of granulations; seta  $10\mu$  long.

Type locality: Calvert Park, College Park, Maryland

Collected: July 23, 1959 by John P. Keifer and the writer

Host: Carva ovata Mill. (Juglandaceae) shagbark hickory

Relation to host: the mites inhabit the undersides of the leaves and cause severe leaf rusting.

Type material: as well as a type slide and 11 paratype slides there are mites with leaves in liquid and mite mummies on dry leaves. The species is strongly deuterozygous.

#### Pseudojohnella, new genus

This genus is similar to Johnella K. (1959), and differs in that the first abdominal tergite is not fused with the rear shield margin. From Coptophylla K. (1944) the new genus is separated by the fewer uneven tergites.

Genotype: Pseudojohnella ajoensis, new species

#### Pseudojohnella ajoensis, new species

##### Plate 8

Female  $135\mu$ - $140\mu$  long,  $43\mu$  wide,  $36\mu$  thick; flattened-fusiform; light yellowish in color. Rostrum  $24\mu$  long, curved down; antapical seta  $3\mu$  long. Shield  $37\mu$  long,  $40\mu$  wide; roughly pentagonal in shape, the rear margin bluntly acuminate posteriorly and rounded anteriorly; lobe over rostrum of moderate length, thin in side view. Shield design obsolete; dorsal tubercles and setae missing. Forelegs  $29\mu$  long; tibia  $6.5\mu$  long, with seta  $7\mu$  long from 1/2; tarsus  $6.5\mu$  long; claw  $8.5\mu$  long, tapering, curved; featherclaw 7-8-rayed. Hindlegs  $23\mu$  long, tibia  $4.5\mu$  long, tarsus  $6.5\mu$  long, claw  $8.5\mu$  long. Coxae with quadrate areas surrounding tubercles, the anterior coxae narrowly joined centrally. First setiferous coxal tubercles farther apart than second tubercles and somewhat ahead of anterior coxal junction; second coxal tubercles somewhat ahead of transverse line through third tubercles. Abdomen with six large tergites, the second and third narrow, and followed caudally with about 6 narrow rings; about 13 tergites and 55-60 sternites. Sternites completely set with microtubercles which are slightly elongate and reach rear ring margins. Tergites with more or less elongate and suppressed microtubercles. Lateral seta  $13\mu$  long, on about sternite 6 behind shield; first ventral seta  $10\mu$  long, on sternite 16; second ventral seta  $10\mu$  long, on sternite 27; third seta  $15\mu$  long, on sternite 5 from rear. Accessory seta absent. Female genitalia  $20\mu$  wide,  $13\mu$  long; coverflap with about 16 longitudinal ribs, partly broken into two uneven ranks; seta  $12\mu$  long.

Type locality: Palm Canyon, Yuma County, Arizona

Collected: April 14, 1960 by D. M. Tuttle and the writer

Host: Quercus ajoensis C. H. Muller (Fagaceae) an oak

Relation to host: the mites are undersurface leaf vagrants

Type material: as well as a type and 7 paratype slides there is a vial with mites in liquid.



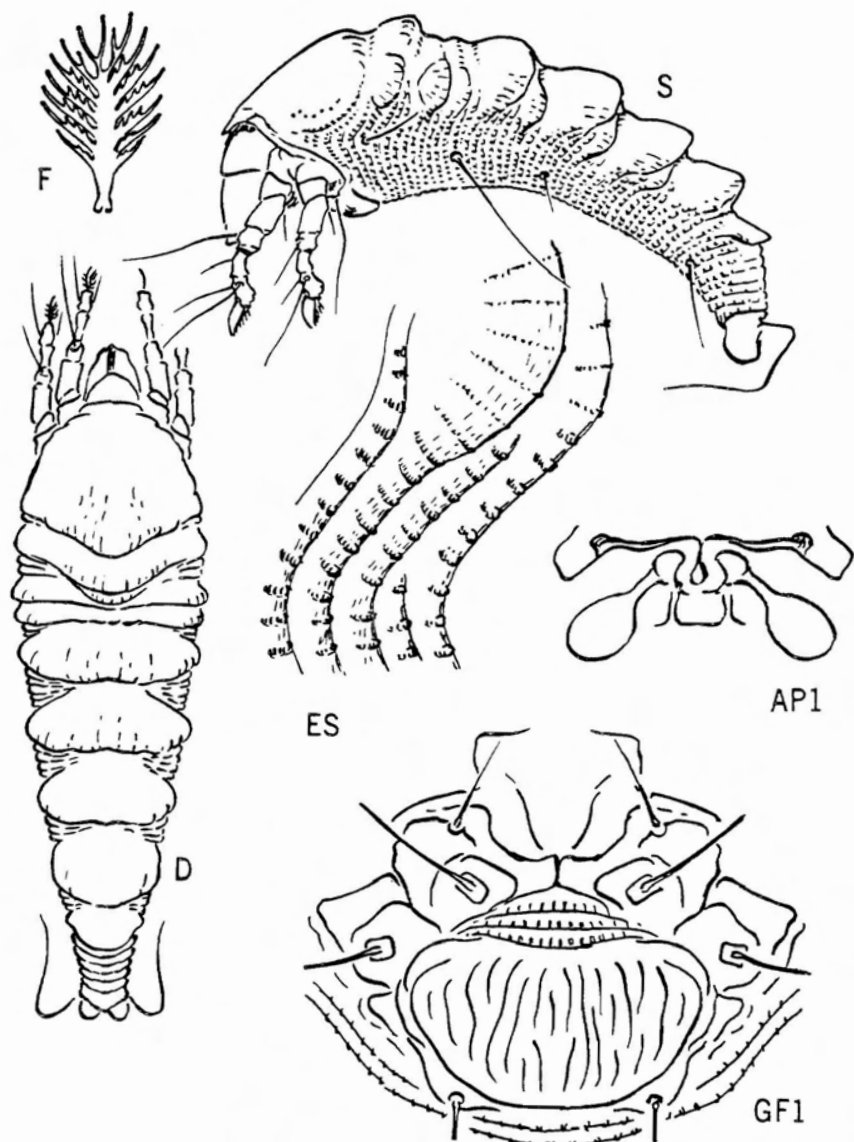


Plate 8 - *Pseudojohnella ajoensis*, new species

## Aceria byersi, new species

## Plate 9

Byersi has a very irregular shield pattern, assuming many deformations. One of the principle features, on the more regular shields, is a pair of boxes in front of the dorsal tubercles. On byersi the microtubercles project lobe-like past the rear ring margins, and there is a tendency for the dorsal half to have fewer rings than the venter. The species is named for David H. Byers, of the Orange County Department of Agriculture, who collected the mites.

Female 190 $\mu$ -210 $\mu$  long, 50 $\mu$  thick; wormlike; light yellow in color. Rostrum curved down; antapical seta 5 $\mu$  long. Shield 29  $\mu$  long, 37 $\mu$  wide, anterior part subsemicircular in dorsal view. Shield design irregular; in more regular designs the median line complete, a pair of outwardly diagonal short lines from rear rear margin; admedian lines complete, diverging at middle, then slightly recurved at rear; first submedian complete from anterior part of shield, a pair of irregular rectangles from it extending laterally in front of dorsal tubercle, second submedian from lateral line at 1/2, both it and lateral line running to granular area lateral to dorsal tubercles; rows of granules above coxae. Dorsal tubercles 26 $\mu$  apart; dorsal setae 40 $\mu$  long, somewhat divergent to rear. Forelegs 31 $\mu$  long; tibia 6.5 $\mu$  long, with seta 8 $\mu$  long at 1/4; tarsus 7.5 $\mu$  long; claw 8.5 $\mu$  long, tapering, curved; feather-claw 5-rayed. Hindlegs 27 $\mu$  long, tibia 5.5 $\mu$  long, tarsus 8 $\mu$  long, claw 8.5 $\mu$  long. Coxae with lines and granules; with short sternal line between anterior coxae; first setiferous coxal tubercles even with anterior coxal junction, ahead of second tubercles; second tubercles well ahead of transverse line through third tubercles. Abdomen with about 70 rings, considerable doubling of rings from dorsum to venter; rings completely microtuberculate, the microtubercles projecting lobe-like past rear ring margins. Lateral seta 23 $\mu$  long, on about ring 8; first ventral seta 60 $\mu$  long, on ring 21; second ventral 10 $\mu$  long, on ring 41; third ventral 23 $\mu$  long, on ring 7 from rear. Accessory seta 6 $\mu$  long. Female genitalia 23 $\mu$  long, 14 $\mu$  wide; coverflap with 11-12 longitudinal ribs; genital seta 15 $\mu$  long.

Type locality: Olive, Orange County, California

Collected: August 9, 1960 by D. H. Byers

Host: Cucurbita foetidissima HBK (Cucurbitaceae) calabazilla

Relation to host: the mites live among hairs on the leaves and stems, causing slight marginal leaf curling and browning of older leaves. The principle population is on the younger leaves.

Type material: there is a type slide and four paratype slides and the dry plant parts from which the mites were taken.

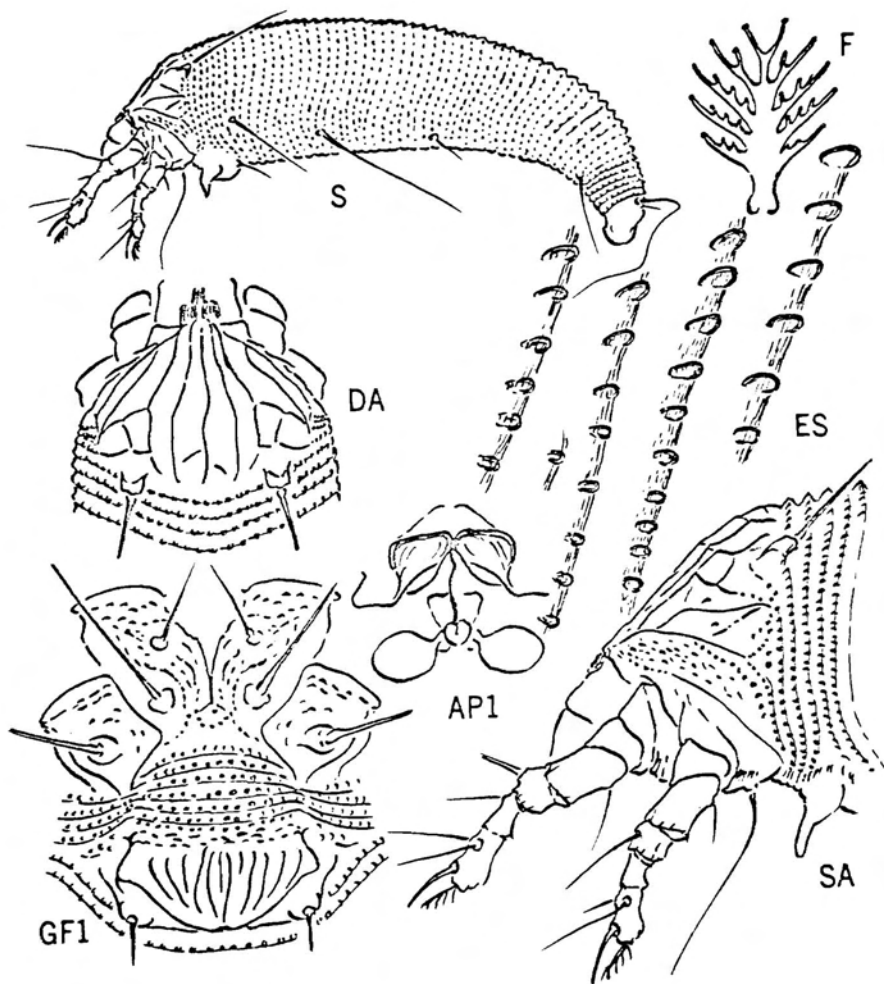


Plate 9 - *Aceria byersi*, new species

**Designations on the Plates**

AP1 - internal female genitalia  
CS - caudal setae  
D - dorsal view of mite  
DA - dorsal view of anterior section  
ES - lateral surface structures  
F - featherclaw  
GF1 - female genitalia and coxae  
L1 - anterior leg  
S - side view of mite  
SA - side view of anterior part of mite

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