

ERIOPHYID STUDIES C - 3

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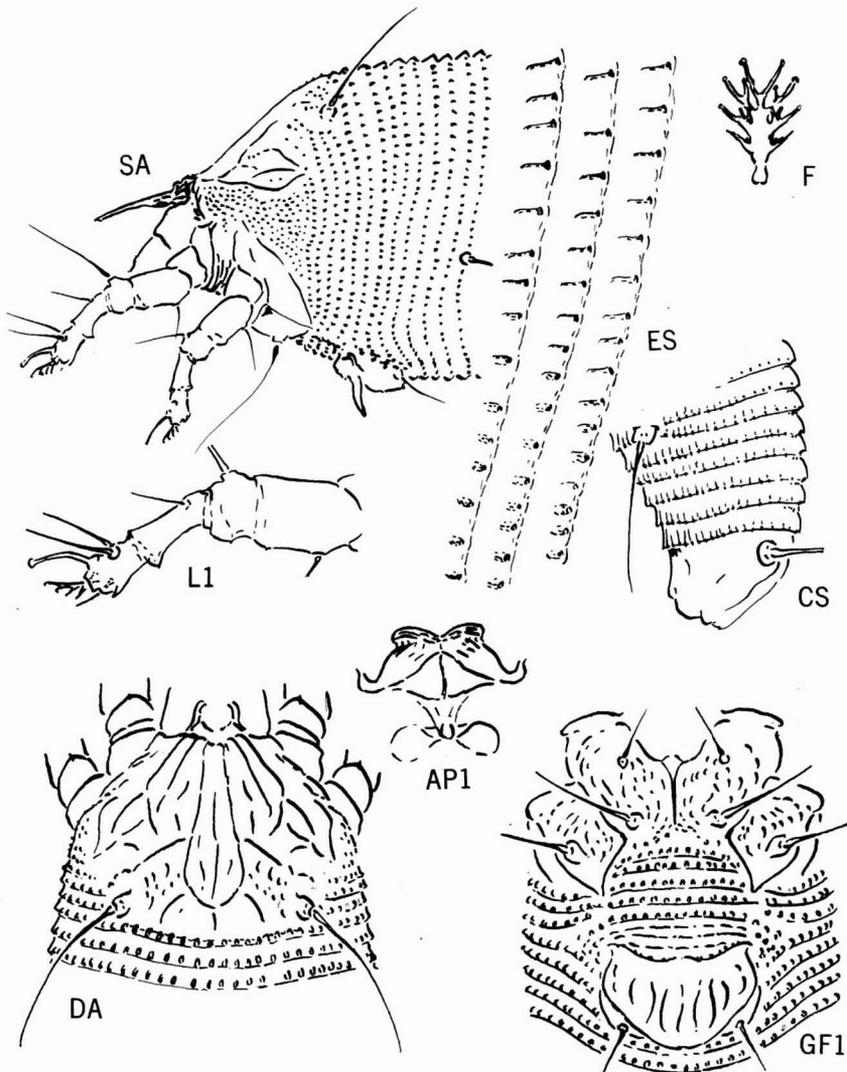


Plate 1 - *Eriophyes newkirki*, new species

Eriophyes newkirki, new species

Plate 1

The distinguishing features of *newkirki* are the 4-rayed featherclaws, the turning in of the median lines a short distance before the rear shield margin so that they meet centrally, and especially the fine, rather elongate thanosomal microtubercles. Examination of a considerable series of North American species in this genus which 4 and 5-rayed featherclaws fails to disclose any described species that seems closely related.

This mite is being named for Richard A. Newkirk, who collected it and who has been of much help securing eriophyid literature.

Female 163 μ -232 μ long, about 55 μ -60 μ thick; body robust and tapering; color light yellowish-white. Rostrum 20 μ long, curving down; antapical seta 4 μ long. Shield 28 μ long, 36 μ wide, broad in front. Shield design of longitudinal lines; median line present on rear 3/4; admedian lines complete from chelicera base, gradually diverging to 4/5 and then branching, one branch curving inward to join centrally with branch from other side, the outer branch divergent to shield margin; first and second submedian lines starting lateral to admedian but ending in confused lines and branches at about 1/2; a diagonal line across in front of dorsal tubercle, ending against admedian line. The shield laterally with converging lines somewhat in front of and below dorsal tubercles; a broad band of granules above coxae ending against 4 partial rings below dorsal tubercle. Dorsal tubercles 25 μ apart; dorsal setae 25 μ long, divergent to rear. Foreleg 29 μ long; tibia 7.5 μ long, with 5 μ seta on inner side at about 1/5; tarsus 6 μ long, claw 6.5 μ long, knobbed; featherclaw 4-rayed. Hindleg 28 μ long; tibia 6 μ long, tarsus 6 μ long, claw 6 μ long. Coxae with short dashes mainly curved around setiferous tubercles, sternal line of moderate length, ending between second tubercles and unforked. First setiferous coxal tubercles farther apart than second and opposite anterior end of sternal line; second tubercles somewhat ahead of level of third tubercles. Abdominal thanosome with about 65 rings, completely microtuberculate, the microtubercles fine, tending to be elongate and slightly acuminate above, slightly ahead of ring margins; thanosomal microtubercles becoming shorter to rear. Lateral seta 24 μ long, on ring 9 behind shield; first ventral seta 45 μ long, on ring 23; second ventral seta 13 μ long, on ring 42. Telosome with 6 or 7 rings, microtubercles bead-like, on margins, and extended ahead as fine lines, weaker above. Telosomal seta 19 μ long. Accessory seta 2 μ long. Female genitalia 18 μ long, 20 μ wide, coverflap with 8 to 10 rather weak and short ribs; seta 20 μ long.

Male 160 μ -185 μ long.

Type locality: Kenilworth Gardens, Washington, D. C.

Collected: June 15, 1968, by R. A. Newkirk

Host: *Cephalanthus occidentalis* L. (Rubiaceae - Rubiales) button willow

Relation to host: The mites make irregular bead galls on upper leaf surface, the galls widely open below and containing some erineal hairs. In heavy infestations the leaves become deformed. Galls tend to follow veins in lighter infestations. The galls may be hairy above also.

Type material: Dry infested leaves from the type locality are on hand, and two slides made from these leaves. One slide is labelled as type and the other as paratype.

Also on hand are dry leaves from this same host collected in Gainesville, Florida and bearing #E-868. Five slides in this lot are labelled paratypes. The Florida material was collected May 19, 1973 by L. O. Berry and submitted by H. A. Denmark of the Florida Dept. of Agriculture.

Copies of the 'C' Series are obtainable from -

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California Department of Agriculture
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Sacramento, Cal. 95814

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Eriophyes anonae, new species

Plate 2

The characteristics of this species are: 4-rayed featherclaw; shield with confused lines but with submedian broadly bifurcate in front of dorsal tubercle; rounded off microtubercles which are somewhat elongate dorsally and touching rear margin, more beadlike ventrally and slightly ahead of margin; large female genital setiferous tubercles. In the 4-rayed featherclaw group an Australian species, *E. prostantherae* (K.), Eriophyd Studies XXVII, Occ. Papers, Cal. Bur. Ent. #1:17, May 8, 1959) seems somewhat similar, with weakened median line, and first submedians broadly bifurcate in front of dorsal tubercle. The Australian species differs in part by having the first setiferous coxal tubercle set some distance behind the anterior forecoxal end.

Female 165 μ -185 μ long, 40 μ thick; wormlike; probably light yellowish-white color in life. Rostrum 15 μ long, projecting forward and down; antapical seta 6 μ long. Shield 29 μ wide, 17 μ long, triangular with weakly curved sides. Median and admedian lines broken and confused on shield center, admedians indicating convergence at rear margin; first submedian line subparallel to admedians, but broken except for wide bifurcation in front of dorsal tubercle. Shield laterally with some longitudinal lines. Dorsal tubercles 11 μ apart and directing setae somewhat divergently to rear; dorsal setae 18 μ long. Foreleg 28 μ long; tibia 5 μ long, with 4 μ seta from 1/3 tarsus 6.5 μ long; claw 4 μ long; featherclaw 4-rayed. Hindleg 27 μ long, tibia 4 μ long, tarsus 5 μ long, claw 5 μ long. Coxae ornamented with granules tending to circle around second and 3rd tubercles; sternal line present but weak; first setiferous coxal tubercle set far ahead, almost to anterior end of anterior coxa; second tubercle well ahead of third and almost in an inward diagonal line between first and third setiferous tubercle. Abdominal thanosome with about 65 rings, some increase in ring number dorsally; rings well set with microtubercles, all rounded off; microtubercles elongate above and touching ring margins, more bead-like ventrally and tending to be ahead of margins. Lateral seta 15 μ long, on ring 8 behind shield; first ventral seta 36 μ long, on ring 15; second ventral seta 2.5 μ long, on ring 41. Telosome with 6 rings, well set with fine microtubercles on margins, and each with fine anterior line; telosomal seta 12 μ long, stiff. Accessory seta about 5 μ long. Female genitalia 15 μ wide, 11 μ long; female coverflap with 11-12 longitudinal ribs; seta 6 μ long.

Male about 110 μ long, 30 μ thick.

Type locality: Cagua, Aragua State, Venezuela

Collected: July 30, 1965, and Mar. 1, 1967, by Ernesto Doreste of the University of Central Venezuela

Host: *Anona muricata* L. (Anonaceae) Sour sop, guanabana

Relation to host: The mites make small erineum tufts, or elongate erineum strips, along leaf midrib on underside. Usually the tufts are confined to lateral vein axils on midrib where there appears to be a natural leaf gland. These erineum tufts in the axils bulge out somewhat on the upper surface. When there is an elongate erineum strip along the vein the only indication on the upper surface is still limited to vein axils.

Type material: Six slides make up the type series, with three dated Mar. 1, 1967 and three dated July 30, 1965. The type slide bears the above locality data, and is dated Mar. 1, 1967. There are also dry leaves with mites bearing both dates. The slides were made from these dry erineum patches on the leaves.

Designations on Plates

- AP1 - Internal female genital structures
- CS - Lateral caudal section of mite
- D - Dorsal diagram of mite
- DA - Dorsal view of anterior section
- ES - Lateral skin structures
- F - Empodium, or featherclaw
- GF1 - External female genitalia and coxae
- L1 - Left anterior leg
- L2 - Left second leg
- S - Side diagram of mite
- SA - Anterior side section of mite
- Telosome - caudal abdominal section beginning with third ventral seta
- Thanosome - abdomen from rear shield margin to telosome

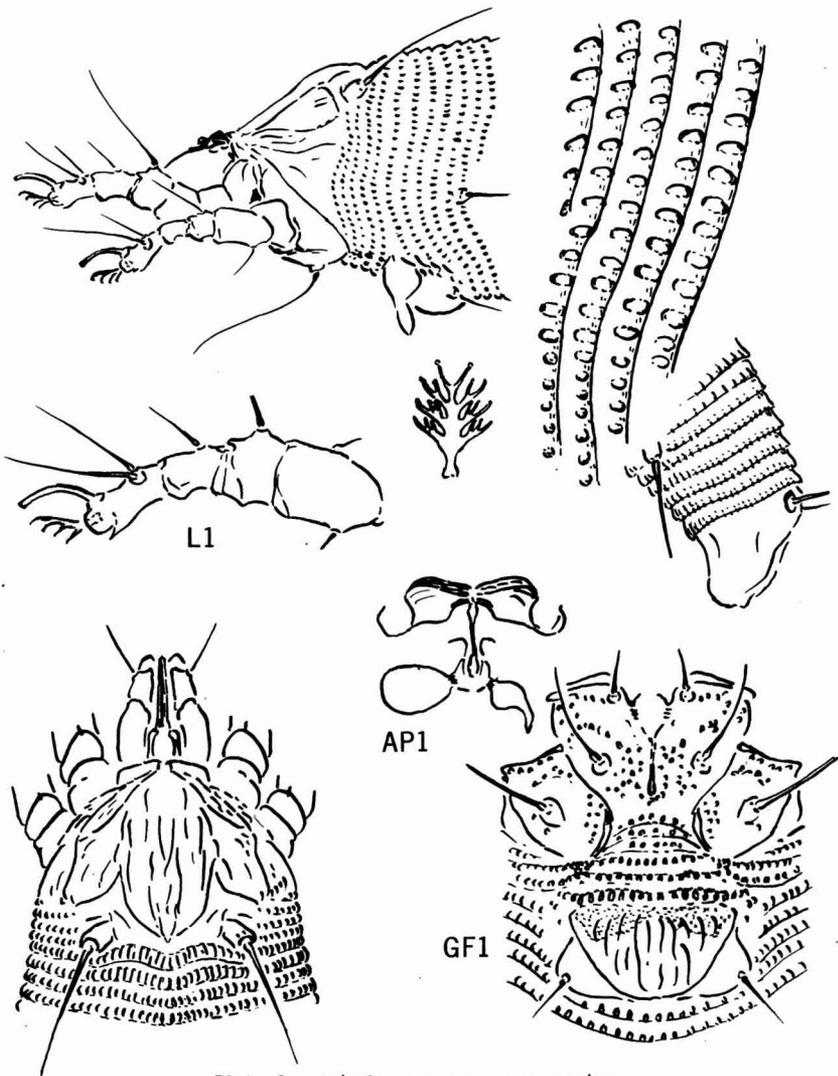


Plate 2 - *Eriophyes anonae*, new species

Eriophyes validae, new species

Plate 3

As a species in the large genus Eriophyes, with four-rayed featherclaws this Phacelia leaf vagrant is a generalized type with no particular feature that stands out. It rather resembles certain grass infesting mites, especially by having the deep bowl-shaped female genitalia. The submedian shield lines on the new species do not end in a fork in front of the dorsal tubercles, but rather give way to a series of short dashes. Perhaps the most distinguishing feature of validae is the lateral change shown by the microtubercles, with pointed granules ventrally and laterally, and rounded knobs dorsally. When this new species is traced through the Aceria key (= Eriophyes) in the 1952 UC California Insect Survey Bulletin it runs inconclusively to such species as boyciei K., chrysoopsis K., heterothecae K. and stinsonis K., without matching any of them closely. The new species crawls around among the undersurface hairs on host leaves, the hairs giving it protection. This species does not show any development toward the Paraphytoptus type, which type has become adapted to life among natural plant hairs.

Female, measured from the front end of the shield to the end of the terminal lobes, varies from 180 μ to 260 μ in length. Thickness about 50- μ 55 μ . Rostrum 26 μ long, projecting diagonally down; antapical seta 6 μ -7 μ long. Shield 41 μ wide, 35 μ long; design of longitudinal lines and interspersed areas of granules to rear and laterally. Median shield line irregular, present on rear 2/3, with a pair of diagonal lines flanking the line at about 5/6, along with some short dashes. Admedian shield lines complete, subparallel to each other and to the median line, gradually diverging, sinuate, divergent on last 5/6. First submedian lines subparallel to admedians, but diverging to about 1/2, then giving way to areas of short dashes in front of dorsal tubercles. Second submedians diverging from first submedians and ending laterad to dorsal tubercles. Laterally the shield with irregular longitudinal lines and with granules. Dorsal tubercles 24 μ apart; dorsal setae 50 μ long, gently diverging. Foreleg 37 μ long; tibia 10 μ long, with 10 μ seta at 1/5; tarsus 9.5 μ long; claw 10.5 μ long; featherclaw 4-rayed. Hindleg 30 μ long, tibia 7 μ long, tarsus 9 μ long, claw 13 μ long. Coxae with strong sternal line centrally, the coxae ornamented with short lines, part curved. First setiferous coxal tubercles farther apart than second, and slightly behind the anterior coxal approximation second tubercles almost in a cross line with third tubercles. Thanosome with about 68 rings, completely microtuberculate, the microtubercles pointed over margins ventrally and laterally, projecting over margins dorsally as small rounded off knobs. Lateral seta 32 μ long, on ring 8 behind shield; first ventral thanosomal seta 62 μ long, on ring 24; second ventral 19 μ long, on ring 44. Telosome with 7 rings, the microtubercles as short dashes along ring margins, elongate ventrally. Telosomal seta 28 μ long; accessory seta 5 μ long. Female genitalia 18 μ long, 28 μ wide; coverflap with about 12 rather long longitudinal ridges; genital seta 23 μ long.

Male about 150 μ -165 μ in length.

Type locality: Strawberry, El Dorado County, Cal., at about 6000 ft. elev.

Collected: July 18, 1972, by the writer

Host: Phacelia ramosissima valida Peck, Hydrophyllaceae, waterleaf family

Relation to host: the mites crawl about among undersurface leaf hairs.

Type material: a type slide, so labelled, with the above data.

Three paratype slides; one sent to the Systematic Entomology Laboratory, U. S. Agricultural Research Service, Beltsville, Maryland

In all cases where paratypes are indicated one paratype will go to the Agricultural Research Center (West), Beltsville, Maryland.

Errata for C-7 (Dec. 18, 1972)

Plate 1 - The specific name should be uruetae

Plate 4 - The designation on the plate: "Aculops rivargenta" in effect creates a synonym since the species name as established on page 7 is argyrea.

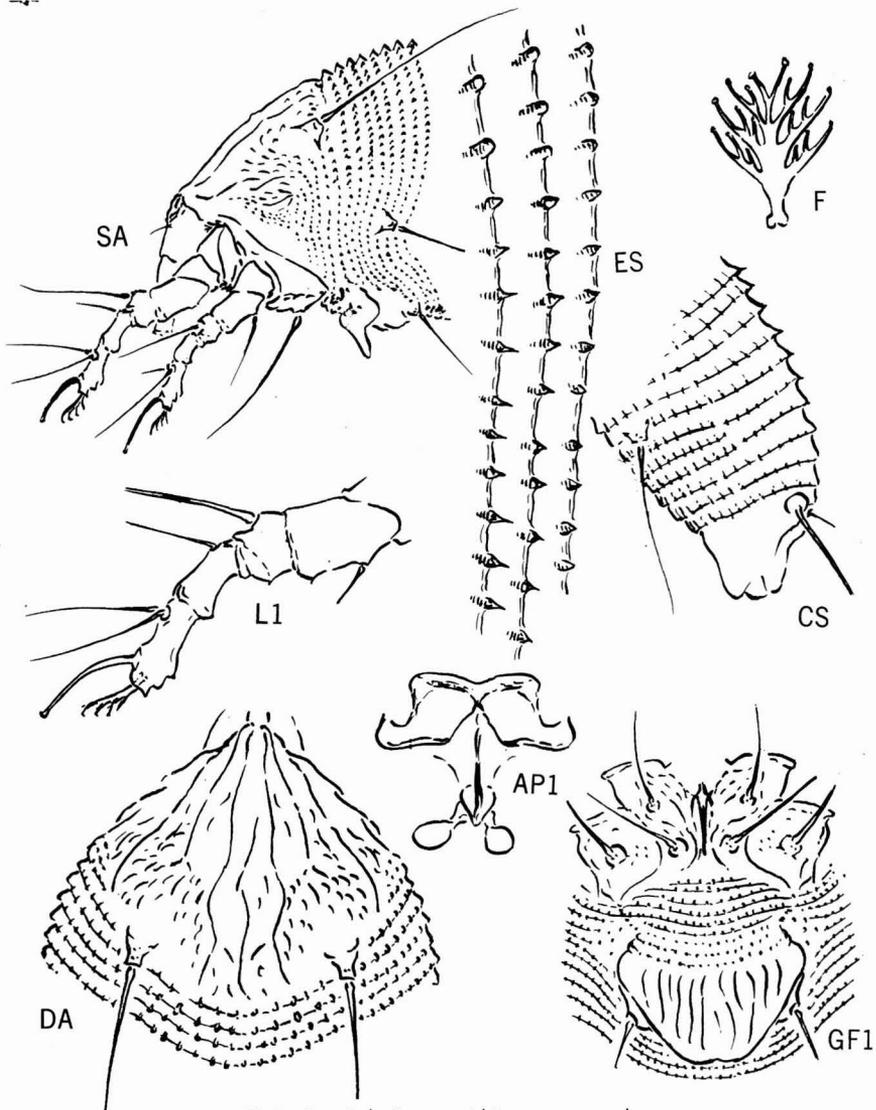


Plate 3 - *Eriophyes validae*, new species

Eriophyes peleae, new species

Plate 4

This species, with a 4-rayed featherclaw, has these definitive features: a thin, almost complete median line ending in a dart-shaped mark at rear shield margin; admedian and other lines thin; small bead-like microtubercles rather close-spaced and ahead of ring margins. Another Hawaiian species, Eriophyes pisoniae (K.) (Eriophyid Studies B-12:5, Cal. Dept. Agr. June 11, 1964) has some similarity by having a weakened central shield pattern, and having rounded off microtubercles ahead of ring margins. But pisoniae has hardly any median shield line and microtubercles coarser.

Female 155 μ -17 μ long, 45 μ thick; wormlike and probably light yellowish-white in life. Rostrum 17 μ long, curved down; antapical rostral seta 5 μ long. Shield 22 μ long by 27 μ wide; design of faint lines: median line nearly complete, ending at rear margin in dart-shaped mark; admedian lines weak and subparallel to median, curving outward near rear and slightly recurved. Shield laterally with a weak line and longitudinal row of granules above coxae. Dorsal tubercles 15 μ apart, directing setae divergently to rear; dorsal setae 26 μ long. Foreleg 23 μ long; tibia 5 μ long, with 4 μ seta at 1/4; tarsus 5 μ long; claw 6 μ long; featherclaw 4-rayed. Hindleg 20 μ long, tibia 3.5 μ long, tarsus 5 μ long, claw 6 μ long. Coxae ornamented with some curved lines and granules; sternal line of moderate length and slightly bifurcate at rear; first setiferous coxal tubercles slightly behind anterior forecoxal approximation and a little farther apart than second; second coxal tubercles somewhat ahead of level of third tubercles. Abdominal thanosome with about 54 rings, completely microtuberculate, the microtubercles small, rounded off, numerous, and set ahead of ring margins; these microtubercles gradually moving to margins toward thanosome rear. Lateral seta 12 μ long, on ring 8 behind shield; first ventral seta 25 μ long, on ring 21; second ventral seta 7 μ long, on ring 36. Abdominal telosome with 6 rings, completely microtuberculate, the microtubercles on ring margins and with slight anterior extension, the microtubercles becoming fainter dorsally. Telosomal seta 11 μ long. Accessory seta very small. Female genitalia 17 μ wide, 10 μ long; coverflap with about 10 longitudinal ribs; seta 6 μ long.

Male about 130 μ long.

Type locality: Glenwood Forest (a 'wet' forest), on Hawaii, the large island
Collected: Mar. 3, 1973 by Clifton J. Davis and sent me by Dr. F. Haramoto
under Haw. Dept. Agr. #73-172

Host: Pelea clusiaefoliae Gray (Rutaceae) alani

Relation to host: The mites make fairly large and disfiguring evaginated erineum patches on leaf undersides; the evaginations subcircular.

Type material: Five slides comprise the mounted specimens. They have the above data. One slide designated the type, the others paratypes. There is also a small jar with leaves bearing mites and erinea.

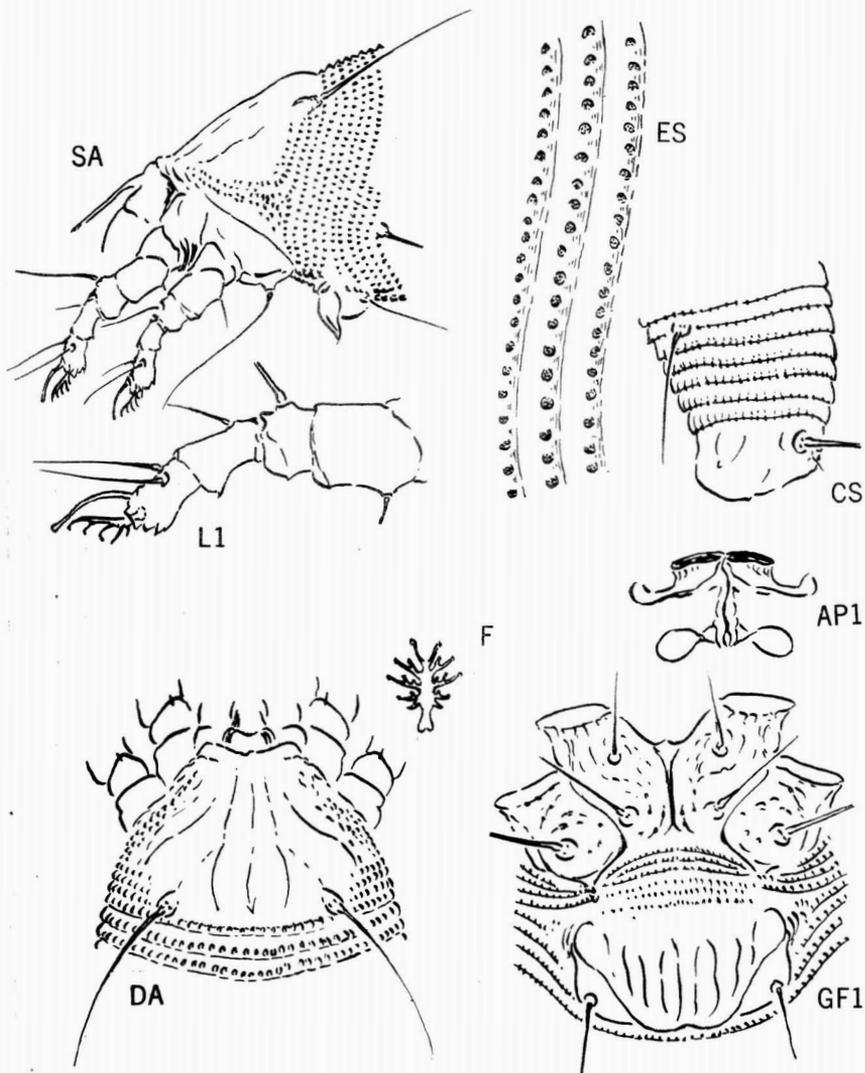


Plate 4 - *Eriophyes peleae*, new species

Phytoptus metrosideri, new species

Plate 5

The genotype of *Phytoptus*, which is *tiliae* Pgst., has 4-rayed featherclaws and dorsal tubercles that incline forward from the rear shield margin. The new species here described has these features, but unlike many other members of the genus, *metrosideri* has featherclaws which lack branches from the rays. The microtubercles on this new species are rounded off; approximately the last eleven thanosomal rings, and all of the telesomal rings, lack dorsal microtubercles.

Female 140 μ -160 μ long, 40 μ thick; body wormlike; color light yellowish-white. Rostrum 19 μ long, downcurved; antapical seta 5 μ long. Shield 25 μ long, 35 μ wide; design faint: median line present on rear 1/2; admedian lines thin, partially composed of granules but otherwise complete, diverging to rear shield margin; faint submedian lines in area anterior to dorsal tubercles. Sides of shield hardly lined, a band of granules above coxae; 2 or 3 partial rings below dorsal tubercle. Dorsal tubercles 15 μ apart, inclined forward from rear shield margin; dorsal setae 20 μ long, projecting divergently forward. Foreleg 28 μ long; tibia 5 μ long, with 7.5 μ seta at 1/3; tarsus 6 μ long; claw 7.5 μ long, with small terminal club; featherclaw 4-rayed, the rays lacking branches. Hindleg 26 μ long, tibia 5 μ long, tarsus 6 μ long, claw 7.5 μ long. Forecoxae with some ornamentation of coarse granules; rather short sternal line, slightly bifurcate anteriorly. First setiferous coxal tubercle farther apart than second and set somewhat ahead of level of anterior end of sternal line; second coxal tubercles a little ahead of level of third tubercles. Abdominal thanosome with about 57 rings; completely microtuberculate on first 44-46 rings, the microtubercles broad-elliptical, resting on margins and rounded off. Approximately last 11 thanosomal rings lacking dorsal microtubercles. Lateral seta 20 μ long, on ring 8 behind shield; first ventral seta 21 μ long, on ring 18; second ventral seta 13 μ long, on ring 37. Abdominal telosome with about 6 rings, lacking microtubercles dorsally but with fine microtubercles on margins and elongate forward toward last ring. Telosomal seta 21 μ long. Accessory seta absent. Female genitalia 19 μ wide, 13 μ long; coverflap with 8 or 9 longitudinal ribs and basally with two transverse rows of coarse granules; seta 9 μ long.

Male about 120 μ -135 μ long.

Type locality: Mauna Loa, Hawaii (the mite said to occur from sea level up to 8000 feet on the mountain; also on Oahu)

Collected: Mar. 30, 1973 by L. M. Nakahara and sent by Dr. F. M. Haramoto

Host: *Metrosideros collina polymorpha* (Myrtaceae-Myrtiflora) "ohia"

Relation to host: the mites live in buds; suspected of carrying a virus.

Type material: a vial with mites and bud parts in liquid. There are four slides, made from mites taken from the vial; one slide labelled type, the other three labelled paratype.

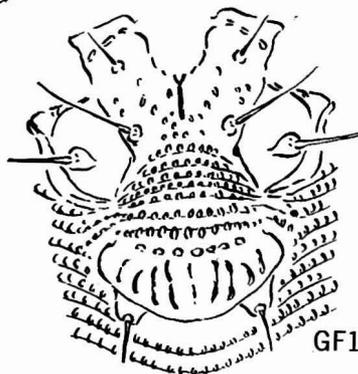
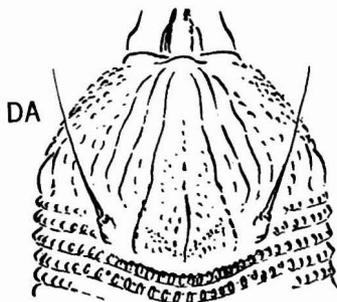
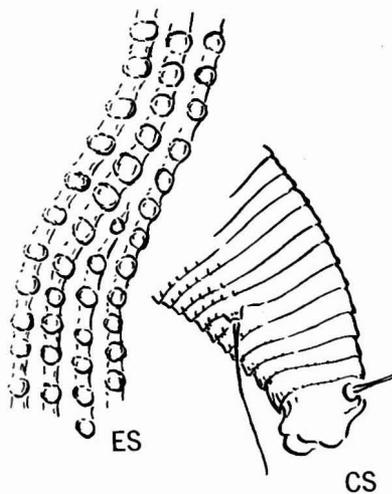
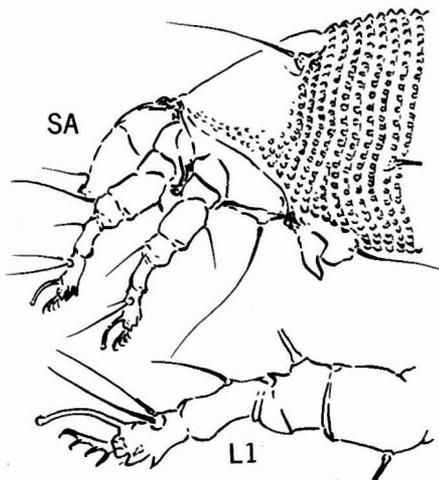


Plate 5 - *Phytophagus metrosideri*, new species

Acalitus hassani, new species

Plate 6

This species has certain general *Acalitus* characteristics including lack of distinct differentiation of forecoxae along median line; first setiferous coxal tubercles set up near anterior end of forecoxae; second coxal tubercles nearly in a line between first and third; and lack of accessory seta. The female genital coverflap also has a central curved transverse line and basal granules. While there is an increasing series of species being discovered that belong to *Acalitus*, this particular one does not seem to be closely related to any. The principal differentiating features of this mite are the 7-rayed featherclaw, and the strong and involved shield design. The mite is named for El Fatih Osman Hassan who is studying eriophyids at the University of Khartoum, and who collected this species.

Female 160 μ -195 μ long, 45 μ thick; wormlike in shape and evidently yellowish-white in life. Rostrum 16 μ long, projecting diagonally down; ant-apical rostral seta very small. Shield 26 μ long by 38 μ wide. Shield design a network of strong lines: median line on rear 2/3, meeting slight diagonal lines from admedians at 2/3, and ending in center of three-pointed cross structure of heavy lines at rear margin; admedian lines close anteriorly, gradually diverging and ending at lateral points of the rear heavy cross line; first submedian line close to admedian and curving to join it at just past 1/2; second submedian extending back from near shield front; receiving branch at about 1/2 on shield and ending in front of dorsal tubercle in the sinuate cross line in front of tubercle; a branch of second submedian, starting near front of shield extends back onto side of shield and joining branched lines at side below dorsal tubercle. Shield laterally bulging near rear margin and from there with sides acuminate to chelicera base. Dorsal tubercles 21 μ apart, directing setae somewhat divergently to rear; dorsal setae 18 μ long. Foreleg 31 μ long; tibia 5 μ long, tarsus 9 μ long, claw 9 μ long, featherclaw 7-rayed, forefemur with no ventral spine or ridge. Hindleg 29 μ long, tibia 5 μ long, tarsus 9 μ long, claw 10 μ long. Coxae with slight series of pointed granules, mostly apical; forecoxae not definitely separate; first setiferous coxal tubercles set up near anterior end of forecoxae; second coxal tubercles slightly inside of line between first and third tubercles. Abdominal thanosome with about 58 rings; rings completely microtuberculate, the microtubercles variably pointed over ring margins, more elongate dorsally. Lateral thanosomal seta 17 μ long, on ring 8 behind shield; first ventral seta 43 μ long, on ring 21; second ventral seta 25 μ long, on ring 35. Abdominal telosome with 5 rings, the microtubercles fine and pointed over margins, tending to be ahead of margins dorsally; telosomal seta 15 μ long. Accessory seta absent. Female genitalia 12 μ long, 22 μ wide; female coverflap with a cross anteriorly concave curved line centrally and with granular area basally; seta 15 μ long.

Male about 130 μ -150 μ long.

Type locality: Shambat, Khartoum district, Sudan

Collected: July 1973 by El Fatih Osman Hassan

Host: *Salvadora persica* L. (Salvadoraceae) mustard plant

Relation to host: The mites make undersurface erineum patches which evaginate out onto upper leaf surface. Many leaves are completely deformed by this erineum. The erineum consists of simple twisted papillae.

Type material: There are five slides made from mites in erineum on dry, more or less deformed leaves. One of the five slides, with the above data, is designated as type and the rest as paratypes.

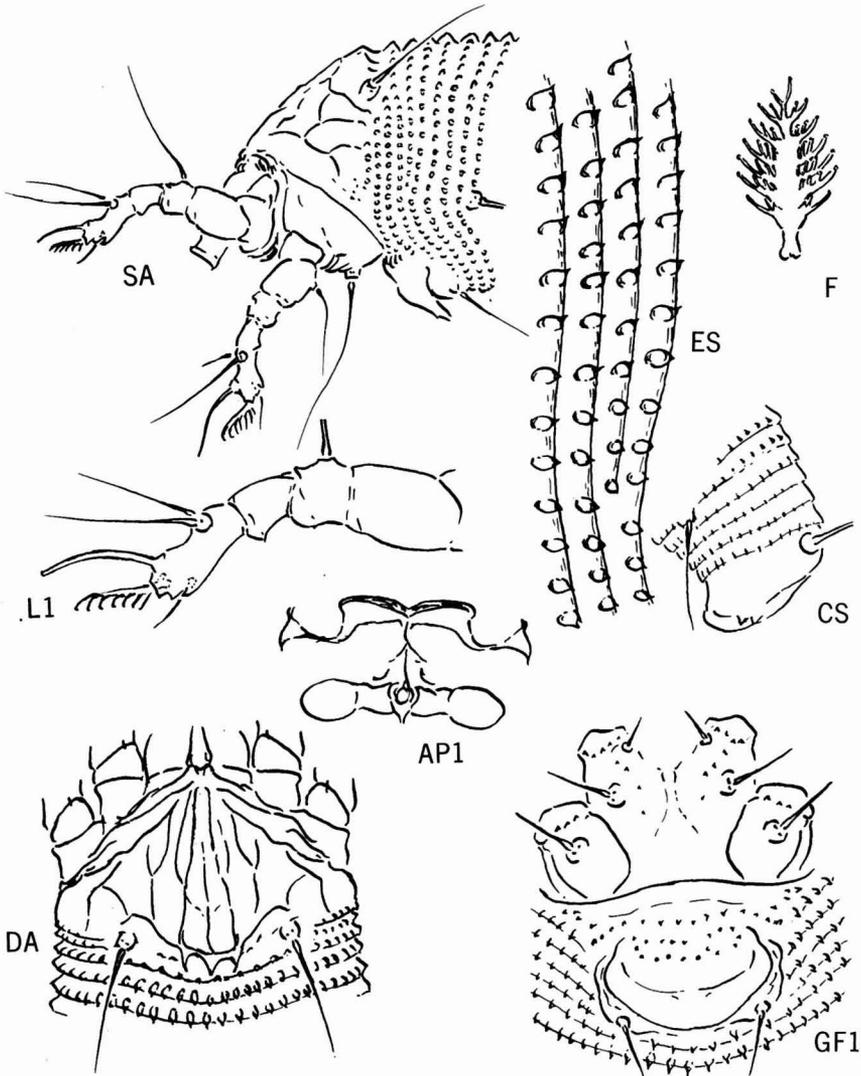


Plate 6 - *Acalitus hassani*, new species

Aculops gutierrezii, new species

Plate 7

Perhaps the Eriophyinae and Phyllocoptinae approach each other closest in intergrades between Eriophyes and Aculops. Eriophyes has little or no shield overhang above the rostrum, and the abdominal thanosome has rings not differentiated laterally into broader tergites and narrower sternites. Aculops typically has a definite anterior lobe over the rostrum which is more or less acute. The thanosome is differentiated laterally into tergites and sternites on the great number of typical species in the genus. The present Madagascan mite on Boerhavia has a small inconsequential anterior shield lobe which seems to have a slight emargination. This lobe is not enough to keep the species out of Eriophyes. But the definite lateral differentiation into tergites and sternites, on the thanosome, shows that the species goes into Aculops. A species which brings Eriophyes and Aculops closer than in the present case, is Aculops massalongoi (Nal.). Massalongoi is a rust mite on lilac, Syringa, but it has no dorso-ventral thanosomal differentiation, and but a small anterior shield lobe.

The present new species, gutierrezii, has the following features of note; broken median line; outwardly diagonal row of 'cells' across in front of the dorsal tubercle; fine but sharp microtubercles; 6-rayed featherclaw. It has not been possible to find another species close enough for adequate comparison.

Female 170 μ -185 μ long, about 50 μ thick; tapering-wormlike; color in life probably light yellowish-white. Rostrum 22 μ long, projecting down; antapical rostral seta 6 μ -7 μ long. Shield 33 μ long, 36 μ wide, subtriangular in dorsal view with sides slightly outcurved; anterior shield lobe very short and with slight central emargination. Median shield line broken, present centrally and on rear 1/3 of shield. Admedian line complete, gentle outwardly convex anterior part to just beyond 1/2, with cross line at about 1/3, meeting a cross line at 2/3; rear part of admedian curving out from a cross line and then recurving to center just ahead of rear shield margin, an outer short extension inside dorsal tubercle area reaches rear margin. Submedian shield lines describing three 'cells' running diagonally outward and back in front of dorsal tubercle. Lateral longitudinal shield lines and longitudinal band of granules above coxae. A series of partial rings below lateral shield angle. Dorsal tubercles 26 μ apart; dorsal setae 21 μ long, projecting diagonally to rear. Foreleg 37 μ long; tibia 7.5 μ long, with 7 μ seta at 1/4; tarsus 6 μ long; claw 8.5 μ long; featherclaw 6-rayed. Hindleg 34 μ long, tibia 7 μ long, tarsus 6.5 μ long, claw 9 μ long. Coxae with some granules and slight lines; sternal line of moderate length and with thin rear bifurcation. First setiferous coxal tubercle ahead of second and opposite anterior end of sternal line; second coxal tubercle somewhat ahead of line across third tubercles. Abdominal thanosomal tergites about 46 in number, and sternites 58. Tergal-sternal differentiation along lateral line definite. Thanosome completely microtuberculate, the microtubercles pointed but usually tending to be ahead of tergal and sternal margins. To rear thanosome microtubercles moving closer to margins. Lateral seta 23 μ long, on sternite 8 behind shield; first ventral seta 46 μ long, on sternite 22; second ventral seta 36 μ long, on sternite 38. Telosome with about 7 rings, the microtubercles fine and on ring margins, these microtubercles having slight anterior extensions. Accessory seta 4 μ long. Female genitalia 20 μ wide, 15 μ long; coverflap with about 8 longitudinal ribs which are more or less shortened and curved; basally the coverflap with three transverse lines of granulations; genital seta 26 μ long.

Male about 165 μ -175 μ long.

Type locality: Tulear (alt. 10m), southwest Madagascar

Collected: May 1973, by J. Gutierrez and R. Delattre. I am pleased to name this mite for Dr. Gutierrez who has sent me a number of eriophyids.

Host: Boerhavia diffusa L. (Nyctaginaceae- Centrospermae)

Relation to host: The mites live in buds and on stunted shoots

Type material: There is a small vial of mites in liquid from which vial the specimens on the slides were taken. Of five slides one is the type, the remainder paratypes

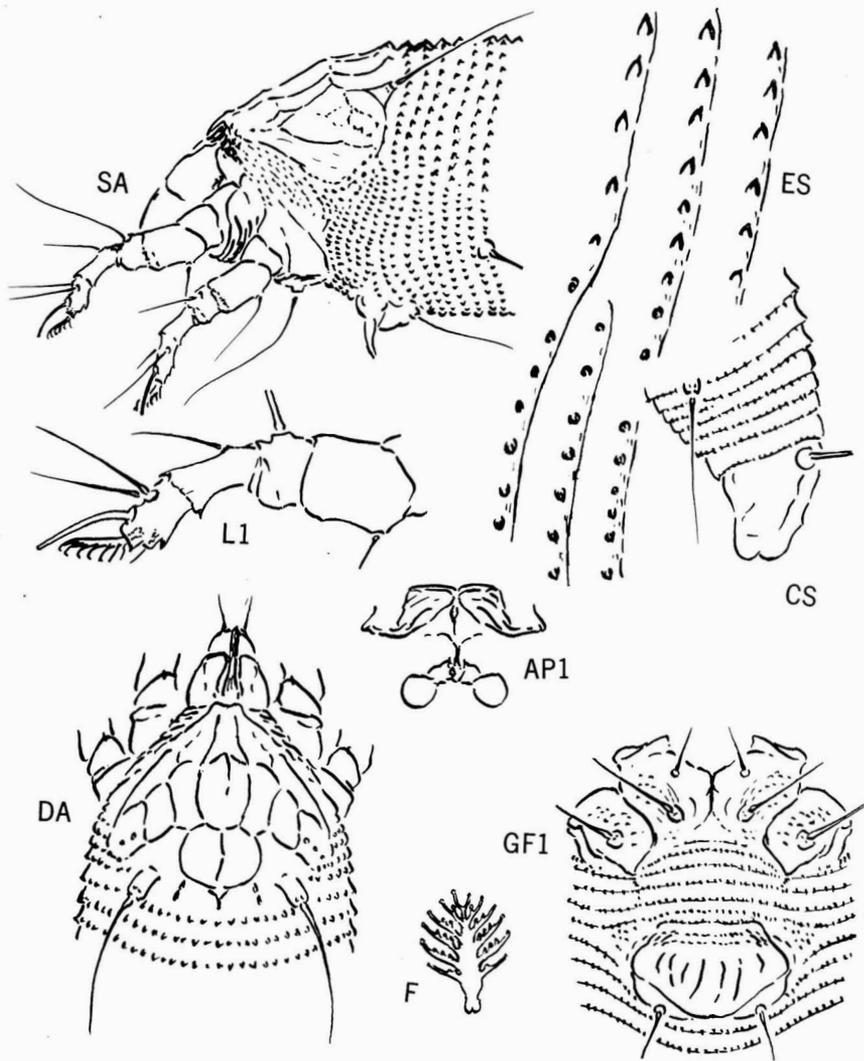


Plate 7 - *Aculops gutierrezii*, new species

Phyllocoptes cruttwellae, new species

Plate 8

The characters of this species with 4-rayed featherclaws are: broad shield with design absent; dorsal tubercles set somewhat ahead of rear shield margin and with elongate axes directed diagonally inward to rear; somewhat upturned anterior shieldlobe, with small indentations in dorsal view and displaying numerous transverse small grooves from side view; broad tergites on the abdominal thanosome, which extends back half way onto the telosome; microtubercles limited to sternites. This species has no particularly close relatives in the genus, being more like species of *Anthocoptes*. However, the genus *Anthocoptes* is defined by having a suddenly contrasting telosome, which *cruttwellae* lacks. I am happy to name this mite for Rachel Cruttwell, of the Commonwealth Institute of Biological Control, Trinidad, who is investigating life histories and host plant preferences in that area.

Female 164 μ -204 μ long, 55 μ thick; fusiform; color evidently yellowish-white. Rostrum 21 μ long, projecting down; antapical rostral seta 3.5 μ long. Shield 50 μ long, 55 μ wide; anteriorly almost subsemicircular, with projecting anterior lobe which is broad; anterior lobe in dorsal view with many indentations, lobe somewhat upturned, with rather deep anterior edge crossed by numerous transverse furrows. Dorsal tubercles set somewhat ahead of rear shield margin, long axis gently diagonal inwardly to rear, the tubercles 25 μ apart; dorsal setae 5.5 μ long, projecting diagonally ahead and up. Foreleg 35 μ long; tibia 8 μ long, with 3.5 μ seta at 1/3; tarsus 7 μ long; claw 6 μ long, end knobbed; featherclaw 4-rayed. Hindleg 33 μ long, tibia 6 μ long, tarsus 6.5 μ long, claw 5.5 μ long. Coxae fairly smooth; moderately strong sternal line between forecoxae; first setiferous coxal tubercle a little ahead of anterior forecoxal apporximation; second setiferous coxal tubercle slightly ahead of level of third tubercle. Abdominal thanosome with about 14 broad tergites and 55 sternites; microtubercles limited to sternites, where they are elliptical and touching margins. Lateral seta 8 μ long, on sternite 6 behind shield; first ventral seta 26 μ long, on sternite 23; second ventral seta 17 μ long, on sternite 40. Telosome with broad tergites anteriorly, followed by two narrow rings dorsally; ventrally the telosome with about 6 sternites or rings; microtubercles on telosome limited to sternites anteriorly, but nearly complete on last two rings; each microtubercle as fine bead on margin, extending a short distance as fine line. Telosomal seta 22 μ long. Accessory seta 2 μ long. Female genitalia 23 μ wide, 17 μ long; coverflap with about 10 longitudinal ribs; coverflap basally with sparse granules; seta 8 μ long.

Male about 150 μ long.

Type locality: Curepe, Trinidad

Collected: January 1973 by Rachel Cruttwell

Host: *Eupatorium odoratum* L. (Compositae-Campanulatae) eupatory

Relation to host; the mites are vagrants on leaf undersides and on petioles

Type material: there are dry leaves with mites bearing thr above data. Five slides were made from mites on these leaves: one slide designated as the type and the others as paratypes

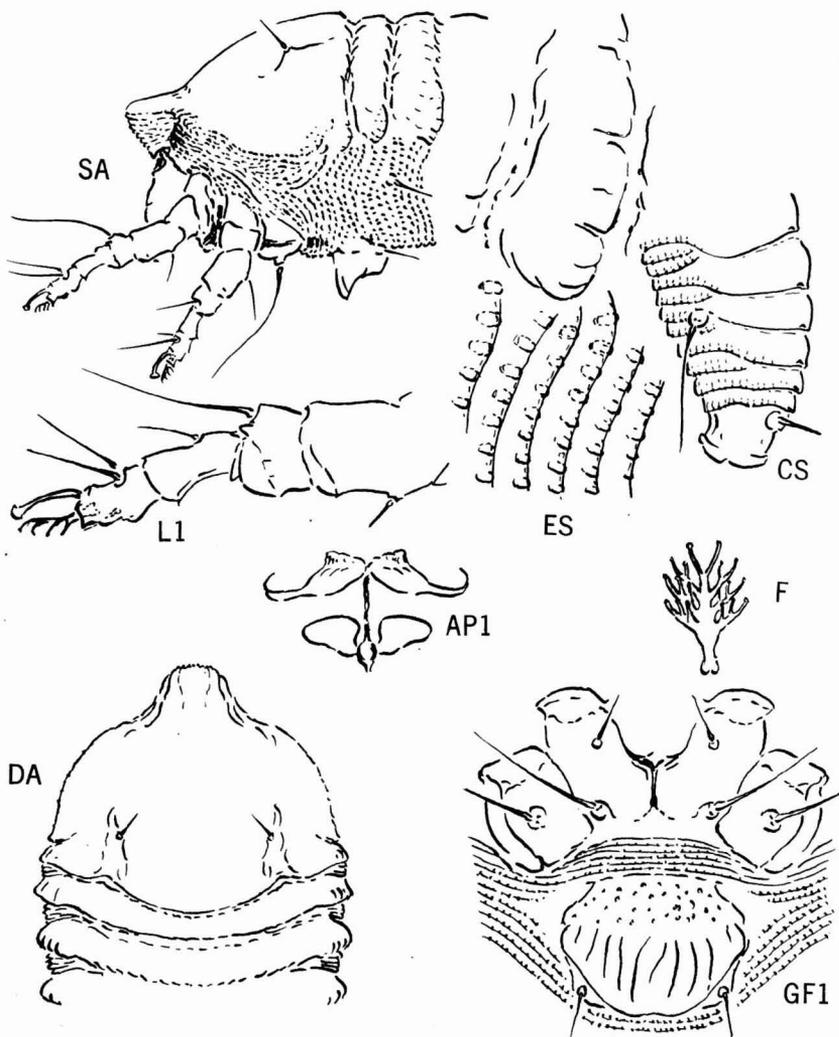


Plate 8 - *Phyllocoptes cruttwelliae*, new species

Phyllocoptes sidae, new species

Plate 9

This species has 3-rayed featherclaws, an uncommon feature in the genus. A Brazilian eriophyid, tentatively referred to *Phyllocoptes*, also has 3-rayed featherclaws. It is *P. bouganvilleae* K. (Eriophyid Studies XXVIII, in Occ. Papers #2, Cal. Bureau of Ent. p.10, Dec. 30, 1959). This *bouganvilleae* mite differs from *sidae* by having a strong central shield pattern and median line, but also by having numerous elongate microtubercles on the tergites. A review of some species with 4-rayed featherclaws did not reveal any species similar to *sidae*.

Female 152 μ -173 μ long, about 55 μ wide and thick; a robust mite of general fusiform shape; color in life probably light yellowish-white. Rostrum 26 μ long, projecting down; antapical seta 6 μ long. Shield 52 μ long, 53 μ wide, subtriangular in dorsal view with somewhat attenuate anterior lobe, this lobe with acute anterior edge and of moderate thickness. Shield design in center not clear: an angled cross line at anterior lobe base; a series of curved lines from lateral anterior lobe base forms a series of 'cells' extending laterally along side of shield; a median line indicated by gently curved line on rear shield center, ending well ahead of rear margin. Dorsal tubercles with longitudinal axes, extending back to rear margin, 28 μ apart; dorsal setae 8 μ long, extending up. Foreleg 38 μ long; tibia 10 μ long, with 6 μ seta at 1/3; tarsus 7.5 μ long; claw 9 μ long, downcurved, with slight apical knob; feather-claw 3-rayed. Hindleg 35 μ long, tibia 7.5 μ long, tarsus 7.5 μ long, claw 6 μ long. Coxae ornamented with some curved lines; sternal line fairly long, bifurcate front and rear; first setiferous coxal tubercles slightly farther apart than second and opposite anterior end of sternal line; second tubercles a little ahead of third coxal tubercle position. Thanosome with about 14 moderately broad tergites, these tergites with fine bead-like microtubercles on lateral margins, extending forward to some extent, rest of tergites smooth. Thanosomal sternites about 56 in number; microtubercles on sternites fine, small, resting on sternite margins; 4 or 5 sternites to each tergite. Lateral seta 12 μ long, on sternite 8 behind shield; first ventral seta 32 μ long, on sternite 25; second ventral seta 22 μ long, on sternite 42. Abdominal telosome with 4 tergites and about six sternites; microtubercles completely around both tergites and sternites, as also on tergites and sternites just ahead of telosome; ventral telosomal microtubercles extended forward to some extent; telosomal seta 28 μ long. Accessory seta 2 μ long. Female genitalia 20 μ long, 29 μ wide; coverflap with about 12 short, longitudinal ribs, and basally with a pattern of sparse granules or short dashes; seta 14 μ long.

Male about 150 μ long.

Type locality: Zapotlanejo, Mexico

Collected: July 30, 1970, by Donald M. Tuttle, University of Arizona

Host: *Sida* sp. (Malvaceae)

Relation to host: the mites are presumably leaf vagrants

Type material: as well as mites in liquid in a vial there is a type series of seven slides, one of which is designated type, and the others paratypes.

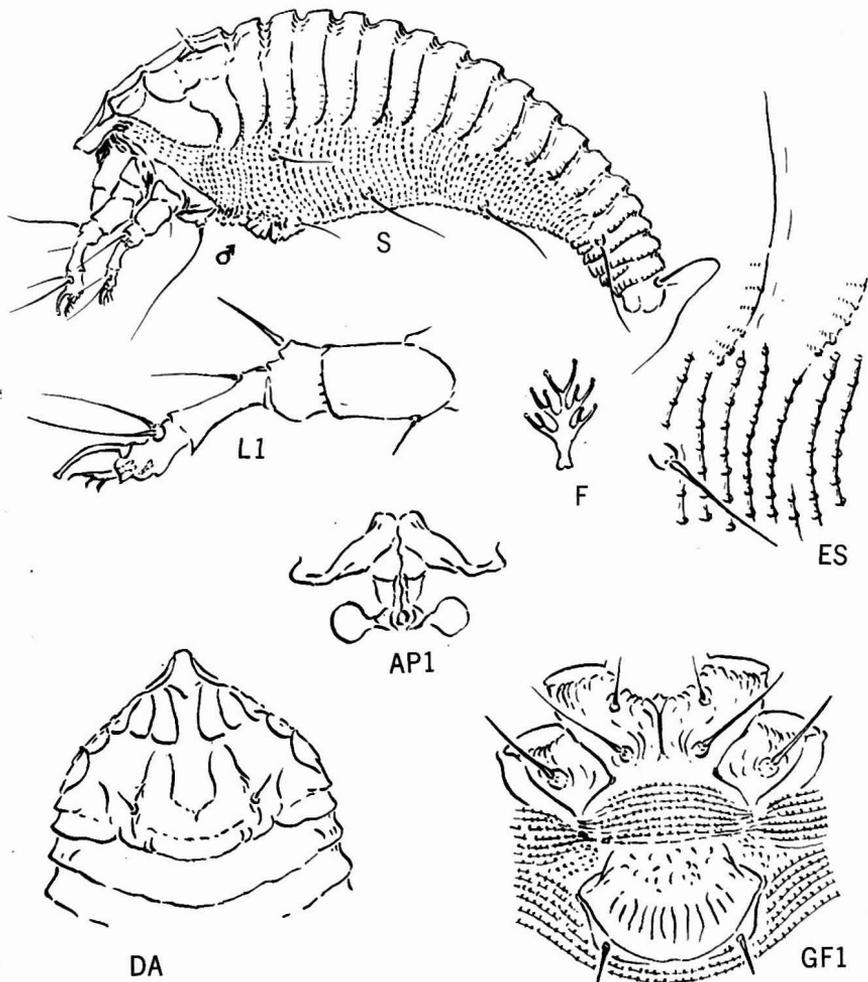


Plate 9 - *Phyllocoptes sidae*, new species

Vasates physenae, new species

Plate 10

The genus *Vasates* Shimer, in the *Phyllocoptinae*, is defined by having the dorsal shield tubercles touching the rear shield margin, but with axes diagonally divergent to rear, and directing the dorsal setae convergently to the rear. *Phyllocoptes* species have dorsal tubercles which are often ahead of the rear shield margin, and which have longitudinal axes. If these tubercles are occasionally round they are bent and direct the setae ahead. In the genus *Vasates* the species *quadripedes* Shimer, which is the genotype, makes leaf galls on *Acer saccharinum* L. A related species, *V. aceris-crumena* (Riley), makes finger galls on leaves of *Acer saccharum* L. A third species, with dorsal tubercles following the *Vasates* pattern, *V. tucsonensis* K., lives on hairy fruits of *Larrea divaricata* Cav. creosote bush, in western North American deserts. The new species, living in Madagascar, also has the *Vasates* dorsal tubercles. All of these species have elongate microtubercles on the abdominal tergites, and they have 4 or 5-rayed featherclaws. Otherwise the non-*Acer* feeding mites seem unrelated to those on *Acer*. But to submerge them in *Phyllocoptes* would hide the dorsal tubercle character, and reduce *Phyllocoptes* to a synonym. The new species, *physenae*, is characterized by the 4-rayed featherclaw, a somewhat attenuate and projecting anterior shield lobe, sides of shield heavily covered with lines of granules, and very strong elongate microtubercles on the tergites.

References: *tucsonensis*, - Eriophyid Studies, Cal. Dept. Agr. B-19:11, July 1923 for *quadripedes* Shimer, and *aceris-crumena* (Riley) see Hodgkiss, New York Maple Mites, N. Y. State Agr. Exp. Sta. Tech Bul. 163, July 1930

Female length 190 μ -205 μ , width 55 μ , 45 μ thick; elongate-fusiform, tapering; color in life probably light yellowish-white. Rostrum 29 μ long, projecting down; antapical rostral seta 6 μ long. Shield 51 μ long, 52 μ wide; sides rounded out and with anterior lobe thin and long-attenuate; anterior edge of lobe with transverse groove around front edge. Median shield line present only just ahead of rear margin; admedians complete, sinuate, somewhat divergent between dorsal tubercles. First submedian line present on anterior shield half, subparallel to admedian and ending in series of lines of granules well ahead of dorsal tubercle. Sides of shield heavily lined with granules; about 2 partial rings below dorsal tubercle. Dorsal tubercles 25 μ apart; dorsal setae 6 μ long. Foreleg 38 μ long; tibia 12 μ long, with 6 μ seta at about 1/4; tarsus 8 μ long; claw 8 μ long; featherclaw 4-rayed. Hindleg 39 μ long, tibia 10 μ long, tarsus 8 μ long, claw 7 μ long. Coxae with lines of granules curved around tubercles; sternal line rather short and somewhat bifurcate anteriorly. First setiferous coxal tubercles a little ahead of anterior end of sternal line and slightly farther apart than second tubercles; second tubercles somewhat ahead of level of third tubercles. Abdominal thanosome with about 38 tergites and 65 sternites. Tergites with prominent elongate microtubercles. Sternal microtubercles more beadlike and resting on ventral ring margins. Lateral seta 42 μ long, on sternite 7 behind shield; first ventral seta 63 μ long, on sternite 25; second ventral 16 μ long, on sternite 46. Telosome with 6 or 7 rings. Rings completely microtuberculate with small microtubercles on ring margins, the more ventral ones anteriorly elongate. Rear rings of thanosome with microtubercles more like telosome rings. Telosomal seta 21 μ long. Accessory seta absent. Female genitalia 25 μ wide, 20 μ long; coverflap with about 16 irregular ribs, some curved; coverflap basally with some granules.

Male about 140 μ long.

Type locality: Port-Bergé, alt. 200m, Madagascar ouest

Collected: Aug. 26, 1967, by J. Gutierrez

Host: *Physena sessiliflora* Tyl. (Flacourtiaceae)

Relation to host: leaf edgerolling

Type material: Mites in the original vial in liquid, and five slides made from specimens in this vial. One slide with above data labelled type, the remainder labelled as paratypes.

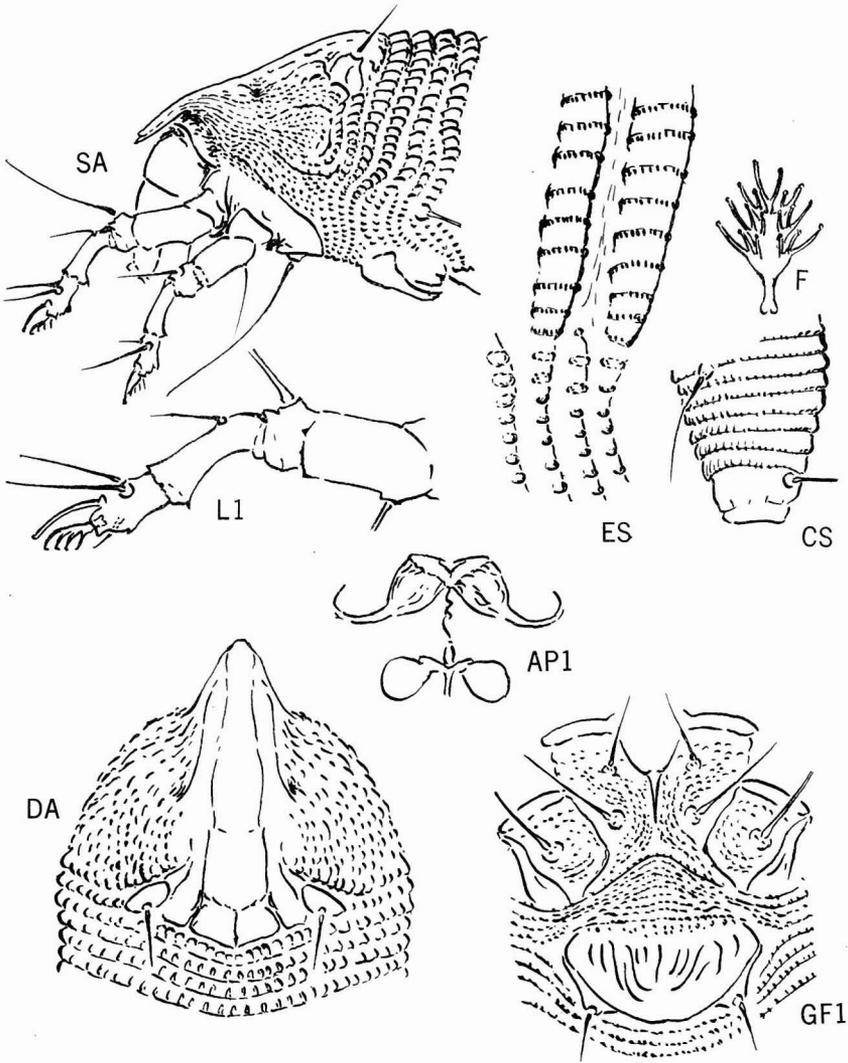


Plate 10 - *Vasates physenae*, new species

Heterotergum zexmeniae, new species

Plate 11

This species has 6-rayed featherclaws. It is comparable to H. wilsoni K. (Eriophyid Studies XXIV, Bul. Cal. Dept. Agr. 44(4), 161, Jan 23, 1956). This new species is larger than wilsoni, and differs further in having one less ray on the featherclaw, but it also has one more thanosomal tergite than wilsoni.

Female 130 μ -145 μ long, about 45 μ thick; fusiform, body somewhat curved; color in life probably light yellowish-white. Rostrum 18 μ long, projecting down; antapical seta 3 μ long. Shield 32 μ long, 39 μ wide, subtriangular in dorsal view with sides outcurved; anterior lobe short, with 8 transverse channel just under front edge. Shield design absent, a band of granules along side above coxae. Dorsal tubercles 25 μ apart, directing dorsal setae divergently to rear; dorsal setae 8 μ long. Foreleg 25 μ long; tibia 5 μ long, with 3.5 μ -4 μ seta at 1/3; tarsus 5 μ long; claw 7 μ long, fairly straight and with slight knob; featherclaw 6-rayed. Hindleg 24 μ long, tibia 4 μ long, tarsus 5 μ long, claw 7.5 μ long. Coxae with a few short curved lines; sternal line between coxae short, broad anteriorly; first setiferous coxal tubercles slightly ahead of level of sternal line and a little further apart than second; second coxal tubercles a little ahead of level of third tubercles. Abdominal thanosome with 8 broad tergites, the first preceded by 3 narrow rings, the last overlapping half of telosome. Microtubercles confined to sternites except for slight lines on sides of tergites; microtubercles elliptical and resting on margins. Lateral seta 11 μ long, on sternite 7 behind shield; first ventral seta 22 μ long, on sternite 18; second ventral 6 μ long, on sternite 32; about 50 sternites on thanosome. Abdominal telosome with 6 rings showing below, the first three overlapped by last tergite; microtubercles on venter of rings, but weak or absent from dorsum of the three complete rings; telosomal seta 12 μ long. Accessory seta 2 μ long. Female genitalia 13 μ long, 19 μ wide; coverflap with 11-12 longitudinal ribs and two cross lines basally, which are more or less granular; seta 11 μ long.

Male about 130 μ long, 34 μ thick.

Type locality: Zapotlanejo, Mexico

Collected: July 30, 1970, by Donald M. Tuttle, University of Arizona

Host: Zexmenia sp. (Compositae)

Relation to host: The mites are presumably leaf vagrants

Type material: As well as a vial with mites from this host in liquid, there are 5 slides with the above data. One slide is designated as type, and the remainder as paratypes.

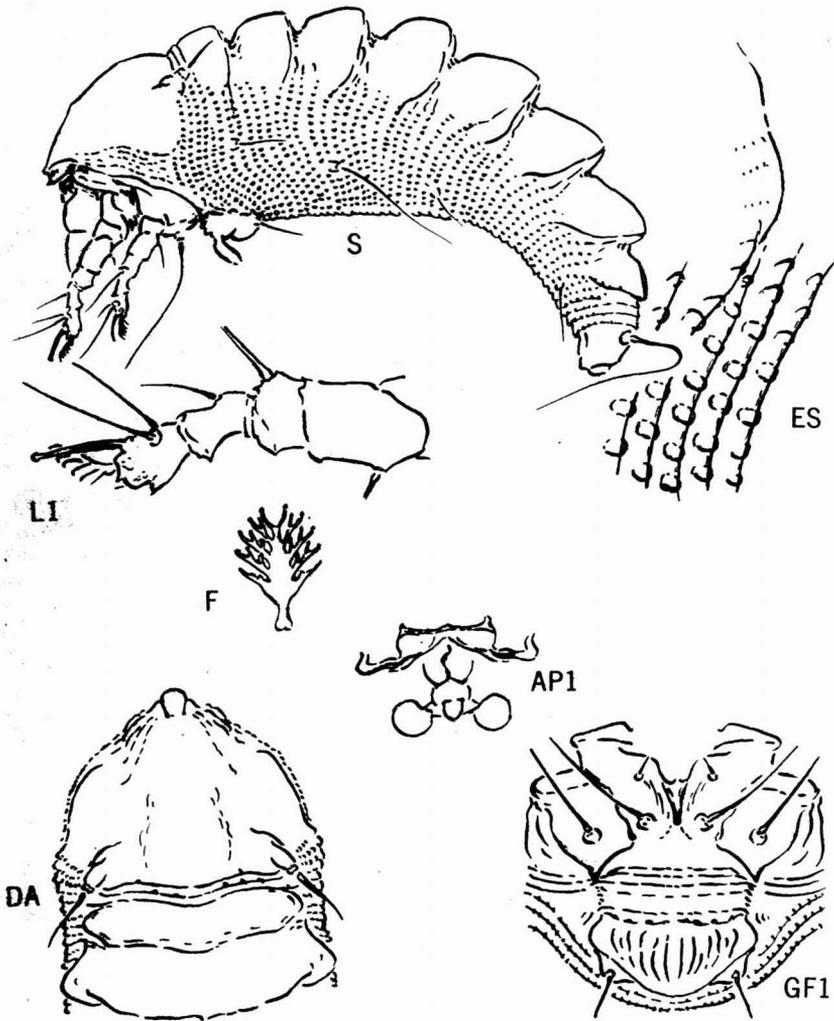


Plate 11 - *Heterotergum zexmeniae*, new species

Floracarus theobromae, new species

Plate 12

This species is described from one female. It is comparable to *Floracarus talisiae* K. (Eriophyid Studies C-2:17, USDA, May 20, 1969) The new species is similar to *talisiae* by possessing a sternal line between the forecoxae, but this line is longer. The shield pattern differs from *talisiae* by having admedian lines that are straighter to rear; general granulation between lateral lines on shield; smaller dorsal tubercles; small spinules covering legs; many more ring microtubercles which are beadlike and not pointed.

Female length 164 μ , width 52 μ , thickness 50 μ ; a robust fusiform species, tapering strongly to rear; color in life unknown. Rostrum 19 μ long and projecting down; antapical seta 2 μ long. Shield 35 μ long, 49 μ wide, broadly sub-circular in dorsal view, strongly declivitous, with slight anterior lobe over rostrum. Shield design consisting of strong lines: median and admedian lines complete, subparallel, joined by cross lines at 1/5, about 1/3 and 2/3 and the admedians flaring but slightly ahead of rear of shield margin. Submedian lines forming a network ahead and laterally below dorsal tubercles, submedian and especially lateral areas on shield heavily granular between lines. Dorsal tubercles well ahead of rear margin but directing setae divergently to rear, 36 μ apart; dorsal setae 5 μ long. Foreleg 24 μ long; tibiotarsus 9 μ long; no claw; featherclaw 4-rayed. Hindleg 23 μ long; tibiotarsus 7.5 μ long; claw 7 μ long, straight, with small knob. Coxae with some granules, arranged in circular patterns on forecoxae; forecoxae separated by sternal line of some length, small bifurcation front and rear; setiferous coxal tubercle absent; second coxal tubercle well ahead of level of third. Abdominal thanosome with about 46 rings, describing a slight lateral ridge anteriorly; microtubercles generally distributed on all rings, present as fine beads on margins and with slight anterior extensions, especially dorsally. Lateral seta 26 μ long, on ring 6 behind shield; first ventral seta 50 μ long, on ring 17; second ventral seta 10 μ long, on ring 30. Abdominal telosome with about 8 rings, completely microtuberculate, the anterior extensions of the microtubercles longer below; seta 17 μ long. Accessory seta minute. Female genitalia 20 μ wide, 16 μ long; coverflap granular; seta 7 μ long.

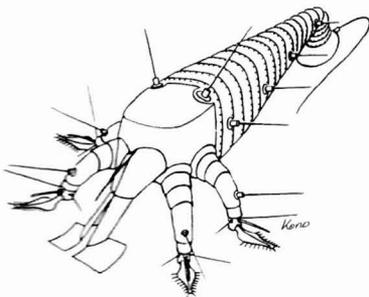
Type locality: Cauagua, Miranda State, Venezuela

Collected: Feb. 11, 1971, by Ernesto Doreste of the Central University of Venezuela

Host: *Theobroma cacao* L. (Sterculiaceae) cocoa plant

Relation to host: evidently a leaf vagrant. It appeared in preparations of buds which were infested by an *Eriophyes* sp. (The *Eriophyes* will be named and described by another author.)

Type material: one slide



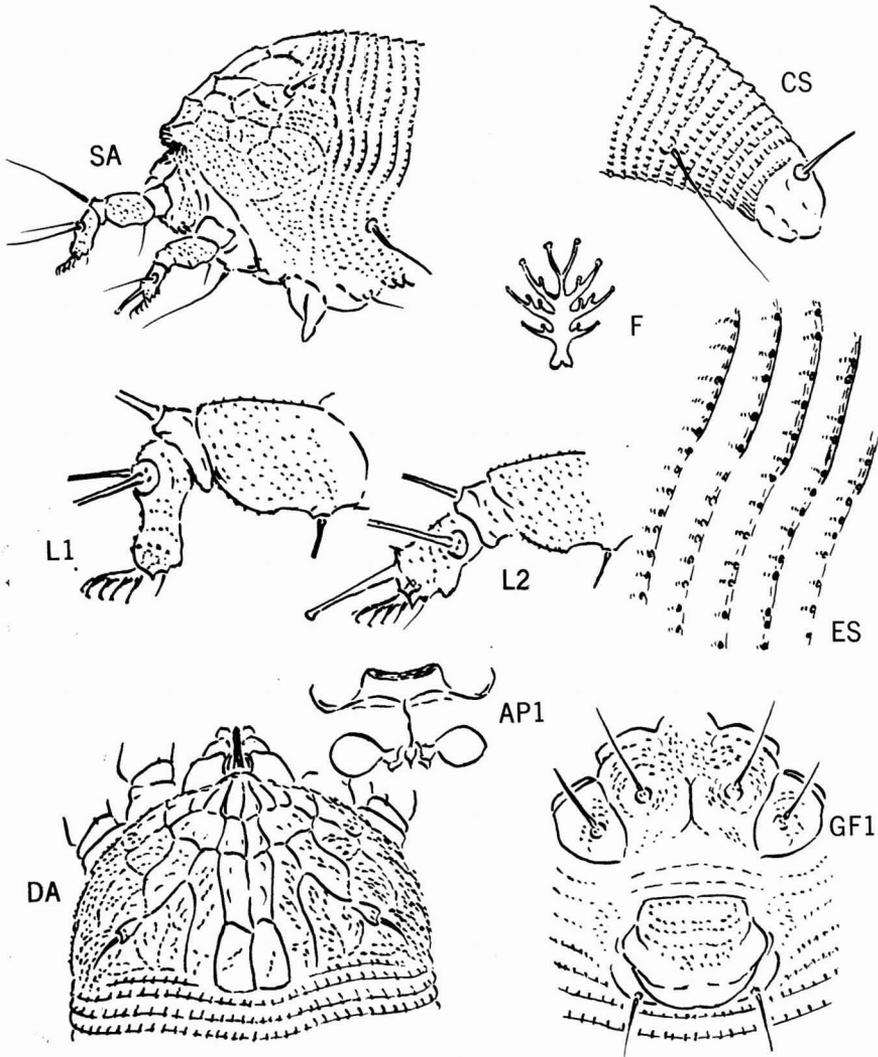


Plate 12 - *Floracarus theobromae*, new species