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ERIOPHYID STUDIES XXII

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The present installment of this series contains descriptions of, and names for nine new species of Eriophyid mites. Five new California species serve to advance our knowledge of the regional fauna, while an additional four species are included in view of their position as plant pests elsewhere. One species comes from tea in India and was received in the course of collaboration work with the U. S. Agricultural Research Service. Another from the same service forms leaf galls on a shade tree in the Marianas Islands. The remaining two come from Kansas and are the result of investigations seeking alternate hosts of the wheat-streak mosaic virus carrier, *Aceria tulipae* (K.)

Phytoptus yuccae Keifer, new species

Plate 233

Female 300-325 μ long, 50 μ thick, white, wormlike. Rostrum 33 μ long, slightly curved down. Shield 37 μ long, 50 μ wide; median line present on posterior $\frac{2}{3}$, broken; admedian lines complete, further apart when enclosing median; submedians irregular, first double anteriorly and running dorsad past dorsal tubercle; second submedian ending ahead of dorsal tubercle; laterally some short lines and granulations. Anterior shield setae 25 μ apart, 12 μ long; dorsal tubercles 19 μ apart, setae 5 μ long; dorsal tubercles ahead of rear shield margin. Forelegs 31 μ long; femur and patella fused; foretibia 6 μ long, tibial seta minute, tibial spur present; claw 10 μ long, tapering; featherclaw 8-rayed inwardly, 7-rayed outwardly. Hindlegs 27 μ long, tibia 5 μ long, tarsus 6 μ long, claw 9 μ long; femur and patella also fused. Anterior coxae hardly contiguous, granular. Abdomen with about 85 rings, the microtubercles evenly curved on outer side but elongate-oval in vertical view. Subdorsal seta 40 μ long, on about ring 9; lateral seta 12 μ long, on about ring 7; first ventral 15 μ long, on about ring 22; second ventral 5 μ long, on ring 48; third ventral 30 μ long, on ring 8 from rear. Accessory seta present. Female genitalia 25 μ wide, 13 μ long, coverflap smooth, seta 6 μ long.

Male not studied.

Type locality: Syracuse, Kansas. **Collected:** August 24, 1953, by C. F. Henderson of the U. S. Agricultural Research Service. **Host:** *Yucca glauca* Nutt. (Liliaceae), *Yucca*. **Relation to host:** The mites live in the center leaf whorl at the point where the leaves emerge from the bud. They do not occur at the bases of the outer leaves as far as the writer has been able to determine. **Type material:** A type and five paratype slides bear the above data. The remarkable feature of this mite is that the femur and patella are united, with only slight indentations to indicate the line of union. This mite is allied to grass infesting species of *Phytoptus* and is unique in the joint fusion on the legs.

Phytoptus montanus Keifer, new species

Plate 234

Female 290-340 μ long, 60-65 μ thick, white, wormlike. Rostrum 24 μ long, projecting ahead and a little down. Shield 42 μ long, 48 μ wide; median line present on rear $\frac{2}{3}$;

admedian lines complete, curving out and along side of median; submedian lines present, the first two irregular and curved, more or less broken; third submedian possibly represented by incomplete lines behind the anterior shield seta; shield laterally granular. Anterior shield setae 24μ apart, 25μ long, projecting ahead; dorsal setae 21μ apart, 8μ long, between first two submedian lines just ahead of rear margin. Forelegs 32μ long, tibia 6μ long, tibial seta small, lateral tibial spur present; tarsus 6μ long, claw 9.5μ long curved, tapering; featherclaw 6-rayed on inner side, 5-rayed on outer side. Hindlegs 27μ long, tarsus 6μ long, claw 8.5μ long. Coxae somewhat granular, the anterior contiguous. Abdomen with about 85 rings; the microtubercles elliptical and not pointed. Subdorsal seta 75μ long, on ring 10; lateral seta 36μ long, on about ring 6; first ventral seta 20μ long, on about ring 28; second ventral 8μ long, on about ring 50; third ventral 30μ long, on ring 12 from rear. Accessory seta present. Female genitalia 24μ wide, 18μ long, coverflap smooth, seta 9μ long.

Male not studied.

Type locality: Plaskett, on western border of Glenn County, California, at about 6000 feet elevation. **Collected:** July 7, 1953, by the writer. **Host:** *Carex subfusca* Boott. (Cyperaceae), a sedge. **Relation to host:** the mites live under the leaf bases at the base of the stalks and in the seed heads. No host damage was noted. **Type material:** As well as the dry plant material containing mites, there is a designated type slide and five paratype slides. Dr. H. Roivainen has already described several of these grass infesting *Phytoptus* as they occur in Finland. This species, *montanus*, and *yuccae*, are the first of this group of grass infestors recorded in North America. *Phytoptus montanus* is allied to *rigidus* Roiv. and to *cylindricus* (Liro), in Finland, but differs in having a 5-6 rayed featherclaw. *Phytoptus rigidus* has an 8-10 rayed structure, and *cylindricus* has a 6-rayed featherclaw.

Phytoptus garryana Keifer, new species

Plate 235

Female 170-190 μ long, about 50 μ thick, color dull white, wormlike. Rostrum 43 μ long, curved down. Shield 30 μ long, 36 μ wide, smooth; setae short. Anterior shield setae laterally placed in the band of microtubercles at the sides; these anterior setae 14 μ long, 25 μ apart; dorsal setae 13 μ long, 19 μ apart. Forelegs 31 μ long, tibia 6 μ long, the seta of moderate size and placed anteriorly, side spur present; tarsus 7 μ long, claw 12 μ long, tapering; featherclaw 6-rayed. Hindlegs 28 μ long, tibia 5 μ long, tarsus 6 μ long, claw 11 μ long. Anterior coxae contiguous. Abdomen with 55-60 rings; the microtubercles elliptical and not pointed. Subdorsal seta 36 μ long, on ring 7 behind shield; lateral seta 25 μ long, on about ring 5; first ventral seta 22 μ long, on about ring 16; second ventral 9 μ long, on ring 30; third ventral 25 μ long, on ring 7 from rear; accessory seta present. Female genitalia 19 μ wide, 14 μ long, coverflap smooth, seta 6 μ long.

Male not studied.

Type locality: Mirabel Springs, near Cobb, Lake County, California. **Collected:** June 10, 1953, by the writer. **Host:** *Garrya elliptica* Dougl. (Garryaceae), Silk tassel bush. **Relation to host:** The mites were found in the fruit catkins, living between the fruit and the fruit socket. There was no apparent damage to the host. **Type material:** As well as the dry plant parts with dry mites, there is a type slide and five paratypes designated. The position this mite holds in relation to other North American members of the genus is shown in the following key. It has not yet been possible to adequately study *abnormis* Garman.

1. Foretibia lacking a lateral spur
avellanae Nal. on *Corylus*, and *abnormis* Garman on *Tilia* 2
1. Foretibial spur present ----- 2
2. Shield design obscure ----- 3
2. Shield design of very plain lines ----- 4
3. Featherclaw 5-rayed, dorsal seta on shield about half as long as the subdorsal abdominal seta; in buds and among seeds of *Cornus nuttalli*
corniseminis K. 4
3. Featherclaw 6-rayed, dorsal seta on shield about a third as long as subdorsal abdominal seta; among fruits of *Garrya elliptica* ----- *garryana* K. 5
4. Featherclaw 5-rayed, dorsal seta on shield about half as long as the subdorsal abdominal seta; in buds of *Hedera helix* ----- *hedericola* K. 6
4. Featherclaw 6 to 8-rayed; dorsal shield seta a sixth or eighth the length of the subdorsal abdominal seta ----- 5
5. Femur and patella fused, featherclaw 7-8 rayed, on *Yucca glauca* ----- *yuccae* K. 7
5. Femur and patella normally articulate, featherclaw 5-6 rayed, on *Carex subfusca* ----- *montanus* K. 8

Aceria tulipae* (K.)Eriophyes tulipae* Keifer, Bul. Cal. Dept. Agr. 27:185, 1938*Aceria tulipae* (K), Bul. Cal. Ins. Surv. UC. 2:33, 1952*Aceria tulipae* (K.), Bul. Cal. Dept. Agr. 42:65, 1953*Aceria sp.*, Slykhuis, Can. Jr. Agr. Sci. 33:195, 1953

Since the discovery by Dr. J. T. Slykhuis that this mite is the vector of wheat-streak mosaic virus, much more factual information about the hosts and distribution of the species has been accumulated. As well as developing large colonies on wheat in such areas as Kansas and Nebraska, the mite lives on the perennial grasses of the genus *Agropyron*, for example: western wheat grass *A. smithii*. In 1948 I received specimens on foxtail, *Hordeum leporinum*, from Davis, California, collected May 26th by Dr. S. F. Bailey. At the time I considered the occurrence accidental, but recent developments indicate otherwise. Prof. G. F. Knowlton, of the Utah State Agricultural College has collected *tulipae* on *Agropyron repens*, quack grass, at Logan, August 18, 1953.

Further careful study of the structure of *tulipae* has disclosed that the cephalothoracic shield actually has a short lobe projecting over the base of the chelicerae. This projection is visible only when the rostrum and chelicerae have pulled down away from the front of the shield, a position they do not often assume. Heretofore I have placed great emphasis on the importance of a supra-rostral anterior projection of the shield as a character of subfamily importance. The presence of this projection designates one of the primary features separating the Phyllocoptinae, which have it, from the Eriophyinae, which lack it. The presence of this slight projection on *tulipae*, which is the genotype of *Aceria*, in the Eriophyinae, shows that the character is not as absolute as heretofore supposed, and while still useful, must be thought of as a matter of degree. In the following description we come to a case of discrimination in this connection.

“Cecidophyes” hendersoni Keifer, new species

Plate 236

Female 200 μ long, 45-50 μ thick, white, robust-wormlike. Rostrum 28 μ long, curved down. Shield 51 μ long, 45 μ wide; design a series of microtuberculate lines as follows: median line complete, ending in a dart-shaped mark; admedian lines complete, gradually diverging; submedian lines much curved and broken, apparently two present; shield laterally granular and with a slight lobe over the chelicera base. Dorsal tubercles and setae missing. Forelegs 36 μ long, tibia 9 μ long, prominent seta present; tarsus 7 μ long, claw 7 μ long, tapering; featherclaw 6-rayed. Hindlegs 32 μ long, tibia 7 μ long, tarsus 6 μ long, claw 7 μ long. Forecoxae narrowly contiguous, slightly granular. Abdomen with about 70 rings, set with elliptical tubercles that are slightly pointed. Lateral seta 14 μ long, on about ring 4; first ventral seta 47 μ long, on about ring 27; second ventral 19 μ long, on about ring 43; third ventral 20 μ long, on ring 7 from rear. Accessory seta absent. Female genitalia 22 μ wide, 16 μ long, appressed to coxae with the apodeme shortened in ventral view; coverflap with 12-14 longitudinal furrows arranged in two ranks; seta 10 μ long.

Male not studied.

Type locality: Syracuse, Kansas. **Collected:** August 24, 1953, by C. F. Henderson, of the U. S. Agricultural Research Service, for whom I name the species. **Host:** *Yucca glauca* Nutt. (Liliaceae), yucca. **Relation to host:** the mites live at the bases of the outer leaves. They cause browning of otherwise white tissue. **Type material:** a type slide and five paratype slides bear the above data. Dr. H. Roivainen, of Finland, has kindly supplied me with examples of the genotype of *Cecidophyes* which is *galii* Karpelles. This mite has a strong anterior shield projection over the rostrum, which removes the genus from the Eriophyinae into the Phyllocoptinae. In the Phyllocoptinae it replaces the genus *Coptophylla* Keifer, in part. This leaves the new species and four other species in North America without a genus designation. These additional species are: *malpighianus* Nal., *psilaspis* Nal., *verilicis* K., and *vermiformis* Nal. The new species, which has a slight projection over the rostrum base, differs from these four in possessing a 6-rayed featherclaw. All the others have a 5-rayed structure. There is a mite on *Yucca*

whipplei Torr. in California, as yet unstudied, that is very similar to *hendersoni*, and occupies the same position on the host. In a later article the genus into which these species will go will be established.

I take pleasure in naming the following genus for Dr. S. F. Bailey, University of California at Davis, who, while on duty with the armed forces in 1944, collected the mite for which I am establishing the genus.

Baileyna Keifer, new genus

Body short-wormlike. Rostrum rather small, curving down. Shield subtriangular, a slight projection over the rostrum; dorsal tubercles on rear margin, dorsal setae projecting backward. Coxae and legs with all usual setae. Abdomen with dorsal longitudinal furrows on anterior $\frac{3}{4}$; a moderately broad central furrow, extending from rear shield margin and separating into two furrows with a slight ridge between about 8 or 9 tergites behind the shield. A subdorsal furrow on each side parallels these. Tergites faintly microtuberculate at most. Sternites set with heavy, pointed microtubercles. Female genitalia the normal distance behind the coxae; apodeme not shortened; female coverflap with longitudinal scoring in one rank.

Genotype as follows:

Baileyna marianae Keifer, new species

Plate 237

Female 160-210 μ long, 30-40 μ thick, wormlike, curved, brown color. Rostrum 18 μ long, curved down. Shield 25 μ long, 35 μ wide, smooth; dorsal tubercles 20 μ apart, setae 20 μ long. Forelegs 27 μ long, tibia 6 μ long, seta present; tarsus 7 μ long, claw 6.5 μ long, featherclaw 4-rayed. Hindlegs 24 μ long, tibia 6 μ long, tarsus 6 μ long, claw 7.5 μ long. Anterior coxae contiguous. Abdomen with about 40 tergites, 50 or more sternites. Lateral seta 15 μ long, on about sternite 8; first ventral seta 31 μ long, on about sternite 18; second ventral 7 μ long, on sternite 31; third ventral seta 16 μ long, on sternite 6 from rear. Accessory seta present. Female genitalia 19 μ wide, 16 μ long, coverflap with 7 or 8 longitudinal furrows; seta 8 μ long. Male not seen.

Type locality: Tinian Island, Marianas Group. **Collected:** November, 1944, by Dr. S. F. Bailey. **Host:** *Premna* sp. (Verbeniaceae), a shade tree. **Relation to host:** The mites form upper surface pouch galls on the leaves. These galls range up to $\frac{1}{4}$ inch long. **Type material:** As well as dry leaf galls with mites there is a type slide and five paratype slides. In addition I have specimens of this mite from Guam under U. S. Agricultural Research Service numbers 53-11653 and 53-12784. These collections were by O. N. Liming at Marbo Caves, September 5 and 21, 1953. The description of this new genus and species immediately introduces the problem of the relationship of this Marianas mite to *Phyllocoptes angustus premnae* Nal., described from Batavia, Java, 1923. The reference is Treubia, 3:429. Nalepa's species forms galls on the leaves of *Premna integrifolia* L. It also has large ventral microtubercles. Nalepa states that his subspecies has the tergites "flattened or moderately sunken," which does not at all describe the system of furrows shown by the Marianas mite. The dorsal furrows, combined with the coarse ventral microtuberculation should distinguish this genus from all other Eriophyid genera.

Platyphytoptus eldoradensis Keifer, new species

Plate 238

Female 170-200 μ long, 50 μ wide, 35-40 μ thick; flattened, fusiform, yellowish to orange in color. Rostrum 25 μ long, curved down. Shield 55 μ long, 50-80 μ wide; subtriangular, with a prominent moderately pointed anterior lobe; lateral shield angles variable, often very strongly produced into acute side lobes. Shield design obscure, of fine dots faintly indicating median and submedian lines. Dorsal tubercles 23 μ apart, well ahead of rear margin; dorsal setae about 10 μ long, projecting up and centrally. Forelegs 33 μ long, tibia 8 μ long, with seta; tarsus 6 μ long; claw 7 μ long, with elongate knob. Featherclaw 4-rayed. Hindlegs 30 μ long, tibia 7 μ long, tarsus 6 μ long, claw 7 μ long. Coxae with lines of microtubercles and roughened areas, the forecoxae almost contiguous; first coxal seta far forward. Abdomen with 55-60 tergites and 80 sternites. The abdominal microtuberculation fine and somewhat obscure dorsally; laterally these microtubercles on the tergites end in fine points. Lateral seta 25 μ long, on about

sternite 7; first ventral seta 30μ long, on about sternite 21; second ventral 22μ long, on about sternite 42; third ventral seta 28μ long, on sternite 5 from rear. Accessory seta present. Female genitalia 30μ wide, 25μ long, coverflap with basal short streaks and microtubercles, and with about 14 longitudinal furrows; genital seta 10μ long. Male not studied.

Type locality: Garden Valley, Georgetown district, El Dorado County, California. **Collected:** September 4, 1952, by the writer. **Host:** *Pinus ponderosa* Dougl., yellow pine. **Relation to host:** The mites are free living on the inner side of the needles just above the sheath. **Type material:** A type slide and five paratype slides bear the above data. The most distinctive feature of *eldoradensis* is the usual shape of the shield, which flares out at the sides into acute points. This gives these elongate mites a peculiar "pick-head" appearance. A minority of the specimens examined do not have this projection. The new species is closest to *multisternatus* K., but this latter species does not have the lateral shield projections. This mite, *eldoradensis*, would also seem to live on Jeffrey pine since the recovery of specimens of this species from crimson maple erineum was under Jeffrey pine at Fallen Leaf Lake, also in El Dorado County, but at a higher elevation.

Phyllocoptes didelphis Keifer, new species

Plate 239

Female rather thick wormlike, 230-250 μ long, 60-65 μ thick; color pale cream to reddish depending on age. Rostrum about 32 μ long, curved down. Shield 48 μ long, 45 μ wide, triangular and with an acute, narrow lobe over the rostrum. Shield design obscure, but with a central line and a ridge over the anterior lobe; sides lined, lacking microtubercles. Dorsal tubercles 16 μ apart, set ahead of the rear margin on a curved line, and directing the 18 μ long dorsal setae up and centrad. Forelegs 38 μ long, tibia 11.5 μ long, slender, with a moderately prominent seta from the basal fourth; tarsus 8 μ long, claw 6 μ long, featherclaw 3-rayed. Hindlegs 36 μ long, tibia 9 μ long, tarsus 6.5 μ long, claw 8 μ long. Anterior coxae broadly contiguous along a straight line, somewhat lined. Abdomen with about 54 tergites bearing more or less prominent elongate microtubercles; sternites about 75 in number, set with broadly elliptical microtubercles which are slightly pointed; caudal microtubercles elongate ventrally. Lateral seta 35 μ long, on about sternite 10; first ventral 60 μ long, on about sternite 27; second ventral seta 22 μ long, on about sternite 48; third ventral 32 μ long, on sternite 6 from rear. Accessory seta small but present. Female genitalia basally with about four curved lines of microtubercles; coverflap with 12-14 longitudinal furrows; 26 μ wide, 16 μ long, seta 18 μ long.

Male 180-190 μ long, 50 μ thick.

Type locality: Twin Bridges, El Dorado County, California, elevation about 6,000 feet. **Collected:** July 19, 1953, by the writer. **Host:** *Populus tremuloides* Michx. (Salicaceae), Aspen. **Relation to host:** The mites form open erineum pockets on the leaf undersurface, bulging out above. These pockets are 5 to 15 millimeters across and are circular unless crowded. The "erineum" is a cream-white irregular epidermal growth, full of recesses. The mites live within this or partly exposed on its upper surfaces. When disturbed the mites remain motionless. Usually this erineum does not injure the tree, being mainly on lower shaded branches. **Type material:** A type slide and five paratype slides bear the above data. The new species is closest to the Californian species *Phyllocoptes calisalicis* K., from which it differs in having contrasting tergites and sternites. Both species have the 3-rayed featherclaw. The new species, *didelphis*, is quite similar to the European *Phyllocoptes populi* Nal. which inhabits an erineum on *Populus tremula* L. According to the description of the European species, however, it has a 2-rayed featherclaw and lacks the accessory seta. These are different from *didelphis*. The name, *didelphis*, is from the technical name of the opossum and refers to the habit of the mite of "playing possum" when disturbed.

Vasates dormitor Keifer, new species

Female 220 μ long, 60 μ thick, robust-wormlike, light yellowish in color. Rostrum 30 μ long, curved down. Shield 42 μ long, 50 μ wide, triangular, with a narrow lobe over the rostrum. Design faint but apparently the median line is indicated with the submedians curved along the sides and joined by a curved line at about 3/4. Dorsal tubercles 33 μ apart, on rear margin; dorsal setae 30 μ long and projecting backward. Forelegs 45 μ long, tibia slender, 13 μ long, with a proximal small seta; tarsus 9.5 μ long, claw 7 μ long, with a small knob; featherclaw 4-rayed. Hindlegs 39 μ long, tibia 11 μ long, tarsus 9.5 μ long, claw 7 μ long. Anterior coxae curved together, granular. Abdomen with 38-40 tergites set with obscure elongate microtubercles; sternites 70-75 in number, set with fine microtubercles which extend into short points. Lateral seta 40 μ long, on about sternite 11; first ventral 50 μ long, on about sternite 25; second ventral 35 μ long, on about sternite 47; third ventral 32 μ long, on about sternite 6 from rear. Accessory seta small. Female genitalia, 25 μ wide, 15 μ long, some basal transverse microtubercle bands and about 15 "ring" lines between the coverflap and the coxae; coverflap with about 10 obscure longitudinal furrows; genital seta 23 μ long.

Male not seen.

The data for this mite are the same as for *didelphis*, except that *dormitor* is in the minority and therefore is presumably inquiline. No previously known California *Vasates* seems to be very similar to *dormitor*. The combination of an obscure shield design, plus the 4-rayed featherclaw, plus the inquiline habit and the fewer tergites than sternites will distinguish the species. *Vasates glabri* K. on Sierra maple is also an inquiline but has a strong shield pattern. It is the present intention to figure this mite in a subsequent installment.

Acaphylla indiae Keifer, new species

Plate 240

Female 150-155 μ long, 70-75 μ wide, 50-55 μ thick, fusiform, tapering, whitish. Rostrum 35 μ long, large, downcurved. Shield 50 μ long, 72 μ wide; design of thin curved lines: median line present; submedian lines curving from the median and forming a double loop between the dorsal tubercles. Anterior shield lobe broad, hoodlike over the rostrum; the shield laterally with a broad lobe over the coxae. Dorsal tubercles 37 μ apart, set well ahead of the rear margin and directing the 5 μ long setae ahead and outward. Forelegs 37 μ long, tibia 10 μ long, small seta present; tarsus 6 μ long, claw 11 μ long, slender with a small knob; featherclaw bifurcate with about 8 rays on a side. Hindlegs 30 μ long, tibia 6 μ long, tarsus 5 μ long, claw 10 μ long. The hindlegs with the femoral and patellar setae missing. Anterior coxae touching. Abdomen with a subdorsal shallow trough on each side of the broad, low central ridge; tergites about 38, apparently lacking microtubercles. About 65-70 sternites, lacking microtubercles anteriorly but microtuberculate toward the rear. Lateral seta 30 μ long, on about sternite 9; first ventral 70 μ long, on about sternite 24; second ventral seta 38 μ long, on about sternite 42; third ventral 17 μ long, on sternite 5 from rear. Accessory seta absent. Female genitalia 34 μ wide, 18 μ long, coverflap with furrows in two ranks, the rear rank with about 14 longitudinal or diagonal furrows; seta 8 μ long.

Male not seen.

Type locality: Tocklai Experimental Station, Cinnamara, Assam, India. **Collected:** April, 1954, by Dr. G. M. Das. **Host:** *Thea sinensis* L. (Ternstroemiaceae), tea. **Relation to host:** The mites are open surface inhabitants, causing some leaf rusting. **Type material:** a type slide and five paratype slides bear the above data. The genotype of *Acaphylla* is *steinwedeni* K. From the genotype the new species differs in a number of ways: it has a broader anterior lobe over the rostrum, a broader central abdominal ridge, it lacks the hind femoral seta, and has more rays in the featherclaw.

Specimens which Dr. Das submitted of what he calls the "pink tea mite" prove to be *Acaphylla steinwedeni* which is common on camellia in California. Dr. Das further states that this pink mite was the object of the name "*Phytoptus theae*" by Watt, in "Pests and Blights of the Tea Plant," Calcutta, 1898. In 1929 Nalepa listed this name along with *carinatus* Green as a nude name, lacking a description. It seems therefore probable that *steinwedeni* will stand as the name for this pink mite. At any rate the genus name is *Acaphylla*. Both the pink mite and the new species were received through the office of Dr. P. W. Oman, U. S. Agricultural Research Administration, under number 54-5953.

Notes on Mite Slide Mounting Media

The following formulae represent a distinct advance over previous media detailed in these articles. The final mount has proven to be a more uniformly satisfactory preparation of the specimens for study. These media do two principal things: first they eliminate lactic acid and its astringent effect; second, they substitute karo sirup for gum arabic. White karo sirup goes into solution far quicker than gum arabic, holds crystalline contents in semisolid solution better, and never reverses the tendency for the iodine stain to concentrate on the specimens. This sirup must be free from starch, however, and appropriate tests and treatments must precede its use.

The first formula, designed primarily for Eriophyid mites, is for use in clearing out the opaque body contents. Heat the medium bearing the mites gently until the desired clarity arrives. The ingredients are: resorcinol—50 grams; diglycolic acid—20 grams; glycerin—25 cc.; iodine—enough to produce the desired color, usually an appreciable amount; water—about 10 cc., or to produce the desired consistency. Allow this to dissolve at room temperature. Warming this to dissolve the ingredients will destroy some of the dissolving power of the medium. For larger mites less iodine is desirable, and a small amount of phenol solution in water, added after the medium is hot, will produce a very gratifying result.

The second formula, designed to eliminate excess resorcinol, is also of use as a preparatory medium, and additional heating of specimens from the first medium will often further the clearing action of these media. The formula is: white karo sirup (starch free)—25 cc.; chloral hydrate crystals—125 grams; glycerin—5 cc.; iodine (for Eriophyids)—moderate amount; water—15 cc.

The final medium is apparently quite permanent. The staining action of the iodine is excellent with the specimens contrasting sharply from the surrounding medium. With the elimination of lactic acid there is no collapsing of the specimens during these transfers. All three media can be thick enough to allow easy "needling" of the specimens from one to the other if the solvent is not added in excess. The formula for the final medium is: starch-free white karo sirup—12 cc.; chloral hydrate crystals—60 grams; potassium iodide crystals—small amount at the discretion of the formulator; iodine crystals (for Eriophyids)—2 grams; formaldehyde solution in sufficient amount to form a thin mixture.

Place this final medium mixture in a 45 degree C. oven and allow to stay warm until the solution has come to the desired thickness. This should be for at least 10 days. The heating destroys the dissolving action of the medium on the specimens and reduces the possibility of future recrystallization. When the specimens are in this medium on the slide, further gentle warming, to distribute the medium under the coverslip, will not disturb the turgidity of the specimens.

Installment XXI of Eriophyid Studies appeared in this *Bulletin*, 42:65, June 30, 1953.

DESIGNATIONS ON THE PLATES

- AP1—Internal female genitalia
- D —Dorsal view of mite
- DA —Dorsal view of anterior section of mite
- ES —Detail of side skin structure
- F —Featherclaw from below
- GF1—Female genitalia and coxae
- L —Left legs
- S —Side view of mite
- SA —Side view of anterior section of mite

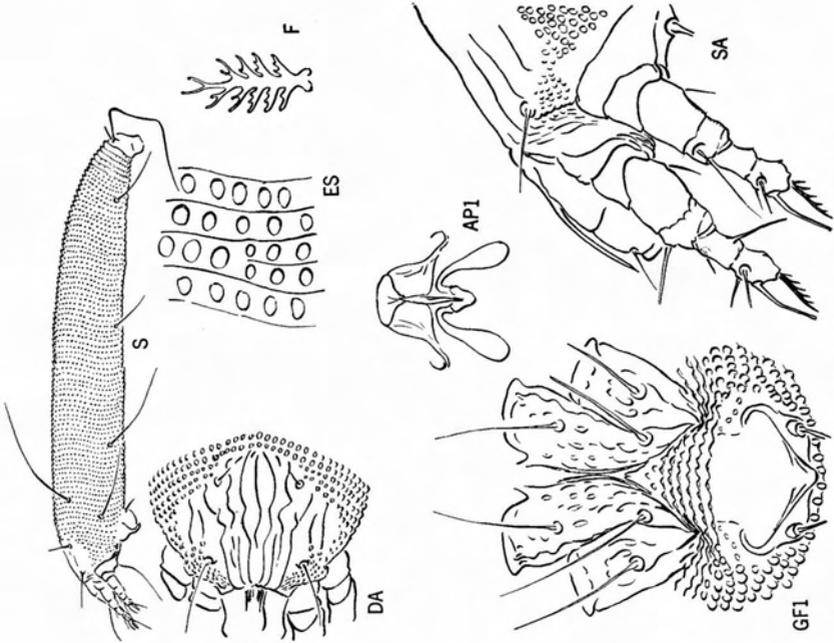


Plate 234—*Phytoptus montanus* n. sp.

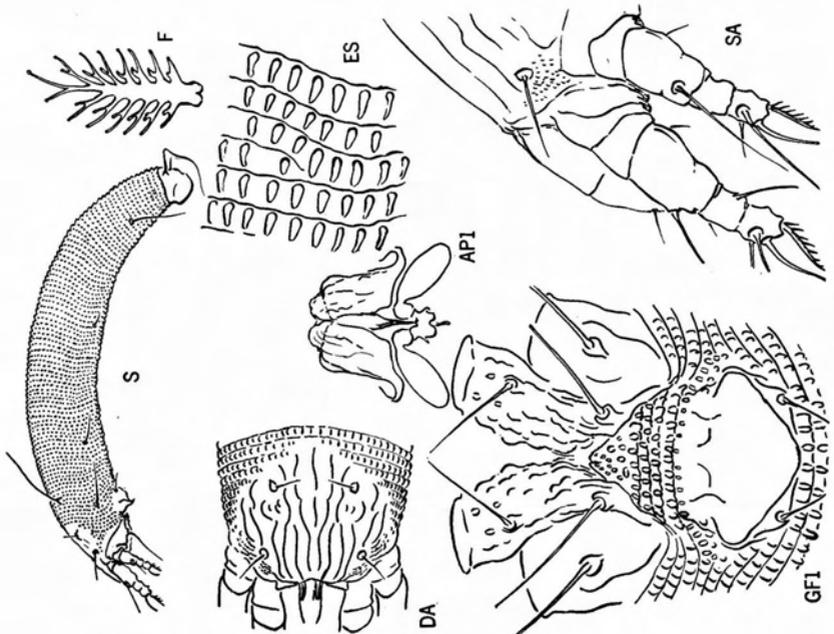


Plate 233—*Phytoptus yuccae* n. sp.

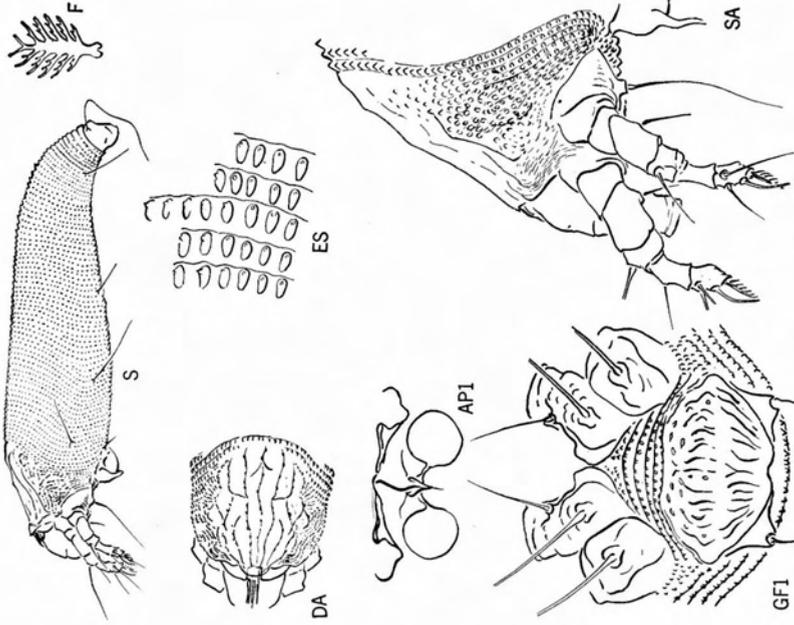


Plate 236—*Cecitophyes hendersoni* n. sp.

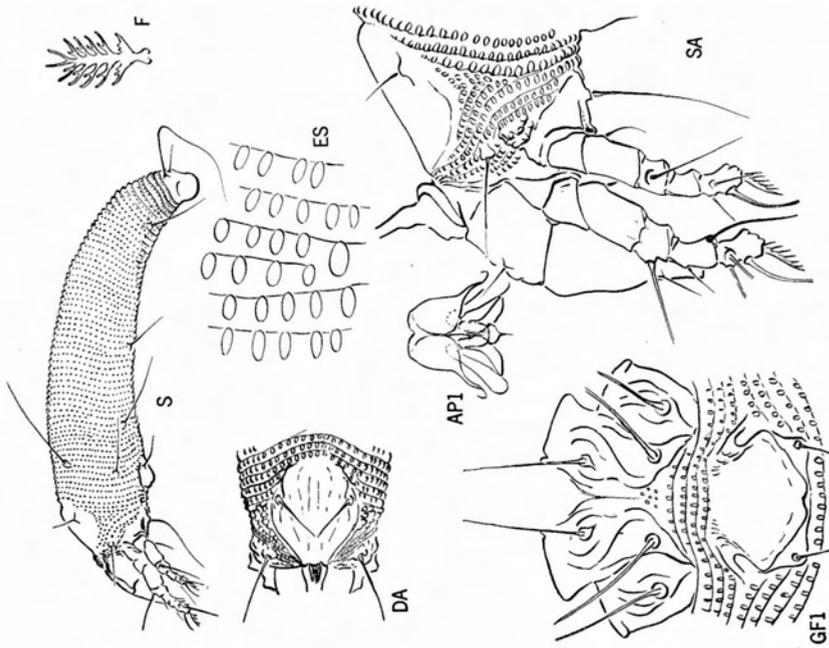


Plate 235—*Phytoptius garryana* n. sp.

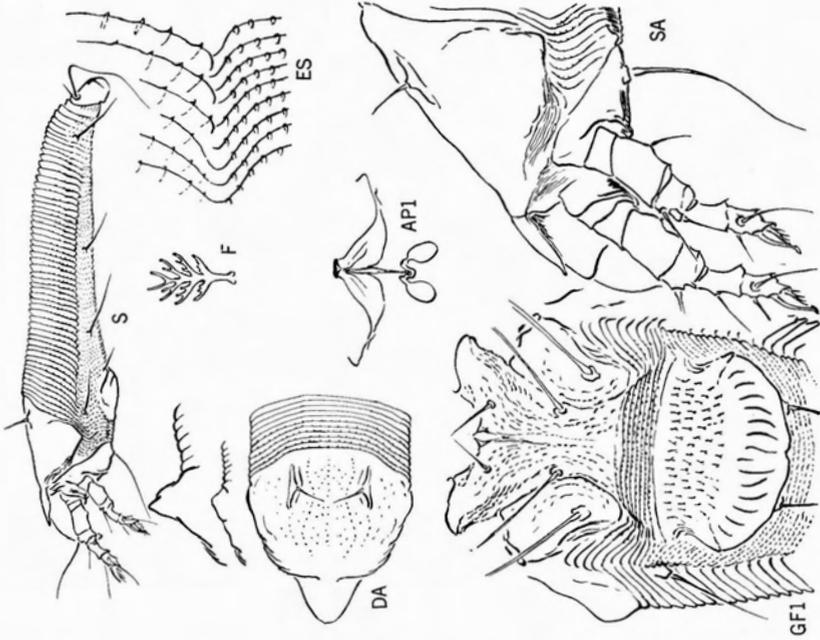


Plate 238—*Platyphoptus eldoradensis* n. sp.

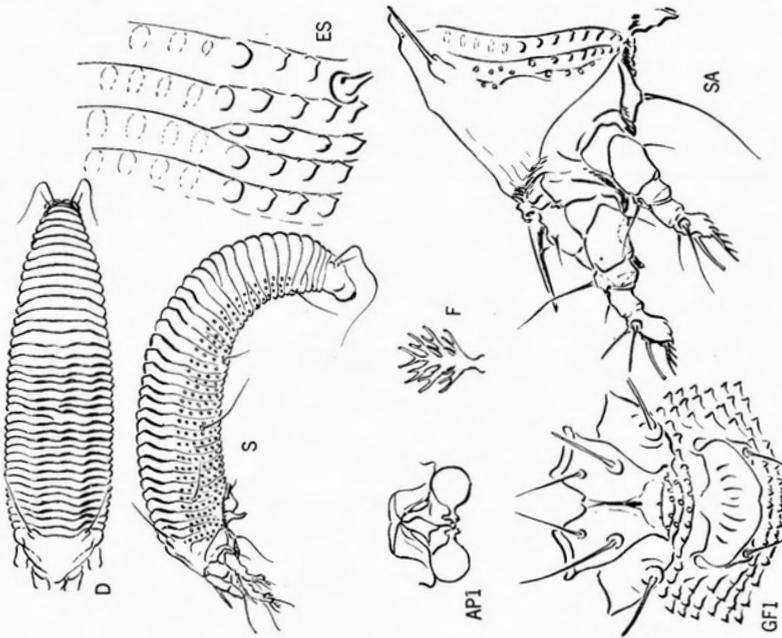


Plate 237—*Baileyna marianae* n. sp.

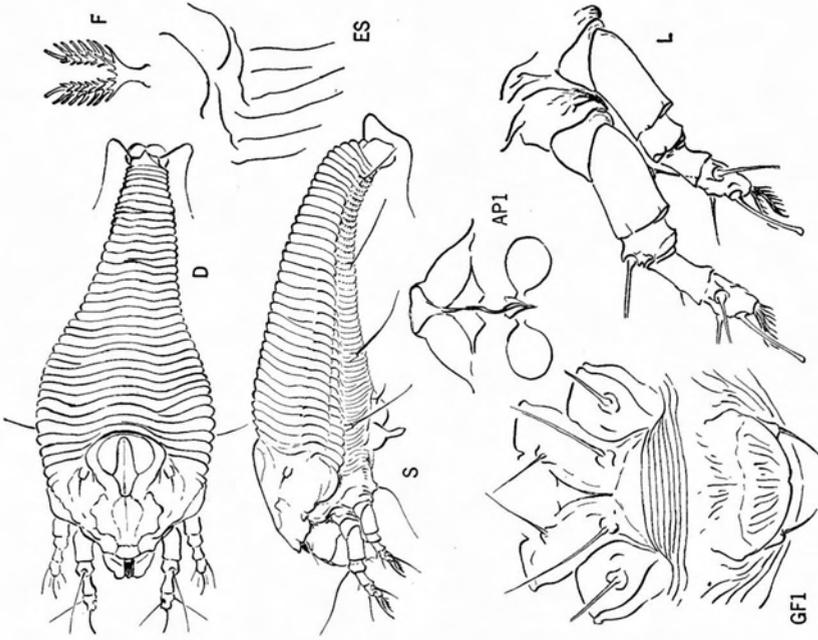


Plate 240—*Acaphylla indiae* n. sp.

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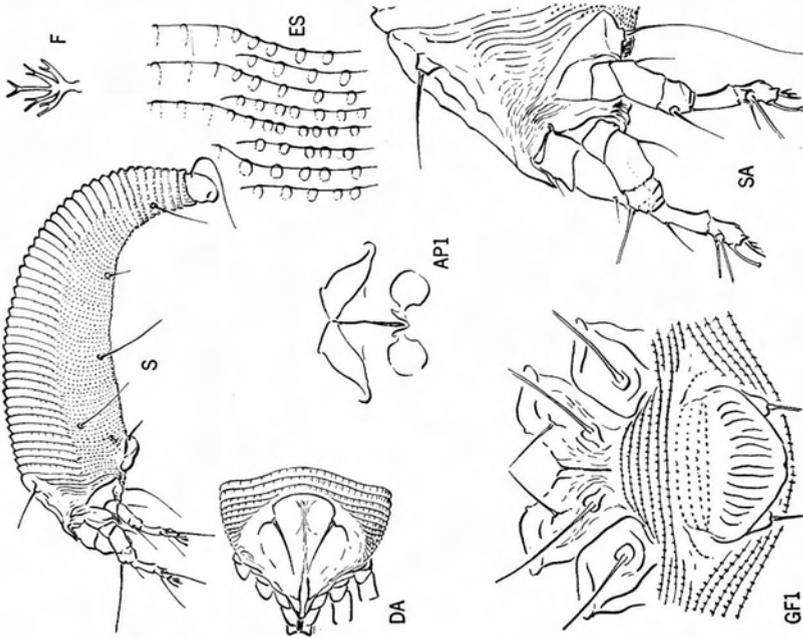


Plate 239—*Phyllocoptes ditelphus* n. sp.

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