

VOLUME XXXV

NUMBER 1

STATE OF CALIFORNIA
DEPARTMENT OF AGRICULTURE



BULLETIN

SACRAMENTO, CALIFORNIA

JANUARY

FEBRUARY

MARCH

1946

ERIOPHYID STUDIES XVI

H. H. KEIFER

State Department of Agriculture

The sixteenth contribution to this series contains descriptions of eight Eriophyid mites, one of which is from apple in the Salinas-Santa Cruz area of California. Two others of some importance are Hawaiian and are rust mites on Hibiscus and Mango.

MACKIELLINAE, new name

Sierraphytoptinae Keifer, Bul. Cal. Dept. Agr. Vol. XXXIII, No. 1, p. 18, Apr. 13, 1944

This subfamily designates mites with a pair of subdorsal abdominal setae and dorsal back plates broader than the ventral half-rings. When setting up this subfamily I overlooked the fact that the name *Mackiella* had page priority over *Sierraphytoptus*. The original references to these names are:

Mackiella K. Bul. Cal. Dept. Agr. Vol. XXIX, No. 2, p. 147, Mar. 17, 1939

Sierraphytoptus K. Bul. Cal. Dept. Agr. Vol. XXIX, No. 2, p. 151, Mar. 17, 1939

ERIOPHYINAE

The spiraea gallmite, *Eriophyes spiraeae* Nal. 1893, produces flower galls on *Spiraea denisflora* Nutt., where the plant occurs at the 6,000 foot level in the Sierra Nevada mountains. The specific locality is Twin Bridges, along Pyramid Creek, El Dorado County, California. The gall is a cone-shaped deformity of the individual flowers, and usually most of the flower cluster is implicated. This record proves the mite to be holartic in distribution. The species was originally described from Germany. The California collection was made by the writer.

Aceria calilupini Keifer, new species

Plate 196

Female 210 μ long, 40-50 μ thick, wormlike, whitish. Rostrum 25 μ long, curved down. Shield 27 μ long, 32 μ wide, design of longitudinal lines centrally, with lateral granules; dorsal tubercles 16 μ apart, on rear margin; dorsal setae 30 μ long, projecting backward. Forelegs 29 μ long, tibia 7 μ long, tarsus 6 μ long, claw 7.5 μ long and curved, tapering; featherclaw 7-rayed. Hindlegs 27 μ long, tibia 7 μ long, tarsus 6 μ long, claw 7.5 μ long. Abdomen with 75-80 rings, completely microtuberculate, the microtubercles pointed. Lateral seta 29 μ long, on about ring 9; first ventral seta 33 μ long, on about ring 23; second ventral 20 μ long, on about ring 45; third ventral 20 μ long on ring 6 from rear; accessory seta present. Female genitalia 18 μ wide, 10 μ long, coverflap with 12-14 longitudinal furrows; seta 23 μ long. Sternite just behind the genitalia curving centrally to the genital margin.

Male 200 μ long, 40-50 μ thick; the males more numerous than the females.

Type locality: Table Mountain, Oroville, California. **Collected:** June 11, 1944, by the writer. **Host:** *Lupinus albifrons* Benth., a white-pubescent lupin. **Relation to host:** the mites live in the pubescence around the buds and under the petiole bases. **Type slide:** so designated with the above locality and date. **Paratype slides:** six in number, with the above data. The shield pattern and general body features are not

distinctive, but the anteriorly curving sternite just behind the genitalia, and the 7-rayed featherclaw, are unusual and diagnostic.

Paraphytoptus rhamniphagus Keifer, new species

Plate 197

Female 180-200 μ long, 40-45 μ thick, wormlike, very light yellow. Rostrum 25 μ long, projecting down. Shield 30 μ long, 35 μ wide, design a network of ridges, granulations at sides; dorsal tubercles 23 μ apart, on rear margin; dorsal setae 24 μ long, projecting backward. Forelegs 30 μ long; tibia 6 μ long; tarsus 7.5 μ long, claw 8 μ long and tapering; featherclaw 5-rayed. Hindlegs 27 μ long, tibia 5.5 μ long, tarsus 6.5 μ long, claw 8 μ long. Anterior coxae broadly contiguous, the coxae granular. Abdomen completely microtuberculate, with the sternites twice as numerous as the tergites on most of the rear half; about 50 tergites and 60 sternites. Lateral seta 32 μ long, on about sternite 7; first ventral 46 μ long, on about sternite 21; second ventral 12 μ long, on about sternite 36; third ventral 24 μ long, on about sternite 6 from rear; accessory seta present. Female genitalia 20 μ wide, 12 μ long, coverflap with about 12 furrows, longitudinally arranged; seta 23 μ long.

Male 175 μ long, 40 μ wide.

Type locality: Hills back of Clarksville, El Dorado County, California. **Collected:** August 1, 1944, by the writer. **Host:** *Rhamnus californicus tomentella* B. & W., a rather pilose variety of the plant. **Relation to host:** the mites live in the hairs around the terminal buds. **Type slide:** so designated, with the above data. **Paratype slides:** four in number as above. This mite falls in with the species having a more weakly developed broadening of the posterior tergites. The shield network and the humped tubercles are distinctive.

Cymoptus Keifer, new genus

Cephalothoracic shield with longitudinal lines; no projection over the beak; dorsal tubercles on rear shield margin, the dorsal setae projecting caudad. Forelegs with no seta on the tibiae; featherclaws 2-rayed. Abdomen dorsally constructed of rings which are undulating or wavy, transversely, and no microtubercles on dorsal half; ventral half bearing microtubercles produced into spinules. Female genital coverflap smooth, lacking longitudinal scoring; female apodeme full length in ventral view.

Genotype: *Cymoptus spiniventris* n. sp.

Cymoptus spiniventris Keifer, new species

Plate 198

Female approximately 200 μ long, 45 μ thick, wormlike, somewhat thickened, yellowish. Rostrum 21 μ long, projecting down. Shield 35 μ long, 38 μ wide, design of longitudinal lines, the sides not granular; dorsal tubercles 26 μ apart, on rear margin; dorsal setae 14 μ long, projecting outward and backward. Forelegs 28 μ long, tibia 3.5 μ long, lacking a seta; tarsus 11 μ long; claw 7.5 μ long, curved, knobbed; featherclaw 3-rayed. Hindlegs 26 μ long, tibia 3 μ long, tarsus 9 μ long, claw 7.5 μ long. Forecoxae contiguous along a definite line; setae I ahead of anterior junction of coxae. Abdomen with about 50 rings, as described for the genus. Lateral seta 12 μ long, on about ring 7; first ventral 33 μ long, on about ring 18; second ventral 26 μ long, on about ring 31; third ventral 15 μ long, on ring 6 from rear; accessory seta absent. Female genitalia 20 μ wide, 13 μ long, coverflap smooth; seta 10 μ long, on spur-like tubercles.

Male not seen.

Type locality: Isla Victoria, Nahuel Huapi National Park, Argentina. **Collected:** April, 1943, by D. Havrylenko. **Host:** *Nothofagus dombeyi*. **Relation to host:** The mites form erineum patches on the undersides of the small leaves. This erineum is not made of hairs, but consists of mushroom-shaped surface projections. **Type slide:** so designated, with the above data. **Paratype slides:** six in number, as above. The species and genus belong to the Eriophyinae and are separated from other genera by the undulating tergites. Supplementary generic characters are the posterior projecting dorsal setae, the 2-rayed featherclaw, the spinules confined to the sternites, the foretibiae lacking setae. The

2-rayed featherclaw and genital setae on spurs suggest certain oak and walnut mites to which this species is undoubtedly allied. The generic name is *Cym*, meaning wave, plus a contraction of the familiar *Phytoptus*, to shorten syllable number.

PHYLLOCOPTINAE

Phyllocoptes cedri Keifer, new species

Plate 199

Female 220 μ long, 65 μ thick, orange colored, spindleform. Rostrum 44 μ long, curved down, apical seta 12 μ long. Shield 87 μ long, 52 μ wide, design a network of lines with the longitudinal lines more prominent; anterior shield lobe short; dorsal tubercles 20 μ apart, ahead of rear margin; dorsal setae 10 μ long, projecting dorso-centrad. Forelegs 40 μ long, tibia 10 μ long, tarsus 8.5 μ long, claw 7.5 μ long and curved down with a small knob; featherclaw 5-rayed. Hindlegs 38 μ long, tibia 8.5 μ long, tarsus 8.5 μ long, claw 8.5 μ long. Coxae lined and granular, the forecoxae hardly touching. Abdomen Eriophyiform, completely microspinulate, the tergites little less numerous than the sternites; about 70-75 tergites and sternites. Lateral seta 36 μ long, on about sternite 11; first ventral 60 μ long, on about sternite 25; second ventral 55 μ long, on about sternite 43; third ventral 26 μ long, on sternite 6 from rear; accessory seta present. Female genitalia 30 μ wide, 15 μ long, coverflap with about 16 longitudinal furrows; seta 17 μ long.

Male 170 μ long, 50 μ thick.

Type locality: Sacramento, California. **Collected:** May 25, and June 1, 1944, from park trees, by the writer. **Host:** *Cedrus atlantica glauca* Carr., glaucous cedar. **Relation to host:** The mites are vagrants on the needles. **Type slide:** so designated, and of mites collected May 25. **Paratype slides:** six in number, three of each date. The narrow female coverflap, the Eriophyiform abdomen, the spinulate rings, are the most distinctive features of this mite. It probably occurs on the normal form of Atlas cedar, but has not been located on Deodar trees near the type trees.

Vasates malivagrans Keifer, new species

Plate 200

Female up to 170 μ long, 53 μ wide, 50 μ thick, spindleform, yellowish. Rostrum 23 μ long, projecting down. Shield 47 μ long, 52 μ wide, design of curved lines represented by tubercles; laterally with sparse granulations; the anterior lobe bears a pair of small points; dorsal tubercles 32 μ apart, on rear margin; dorsal setae 16 μ long, and knobbed; featherclaw 4-rayed. Hindlegs 35 μ long, tibia 7 μ long, projecting backward. Forelegs 35 μ long, tibia 9 μ long, tarsus 8 μ long, claw 6 μ long, tarsus 7.5 μ long, claw 7 μ long. Forecoxae contiguous, bearing lines and microtubercles. Abdomen with tergites about half as numerous as the sternites and the tergites bearing obscure elongate tubercles; sternites completely microtuberculate; about 30 tergites; 60-65 sternites. Lateral seta 26 μ long, on about sternite 8; first ventral 40 μ long, on about sternite 23; second ventral 15 μ long, on about sternite 41; third ventral 22 μ long, on sternite 5 from rear; accessory seta present. Female genitalia 22 μ wide, 13 μ long, coverflap with 9 longitudinal furrows; seta 17.5 μ long.

Neither the male nor the deutogyne observed.

Type locality: Vine Hill, Santa Cruz County, California. **Collected:** August 10, 1944, by the writer. **Host:** *Pyrus malus* L., apple. **Relation to host:** The mites occur on the underside of the leaves and are said to cause pitting on young leaves. **Type slide:** so designated, with the above data. **Paratype slides:** four in number with the above data; four other slides bear the following data: Salinas district, collected June 6, 1944, by Dr. W. H. Lange, who made the observation of the mites' action on the young leaves.

This mite does not occur on apple in the Sacramento Valley. In this latter area *Calepitrimerus baileyi* K. causes some rusting of apple leaves when abundant. *C. baileyi* is also found in the Santa Cruz area.

The type of mite usually supposed to rust apple leaves is *Vasates schlectendali* Nalepa 1890. I have yet to see anything on apple that resembles Nalepa's figure of *schlectendali*. The new species, *malivagrans*, differs from *schlectendali* not only in the shield pattern, but also in having a furrowed female genital coverflap.

***Vasates fockeui* (Nalepa) 1896**

Denkr. Akad. Wiss. Wien. vol. 64, p. 385 (*Phyllocoptes*)

This mite, known in Canada as the nursery plum mite, seems to have a wide distribution on plum and cherry in that country and in the northern United States, from ocean to ocean. I have examined mites from Ontario, Canada, through the kindness of W. L. Putman; and also from Oregon and Utah. So far I have been unable to discover any distinguishing features between *fockeui* as here understood, and *cornutus* Banks 1905, the peach silver mite. In Sacramento the peach silver mites abound, but plum and cherry trees fail to develop a population of this type of mite. This account cannot settle the problem, but is published to indicate that complications exist in the relative status of the above names.

"*Epitrimerus*" *pseudotsugae* Keifer, new species

Plate 201

Female 150-200 μ long, 60-70 μ wide, 50-60 μ thick, reddish orange in color, rather robust-spindleform. Rostrum 35 μ long, projecting down, apical seta 10.5 μ long. Shield 58 μ long, 65 μ wide; design a network of lines; no lateral granulations; anterior lobe broad; dorsal tubercles 28 μ apart, set well ahead of the rear margin; dorsal setae 8 μ long, projecting ahead and inward. Forelegs 41 μ long, tibia 11.5 μ long, tarsus 8.5 μ long; claw 8 μ long, knobbed; featherclaw 5-rayed. Hindlegs 38 μ long, tibia 7 μ long, tarsus 8 μ long, claw 7 μ long. Coxae with fine lines and granulations, the anterior coxae hardly touching; setae II and III almost in a straight transverse line. Abdomen with microtubercles only on the ventral half-rings; the central longitudinal dorsal ridge broad and nearly flat; about 50 tergites, 70-80 sternites. Lateral seta 26 μ long, on about sternite 10; first ventral 60 μ long, on about sternite 23; second ventral 55 μ long, on about sternite 45; third ventral 26 μ long, on sternite 7 from rear; accessory seta present. Female genitalia 29 μ wide, 17 μ long, coverflap with numerous short lines and granulations; seta 11 μ long.

Male 150 μ long, 60 μ wide, 50 μ thick.

Type locality: Sacramento, California. **Collected:** August 29, 1944, by the writer from a park tree. **Host:** *Pseudotsuga taxifolia* (Lamb.), Douglas fir. **Relation to host:** The mites are vagrants on the needles. **Type slide:** so designated, as above. **Paratype slides:** two in number, as above. This mite suggests the genus *Cupacarus*, but does not have a clear middorsal longitudinal depression which is necessary for assignment to that genus. *Epitrimerus* as understood by the writer does not have as broad a central ridge as the new species.

***Tegonotus hibiscella* Keifer, new species**

Plate 202

Female 150-180 μ long, 60-65 μ wide, 50 μ thick, light yellow, robust. Rostrum 24 μ long, directed down, apical set of moderate length. Shield 42 μ long, 63 μ wide, design centrally obscure but with lateral lines and granulations; dorsal tubercles 38 μ apart, on rear margin, produced, projecting caudad; dorsal setae 14 μ long and directed backward. Forelegs 34 μ long, tibia 7.5 μ long, tarsus 6 μ long, claw 6.5 μ long and with a large knob; featherclaw 5-rayed. Hindlegs 32 μ long, tibia 6 μ long, tarsus 6.5 μ long, claw 7 μ long. Coxae rather smooth with the anterior coxae touching. Abdomen with moderately broad tergites bearing obscure microtubercles; sternites strongly microtuberculate; about 30 tergites and 50 sternites. Lateral seta 30 μ long, on about sternite 6; first ventral 35 μ long, on about sternite 19; second ventral 18 μ long, on about sternite 33; third ventral 24 μ long, on sternite 5 from rear; accessory seta absent. Female genitalia 25 μ wide, 16 μ long, coverflap with 10 to 12 furrows, the coverflap basally wrinkled; seta 12 μ long.

Male 140-160 μ long, 50 μ wide, 40-50 μ thick.

Type locality: Hilo, T. H. **Collected:** February 9, 1945, by W. C. Look. **Host:** *Hibiscus* possibly *rosa-sinensis* L. **Relation to host:** The mites are rust mites that cause browning of the leaves. **Type slide:** so designated, with the above data. **Paratype slides:** seven in number, as above. A mite, *Oxypleurites bisetus* Nalepa 1908, has already been described from *Hibiscus rosa-sinensis* L. This mite is said to occur in the Solomon Islands, New Guinea, and elsewhere in that area. It was found with the erineum producing *Eriophyes hibisci* Nal. The new species, *hibiscella*, is distinguished by the produced dorsal tubercles and the narrow ridge over the anterior lobe.

Oxypleurites mangiferae Keifer, new species

Plate 203

Female 160-180 μ long, 60 μ wide, 40 μ thick, light amber in color, spindleform, flattened. Rostrum 24 μ long, projecting down, apical seta moderately long. Shield 50 μ wide; flattened, the design obscure: a diamond-shaped area toward the front center, granular ridges running over the anterior lobe which is also wrinkled in lateral view; sides of shield with longitudinal lines; dorsal tubercles 20 μ apart, set well ahead of the rear margin; dorsal setae 3 μ long, projecting up. Forelegs 29 μ long, tibia 7.5 μ long, tarsus 6 μ long, claw 5.5 μ long and knobbed, featherclaw 6-rayed. Hindlegs 28 μ long, tibia 6 μ long, tarsus 5 μ long, claw 6 μ long, and more attenuate than the foreclaw. Coxae granular, the forecoxae broadly contiguous. Abdomen with 6 or 8 of the anterior tergites bearing characteristic lateral points; a rather acute central ridge; sternites microtuberculate; about 21 tergites and 55-65 sternites. Lateral seta 18 μ long, on about sternite 6; first ventral 26 μ long, on about sternite 20; second ventral 7 μ long, on sternite 33; third ventral 13 μ long on about sternite 5 from rear; accessory seta absent. Female genitalia 20.5 μ wide, 15 μ long, each side of coverflap with diagonal centrally converging furrows, the base of the coverflap with lines of granules; seta 12 μ long.

Male 130-150 μ long, 50 μ wide, 35 μ thick.

Type locality: Hilo, T. H. **Collected:** April 11 and June 1, 1945, by W. C. Look. **Host:** *Mangifera indica* L., mango. **Relation to host:** The mites are rust producers on the undersides of the leaves and are said to be rather easily controlled by sulfur applications. **Type slide:** so designated, with the above data and dated June 1. **Paratype slides:** six in number, two of which are dated April 11. The new species is characterized by the wrinkled lines over the anterior shield lobe, and the diagonal lines on the genital coverflap. A mite, *Phyllocoptes laniger* Nalepa 1899, has already been described from mango. I do not have the data on the original locality for this species.

HOST LIST

Pinaceae, pine family

- Cedrus atlantica glauca* Carr., glaucous cedar
- Phyllocoptes cedri* n. sp. XVI, a needle vagrant
- Pseudotsuga taxifolia* (Lamb.), Douglas fir
- "*Epitimerus*" *pseudotsugae* n. sp. XVI, a needle vagrant

Cupressaceae, cypress family

- Cupressus macrocarpa* Hartw., Monterey cypress
- Phytoptus cupressi* K. XIV, p. 19, 1944
- Juniperus chinensis procumbens* Endl., creeping juniper
- Phytoptus cupressi* K. XIV

Graminae, grass family

- Andropogon* sp., a swamp grass
- Calepitrimerus andropogonus* K. XIV, p. 27, 1944
- Elymus triticoides* Buckl., wild rye
- Abacarus hystrix* (Nal.), XIV, p. 28, 1944
- Vasates mckenziei* K. XIV, p. 26, 1944

Cyperaceae, sedge family

- Carex barbarae* Dew., sedge
- Eriophyes caricis* K., XIV, p. 22, 1944

Salicaceae, willow family

- Salix* spp. willow
- Phyllocoptes calisalicis* K., XIV, p. 25, 1944

- Fagaceae, oak family
Nothofagus dombeyi
Austracus havrylenkonis K., XIV, p. 20, 1944
Cymoptus spiniventris n. sp. XVI, in leaf erineum
Quercus lobata Nee, Valley white oak
Coptophylla caliquerici K., XIV, p. 26, 1944
- Urticaceae, nettle family
Urtica gracilis holosericea Jepson, nettle
Quadracus urticae K., XIV, p. 30, 1944
- Ebenaceae, ebony family
Diospyros kaki L., persimmon
Aceria diospyri K., XIV, p. 23, 1944
- Rhamnaceae, buckthorn family
Rhamnus californicus tomentella B. & W., coffee berry
Paraphytoptus rhamniphaga n. sp. XVI, in bud hairs
- Anacardiaceae, sumac family
Mangifera indica L., mango
Oxypleurites mangiferae n. sp., XVI, undersurface rust mite
- Theaceae, tea family
Camellia japonica L., camellia
Aceria camelliae K., XV, p. 137, 1945
- Saxifragaceae, saxifrage family
Escallonia rubra Pers., escallonia
Aceria escalloniae K., XIV, p. 23, 1944
- Leguminosae, pea family
Lupinus albifrons Benth., lupin
Aceria calilupini n. sp., XVI, in bud hairs
- Rosaceae, rose family
Pyrus malus L., apple
Vasates malivagrans n. sp. XVI, an undersurface vagrant
Spiraea densiflora Nutt., spiraea
Eriophyes spiraeae Nal., XVI, causing flower galls
- Malvaceae, mallow family
Hibiscus sp. (*rosa-sinensis* L. ?) hibiscus
Tegonotus hibiscella n. sp., XVI, a rust mite
- Compositae, sunflower family
Baccharis glutinosa Pers., an Asteraceous Composite
Aceria baccharices K., XV, p. 139, 1945
Baccharis viminea DC., mule fat
Aceria baccharices K.

DESIGNATIONS ON PLATES

- API—Interior structures of the female genitalia
D—Dorsal diagram of the mite
DA—Dorsal view of anterior section
EDI—Dorsal skin in lateral view
ES—Detail of side skin
F—Featherclaw
GFI—Female genitalia and coxae
L—Left legs
S—Side view of mite
SA—Side details of anterior section of mite

NOTE.—Eriophyid Studies XV appeared in the Bulletin Cal. Dept. Agr. vol. XXXIV, No. 3, pp. 137-140, Oct. 8, 1945. The date of the appearance of installment XIV while not stated in the previous publication, was Apr. 13, 1944.

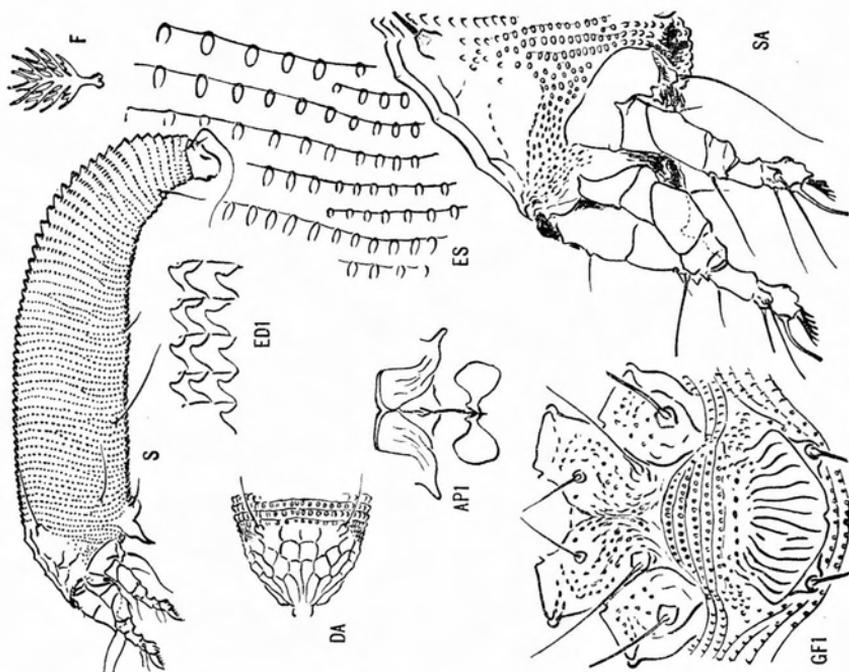


PLATE 197—*Paraphytoptus rhamniphagus* n. sp.

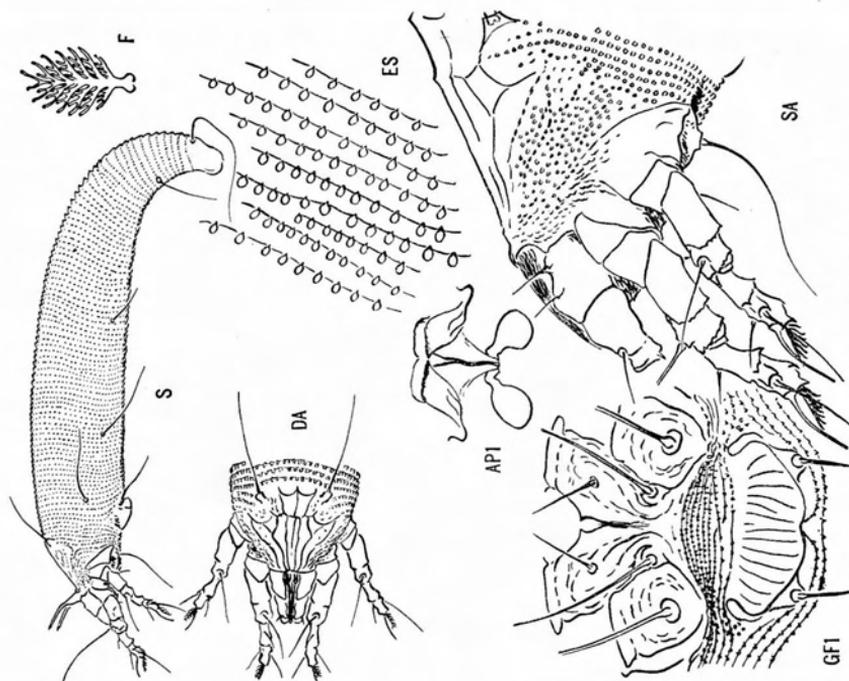


PLATE 196—*Aceria callupini* n. sp.

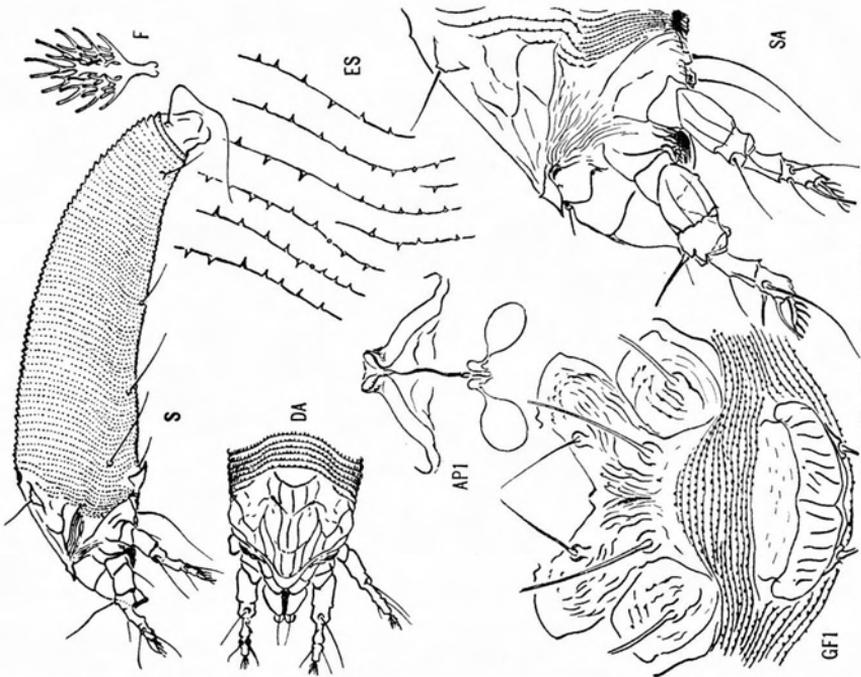


PLATE 199—*Phyllocoptes cedri* n. sp.

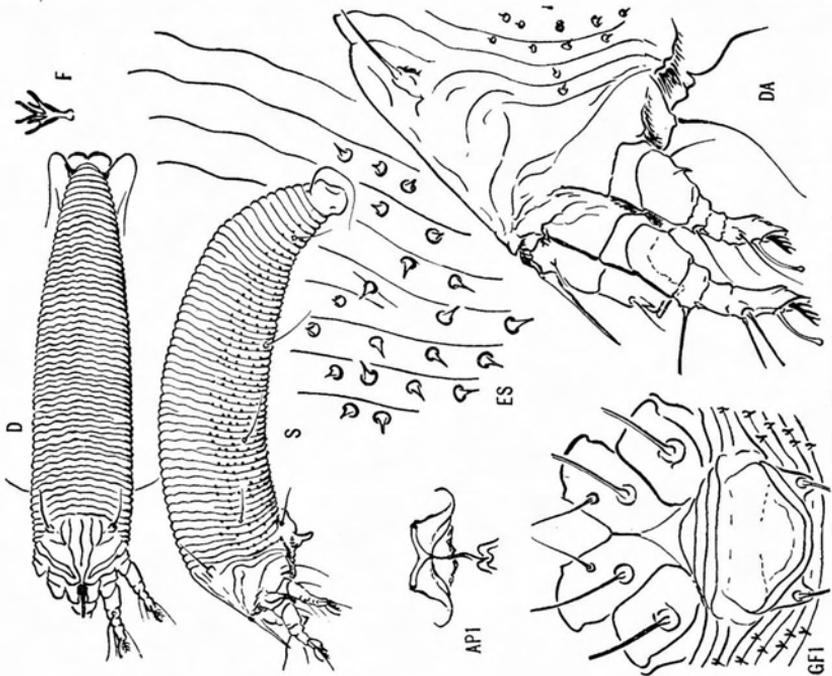


PLATE 198—*Cymoptus spiniventris* n. sp.

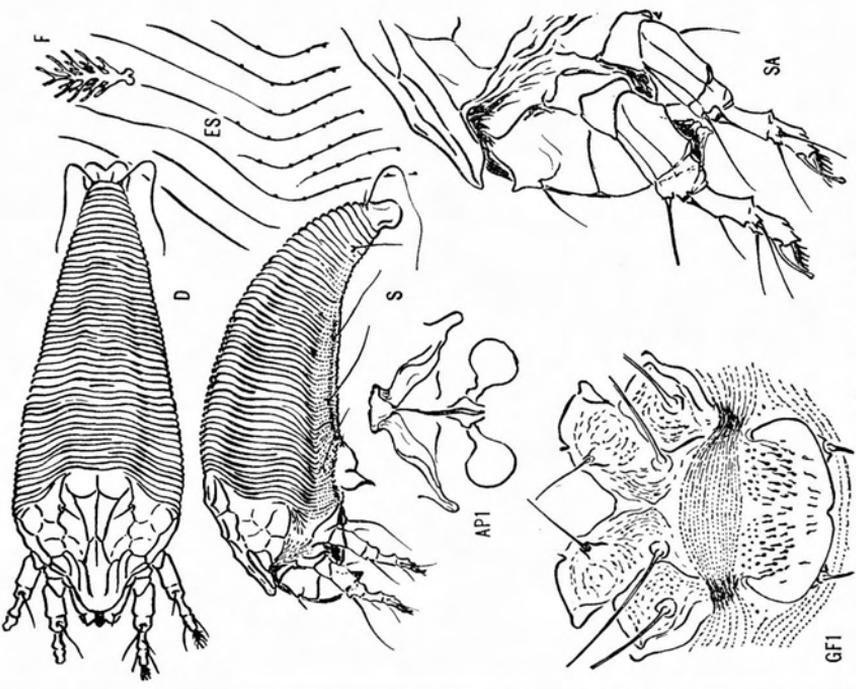


PLATE 201—*Epirimerus pseudotsugae* n. sp.

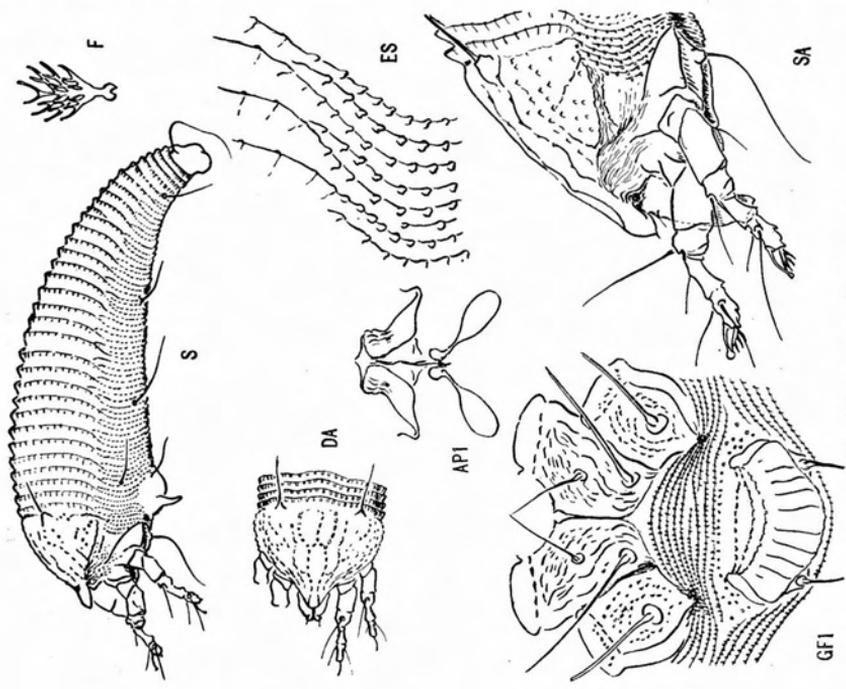


PLATE 200—*Vasates malivagrans* n. sp.

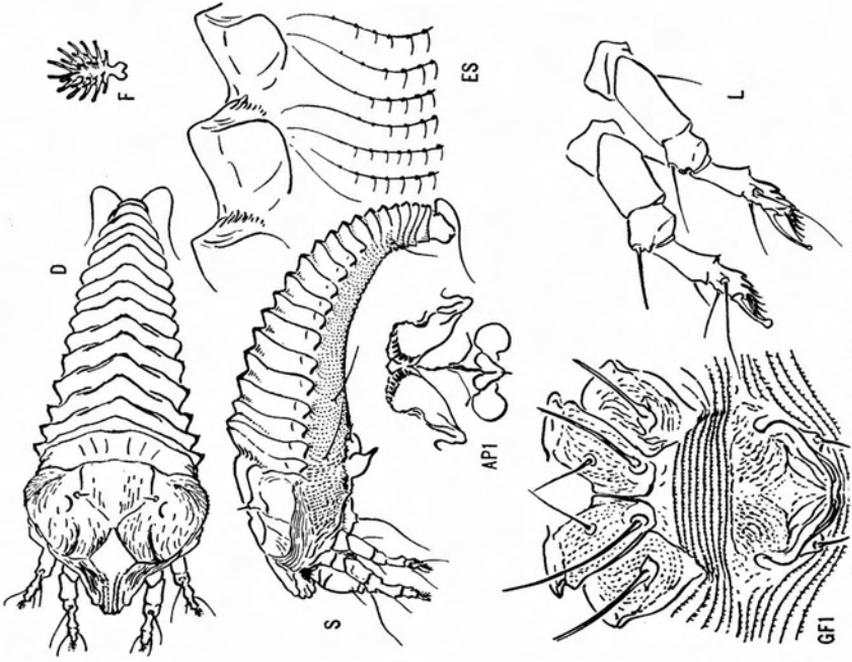


PLATE 203—*Oxypleurites mongiferae* n. sp.

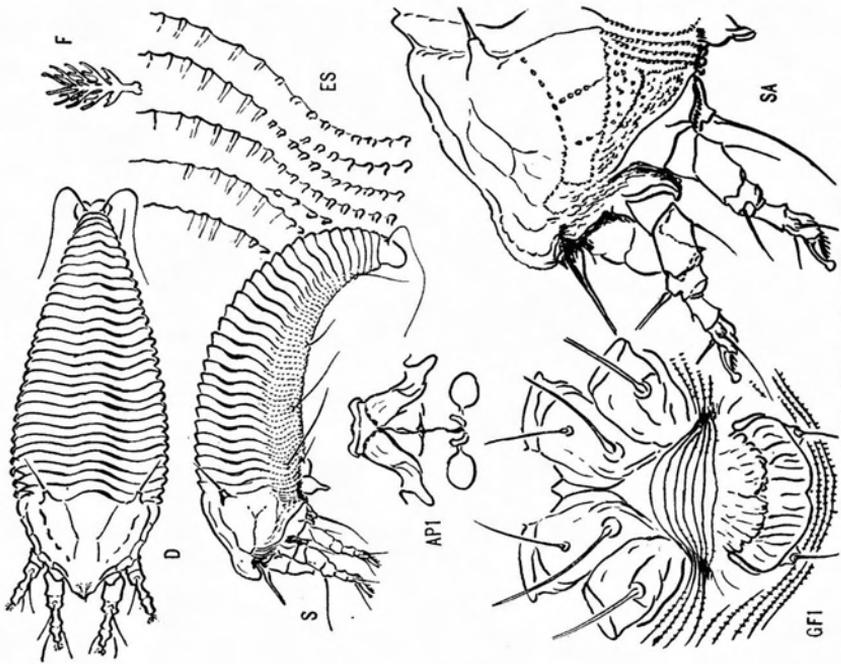


PLATE 202—*Tegenotus hibiscella* n. sp.