

continental North America while types of the other two species are from Trinidad, British West Indies. In order to indicate relationship and facilitate identification, the place at which each species runs out in the writer's previously published key to the North American species of the genus *Opius* (Proc. U. S. Nat. Mus., vol. 49, 1915, pp. 68-72) is given at the beginning of each description.

Opius cupidus, new species.

In the writer's key to species of *Opius* (l. c.) this species runs to category 24 and agrees best with the first alternate of that couplet. It is at once distinguished from *provancheri* Dalla Torre, however, by the fact that the recurrent nervure is interstitial with first intercubitus instead of joining the second cubital cell; and also by the fact that the thorax, with the exception of the mesosternum and propodeum, is reddish testaceous like the head. Resembles *canaliculatus* Gahan, but differs in that the median impression on the mesoscutum is not nearly so elongate, the propodeum lacks the transverse carina near base, and the first tergite is different.

Female.—Length 3 mm. Head viewed from above more than twice as broad as long; ocellocular line more than three times the length of the greatest diameter of an ocellus; vertex and frons polished; face polished, moderately hairy, with weak setigerous punctures and a distinct median ridge; malar space about equal to the width of mandible at base; clypeus with sparse, irregular punctures and separated from the mandibles by a narrow transverse opening; eyes ovate, moderate in size, and broader than the posterior orbits; antennae inserted opposite the middle of the eyes, 34-jointed in the type, the first two flagellar joints subequal and approximately two and one-half times as long as thick, following joints shorter but all distinctly longer than broad. Thorax polished, very sparsely hairy, the mesoscutum and scutellum mostly bare above, the former with a few pale hairs on the anterior portion and a very few posteriorly on each side of the short, elliptical median depression; parapsidal grooves foveolate and deeply impressed at the anterior lateral angles of the mesoscutum, entirely effaced on the posterior two-thirds of the mesoscutum; transverse groove separating the scutellum from mesoscutum broad, deep, and strongly crenulate; mesopleura with a broad and strongly crenulate longitudinal depression below the middle; propodeum irregularly rugoso-punctate, with an incomplete and poorly defined median longitudinal carina basally; wings with the stigma broad; first radial abscissa about equal to one-half the width of stigma, second abscissa approximately one and one-fourth times the length of the first intercubitus; radial cell rather broad and terminating some distance before extreme wing-apex; recurrent nervure exactly interstitial; first brachial cell closed

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A NEW SPECIES OF MATSUCOCCUS FROM PINES IN
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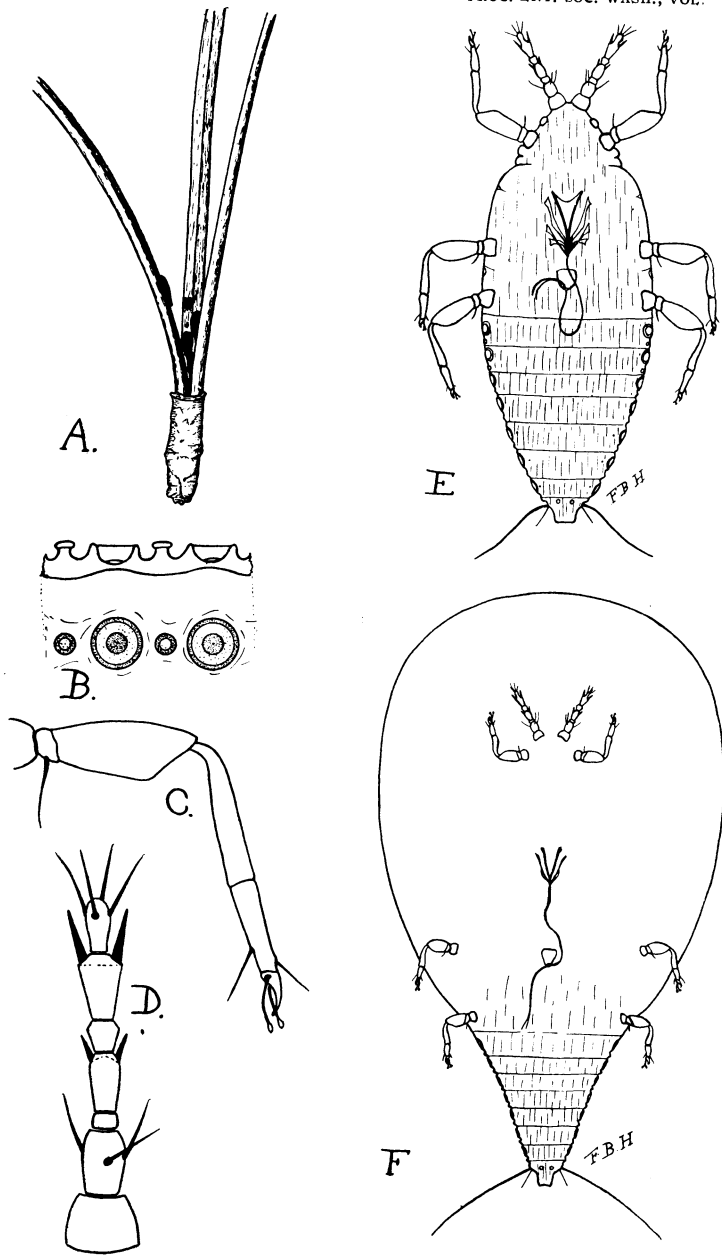
BY FRANK B. HERBERT, *U. S. Bureau of Entomology.*

Coccidae Subfamily—Margarodinae.

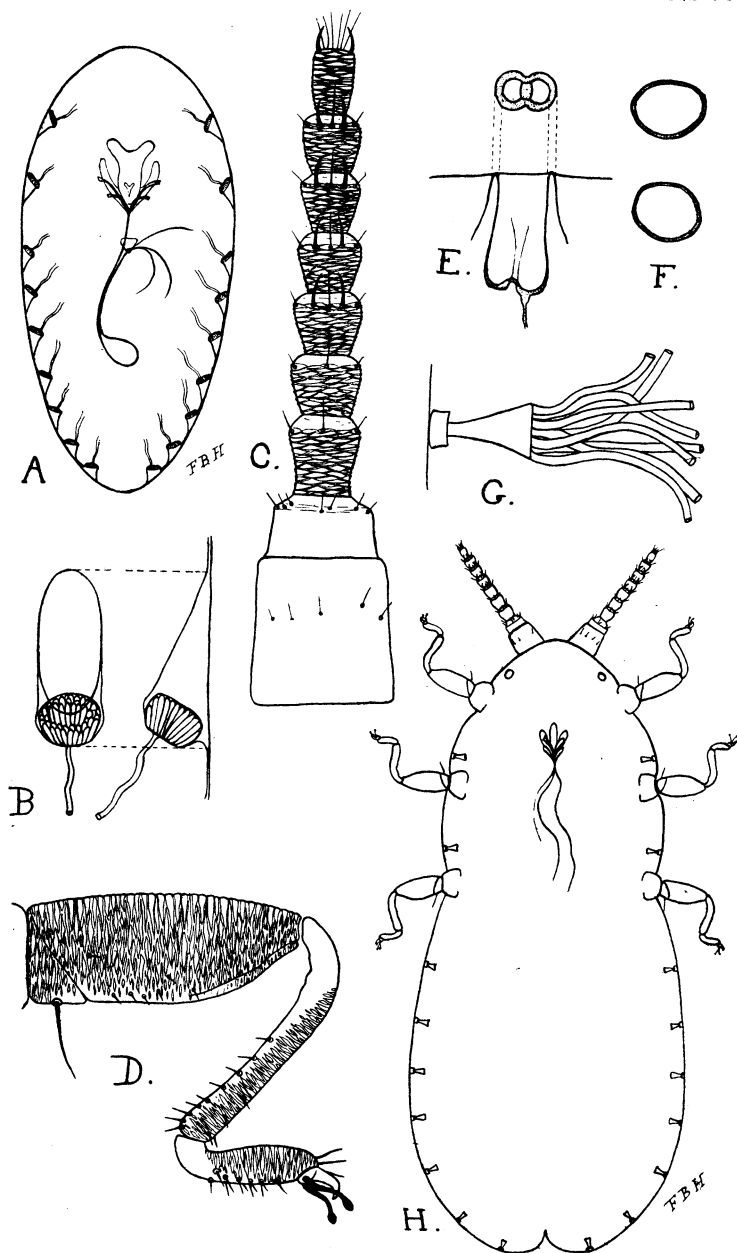
Matsucoccus fasciculensis, new species.

Adult Female.—3 to 3.5 mm. long and 1 to 1.4 mm. broad, elongate oval somewhat narrowed anteriorly (Plate 14, H.). In life the insect is of a brownish color, with margin of abdomen and appendages tinged with yellow. The derm is rough or crinkled. Antennae are transversely striate, nine-segmented, bases approximate. The first segment is large, slightly longer than broad, 2nd nearly as broad but much shorter, the remaining segments becoming successively more slender, each being widest near the outer end. Each segment bears three or more slender spines, segments 5 to 9 each also bear two heavier spines (Plate 14, C.). Legs are moderately large, transversely striated, the tarsus attached at the apex of the tibia and strongly curved outward. Trochanter bears one long spine, the femur, tibia and tarsus each bear a number of small spines. There are no digitules borne on the tip of the tibia as in the genus *Kuwania* but instead the tarsus bears two hair-like digitules and the tarsal claw two knobbed digitules (Plate 14, D.). Eyes are present, mouthparts sometimes present. There are seven abdominal and two thoracic pairs of spiracles from each of which 8 or more tracheae arise (Plate 14, G.). The dorsum of the abdomen bears transverse rows of large, simple pores (Plate 14, F.), while both the dorsum and the venter bear internal ducts, which, viewed from above, have the appearance of 8-shaped pores (Plate 14, E.). Small spines are present on both the dorsum and venter. Without a marsupium. Anal tube absent, anal ring not discernible.

Larva, first stage.—Body is oval, acute at both ends (Plate 13, E.). Antennae are approximate, 7-segmented, segment 1 is large and broad, 2, 4 and 6 are long, 3 and 5 are short, 7 is medium, segment 2 bears 3 long spines and 4 and 6 each bear 2 broad stiff spines, 7 bears 4 long spines on its tip (Plate 13, D.). The legs are rather small, the femur broad, the tibia and tarsus slender, the latter bearing two knobbed digitules (Plate 13, C.). The trochanter bears one slender spine. Segmentation of the abdomen is distinct. There are



HERBERT-MATSUCOCCUS FASCICULENSIS



HERBERT—MATSUCOCCUS FASCICULENSIS

seven pairs of abdominal spiracles, resembling a row of buttons on each side of the abdomen, with smaller button-like processes alternating between them (Plate 13, B.). There are also two pairs of thoracic spiracles. The tip of the abdomen is truncate, bearing a long slender seta on each side. The derm, especially of the abdomen, is lineate.

The cast skins of the first stage are similar except that the cephalothorax is enormously extended and rounding (Plate 13, F.).

Larva, second stage.—Cast skins only have been found: these resemble those of the first stage in every way, except that they are very much larger.

Larva, third stage.—Without eyes, legs or antennae (Plate 14, A.). The spiracles are large and conspicuous, 7 abdominal and 2 thoracic being present. They are surrounded by a number of small ducts and are set at the inner end of rather long slanting tubes (Plate 14, B.). In life, wax threads extend from these tubes inclining posteriorly. The derm is somewhat chitimized. The anal tube is absent, anal ring not discernible.

Mouthparts present in all larval stages. Parts well separated, the internal framework being central with the mentum considerably posterior to it.

Male.—Unknown.

Types.—Holotype, an adult female (Hopk., U. S. No. 15406B), mounted with the immature stages of the same individual, from within the fascicles of digger pine (*Pinus sabiniana*) needles, Mt. St. Helena, California. Paratypes of adults and larvae (Hopk., U. S. Nos. 15406B, 15409B and 15813A) from within the fascicles of digger pine and yellow pine (*P. ponderosa*) needles, Mt. St. Helena and Placerville, California. Author, collector. Holotype and paratypes in the National Collection of Coccidae. Paratypes also in Forest Insect Collection at Los Gatos, California.

Besides the above localities, it has been taken recently on digger pine at The Pinnacles, San Benito County, California, by Mr. G. F. Ferris.

This is a most peculiar coccid occurring in the very interesting and peculiar subfamily, *Margarodinae*. According to Mr. Kuwana's description and figures of *Matsucoccus matsumurae* (Kuwana), this new scale is apparently quite closely related to it in this genus. The adult is especially similar in the transversely striated legs and antennae, and the larva in the odd shaped antennae. This is the second species of the genus *Matsucoccus* Cockerell, and is the first representative of the genus in America. The author has also seen an undescribed species of this genus in Mr. G. F. Ferris' possession, taken on *Pinus monophylla*, which forms a connecting link between *fasciculensis* and *matsumurae*, lacking several of the peculiarities of the former. Were it not for this undescribed species, *fasciculensis* would appear to be distinct enough to belong to a separate genus.

In life, this scale is usually found between the pine needles just at the point where they emerge from the sheath. Occasionally specimens are found within the fascicular binding or out on the needles not over an inch away. They are usually on the needles which are one and two years old.

There is no doubt whatever about the last three stages for the adult female has been found within the apodous form, the latter having the cast skin of the preceding stage covering the posterior part of the body. A smaller cast skin, presumably of this individual, was beneath. There is a decided difference in the size of these two cast skins which also would indicate that there are two larval stages preceding the apodous form.

EXPLANATION OF PLATES.

Plate 13.

Matsucoccus fasciculensis, n. sp.

- A. Several individuals situated in a fascicle of pine needles. (Enlarged.)
- B. Spiracles and alternate button-like processes of first stage larva, side and top view. (Very much enlarged.)
- C. Leg of first stage larva. (Very much enlarged.)
- D. Antenna of first stage larva. (Very much enlarged.)
- E. First stage larva, ventral view. (Greatly enlarged.)
- F. Cast skin of first stage larva, ventral view. (Much enlarged.)

Drawn by F. B. HERBERT.

Plate 14.

Matsucoccus fasciculensis, n. sp.

- A. Apodus form or third stage larva, ventral view. (Much enlarged.)
- B. Spiracle of apodous form, top and side view. (Very much enlarged.)
- C. Antenna of adult female. (Very much enlarged.)
- D. Leg of adult female. (Very much enlarged.)
- E. Duct of adult female, which, viewed from above, has the appearance of an 8-shaped pore. (Very much enlarged.)
- F. Large simple pores of adult female. (Very much enlarged.)
- G. Spiracle and tracheae of adult female. (Very much enlarged.)
- H. Adult female, ventral view. (Much enlarged.)

Drawn by F. B. HERBERT.

DESCRIPTIONS OF SEVEN NEW SPECIES OF OPIUS (HYMENOPTERA-BRACONIDAE).

By A. B. GAHAN, U. S. Bureau of Entomology.

This paper contains descriptions of seven new species belonging to the genus *Opius*. Types of five of the new species are from