

Article II.—DESCRIPTIONS AND RECORDS OF COCCIDÆ.

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Trionymus violascens Cockerell.

Mr. E. Bethel sends abundant material, labelled, "on *Agropyron occidentale* (*A. smithii*), vacant lots in Denver, Colo., Oct. 5, 1914." He notes that it "is the most common and destructive insect to grasses that we have, as it is widely distributed, and very abundant in many places." At Walsenburg, where Mr. Bethel first found this coccid, the grass was only half its normal size; he adds that cattle will not eat it when thus affected.

Eriococcus costaricensis n. sp.

♀. Length about 1.75 mm., in a perfectly white sac; body turning bright red when boiled in KOH. Tarsus distinctly longer than tibia; claw with denticle on inner side near apex (this denticle is also present in *E. adenostomæ*, *E. cockerelli* and *E. palmeri*).

The following measurements are all in microns: antennæ 7-jointed, joints (1.) 30, (2.) 33, (3.) 50, (4.) 39, (5.) 20, (6.) 20, (7.) 35. Dermal spines about 25 long. Caudal lobes large, about 63 long, armed as in *E. cockerelli*, their bristles about 175 long. Bristles of anal ring about 88 long. Middle femur with trochanter about 160 long. Anterior tibia, 88, tarsus (the tarsus in each case measured without claw) 113; middle tibia, 100, tarsus 118; hind tibia, 105, tarsus 125.

Hab.—On twigs of *Vaccinium*, with much black fungus; Mt. Irazu, Costa Rica, 11,300 ft., March 15, 1913 (*E. Bethel*).

Differs from *E. cockerelli* Essig by the longer tarsus, and from *E. adenostomæ* Ehrhorn by the third antennal joint conspicuously longer than the last, as well as the larger size. All these insects are very closely related, and could be regarded as subspecies of a single widely distributed species, but it is probable that they would appear more distinct in life, especially if the earlier stages and males were known. The *Eriococcus* type is extraordinarily conservative, and shows surprisingly little modification in the most remote localities, although the various species or races must have been isolated for ages.

E. costaricensis comes from the highest altitude yet known for a Coccid.

Eriococcus tinsleyi Cockerell.

Walsenburg, Colorado, on *Malvastrum coccineum*, Aug. 16, 1911 (*E. Bethel*).

***Pseudococcus filamentosus* Cockerell.**

Tanghulan, Mindanao, on *Coffea*, very destructive (*Baker*).

***Gossyparia spuria* (Modeer).**

Denver, Colorado, immature, wintering on bark of elm (*E. Bethel*).

***Fonscolombia braggi* n. sp. (Figs. 11-15.)**

♀. Elongate (when mounted on slide), 165 microns long and 75 broad, the sides nearly parallel. Bright raspberry red in life; colorless after boiling. In the following account the measurements are all in microns:

Antennæ 7-jointed, joints 3 to 6 broader apically than basally, so that the lateral profile is stair-like; joints 5 and 6 each with a curved spine at side, 7 with a spine and many bristles; length of joints, (1.) 25, (2.) 18, (3.) 32, (4.) 20, (5.) 16, (6.) 16, (7.) 26. Distance between antennæ 70, width of base of antenna 45. Derm with scattered round glands, and very minute bristles. Mouth parts large, about 125 across; labium short, about 63 long and broad at base, not distinctly jointed. Anal ring with six short spines. Caudal bristles about 140 long. Anterior femur with trochanter 112, middle ditto 120, hind ditto 125; middle tibia 55, hind tibia 75; hind tarsus (excluding claw) 87; tarsi curved. The claw has a very minute denticle on inner side near end.

Second stage.—Antennæ 6-jointed, 52 apart; joints measuring (1.) 20, (2.) 18, (3.) 20, (4.) 13, (5.) 14, (6.) 25. Legs stout; middle leg measuring, femur with trochanter, 88; tibia, 45; tarsus (without claw) 50. Tarsus with two stout bristles on inner side. Derm with regularly placed (in longitudinal and transverse rows) small nipple-like narrowly truncate glands.

Hab.—On roots of *Berberis repens*, Boulder, Colorado, May 31, 1911 (*Bragg*).

The genus was described from Europe, and is new to America. The species is aberrant by the seven-jointed antennæ and the character of the dermal glands, but it does not seem necessary to propose a new generic name for it. The females produce a quantity of loose white cotton-like secretion, but are not hidden by it. Our examples, though adult, had not begun to produce eggs.

***Ripersia trichura* Cockerell.**

On April 4, 1914, we found several specimens of this elongate species under rocks, in nests of *Lasius americanus* and *Formica* sp. at Boulder, Colorado. It is new to Colorado.

***Aspidiotus translucens* (Cockerell).**

This is usually called *A. transparens* Green, but that name was originally applied to *A. destructor* Signoret.

Los Baños, Philippine Is. (C. F. Baker); collected on *Carica papaya*, *Dioscorea alata*, *Aleurites moluccana*, *Mangifera indica* and *Codiaeum*. (Baker 885, 1160, 2180, 2371, 2372.)

Hemichionaspis aspidistræ (Signoret).

Professor Baker writes that his 1751, recorded as from *Smilax*, was really on *Erythrophalum scandens*. He also writes that *Protopulvinaria longivalvata bakeri* was on *Voacanga globosa* (Apocynaceæ), and *Pinnaspis buzi* was on *Homalomena* (not *Aglanema*) *philippinensis*. Also, *Paralecanium luzonicum* was on *Plectronia* (not *Alectronia*) *viridis*.

Aspidiotus ehrhorni Coleman. (Fig. 10.)

Described from California, on *Abies* and *Libocedrus*. Mr. L. C. Bragg found it among lichens on the bark of *Pseudotsuga mucronata* at Boulder, Colorado. Our material seemed to differ a little from Coleman's description, but it agrees with cotype specimens. We give a new figure, showing variations.

Chrysomphalus pedroniformis n. sp. (Fig. 8.)

Female scale circular or oval, about 1.75 mm. diameter, slightly convex, dull pale reddish-brown with the margin whitish; exuviae large, nearly central to sub-lateral, usually darker than the rest of the scale, with the first skin appearing as a shining, more or less golden boss.

Adult female bright yellow when boiled in KHO, almost circular, at period of gestation with pygidium partly contracted within the body; segmentation distinct; pygidium with three pairs of well developed lobes; median and second lobes with a single notch on each side, or second lobes may be without the inner notch; third lobe with a single notch on outer side; two fringed plates between the widely separated median lobes, and two fringed plates between the first and second, and second and third, these conspicuous and well developed; beyond the third lobe three plates with long acute terminations, and just beyond these a slight angular projection of the margin; a short spine laterad of each lobe; club shaped organs at bases of lobes very small; circumgenital glands with anterior lateral groups each of 5 to 8 orifices, posterior lateral of 3 to 5; dorsal pores in two rows on each side, 8 to 12 pores in each row; also a small central group of dorsal pores near the anal opening. Immature female somewhat smaller, with only the median lobes well developed.

Male scale elongate-oval, pale, with darker exuvia.

Hab.—On bark of small branches of *Vitis vinifera*, Los Baños, Philippine Is., March 16, 1914 (C. F. Baker 2374).

Very close to *Chrysomphalus pedronis* (Green) from Ceylon, but the median lobes are differently shaped, with the part beyond the notches much

shorter, and the scale is quite differently colored. It also resembles *C. dictyospermi* (Morgan), but differs at once by the short club-shaped glands and the median lobes notched on inner side.

***Fiorinia phantasma* n. sp. (Figs. 6, 7.)**

Female scale about 1.25 mm. long, of the usual elongate form, very pale greyish ochreous, very inconspicuous on the whitish surface of the under side of the leaves of *Neolitsea*; first skin elongate oval, extending beyond anterior end.

Adult female pale yellow, during gestation with the abdominal segments contracted; pygidium with median lobes widely divergent, not greatly produced, their inner margin with 4 to 6 teeth; no distinct additional lobes, but margin with triangular dentiform projections as shown in the figure; two pairs of large spines on each side, as figured; lateral margins anterior to pygidial area parallel; circumgenital glands with posterior lateral groups each 10 to 13 orifices, anterior lateral of 10, median group of 5; antennæ close together, without any stiff spine, between them is a serrate plate.

Second stage female elongate; pygidial structure not unlike that of *F. fiorinia*, with well developed narrow second lobes.

Male scale white, parallel sided, broad, with pale yellowish first skin.

Hab.— On *Neolitsea*, on under side of leaves, Mt. Makiling, Philippine Is., Jan. 31, 1914 (*C. F. Baker* 2370).

Closely related to *F. saprosmae* Green, but differing conspicuously in the shape of the abdomen and the number of circumgenital glands. Also allied, but not so closely, to *F. theae* Green.

***Pseudaonidia* Cockerell.**

The genus *Pseudaonidia* was revised by Mr. C. L. Marlatt in Proceedings Entomological Society of Washington, ix (1908), pp. 131-141, fifteen forms being recognized. Three of these belong to *Selenaspidus*, which appears to be a sufficiently distinct genus, and has been accepted as such by Lindinger, who has added to it several new species from Africa. True *Pseudaonidia* has also received some additions from various parts of the Old World. In Marlatt's revision, just cited, various North and South American localities are given for species of this genus, but in every case these represent introduced forms, brought from the Old World on plants, and here and there becoming established. The Monthly Bulletin of the Californian Commission of Horticulture, published at Sacramento, gives lists of the insects intercepted by the quarantine officers at San Francisco, and it is shown that every year many consignments of plants arrive from Japan, infested with *Pseudaonidia pæoniæ* and *P. duplex*. Many years ago Professor C. H. T. Townsend collected a remarkable new *Pseudaonidia* in the State of Vera

Cruz, Mexico, and one of us (Cockerell) had sent the description for publication, when he received the same insect from Mauritius, along with a paper in which it had been described by Mr. d'Emmerez de Charmoy. It is now certain that the species belongs to the Old World tropics, and had been introduced in Mexico.

We have now to describe a distinct new species from the Philippine Islands.

***Pseudaonidia obsita* n. sp. (Fig. 1.)**

Female scale circular, slightly convex, about 2.5 mm. diameter, appearing brownish-black, but actually light brownish-pink (as in *P. trilobitiformis*), with a thick covering due to a fungous growth; exuviae yellowish-fulvous, sublateral; ventral film thick, white. Occasionally the scales are white.

Adult female somewhat oval, but produced posteriorly; length about 1.75 mm.; dark brown, integument thick, segments distinctly marked; dorsal pores in rows, minute, not very numerous; circumgenital glands with anterior lateral groups of 27 to 29 orifices, and posterior lateral with 33; abdomen with a large reticulated area; pygidial margin with three pairs of well-formed lobes, and a fourth rudimentary; median pair dark, relatively short and broad, obscurely notched on each side; second and third pairs pale, narrow, elongate, with a notch on the outer side; fourth lobes indicated by a prominent subangular projection just beyond the last of the bidentate squames; squames in interlobular intervals strongly bidentate, with an occasional small tooth at side; a spine laterad of second and third lobes.

Male scale broad-oval, about 1.5 mm. long, dull brown-pink, with the pale orange first skin near one end.

Larva pink, with the caudal end yellowish.

Hab.—Los Baños, Philippine Is., abundant on the under sides of leaves of *Ficus caudatifolia*, collected by C. F. Baker (2376).

Related to *P. baikæ* (*Aspidiotus baikæ* Newstead, Bull. Entom. Research, iv, p. 308, Feb., 1914), from Uganda, but in that species the scale is white or yellowish-white, there are no circumgenital glands, and the lobes and squames are somewhat differently formed. In Marlatt's table it runs to the vicinity of *P. curculiginis* (Green), which has the fourth lobes highly developed, resembling the median ones in form, and lacks the tessellated pygidial patch. According to Green, *P. curculiginis* has the circumgenital glands in groups of about 12 each; Marlatt's account is different, but neither agree with our species. Compared with *P. trilobitiformis* (Green), the new species differs in the form of the lobes, and the squames are much narrower.

We figure the caudal ends of several species of *Pseudaonidia* (figs. 2-5), to show the strikingly different types. It might be supposed that *P. tessellata*, with its low broad lobes, could not be congeneric with *P. obsita*, but *P. clarigera* is more or less intermediate, as shown by the forked squames

and triangular fourth lobe. A species with even lower and broader lobes than *P. tessarata* is *P. fossor* (*Aspidiotus fossor* Newstead, 1914), found on grape vine in Barbados, but doubtless of Old World origin.

***Pinnaspis siphonodontis* n. sp. (Fig. 9.)**

Female scale about $1\frac{1}{2}$ mm. long, mytiliform, rather narrow, pale red-brown, somewhat translucent, the shrunk female beneath showing as a dark spot occupying about half of the large second skin, which is about $\frac{3}{4}$ mm. long.

Female yellowish, elongated; abdominal segments distinct, produced laterally into large tubercles, the posterior two on each side each bearing a pair of spine-like squames; caudal region with the median lobes prominent, almost contiguous, rounded apically, and with a single deep notch on the outer side; next to these on each side is a spine-like squame, then a pointed glandular projection, then two rather small lobes shaped like the blade of an axe, then a spine-like plate, then a pointed projection, then the margin is finely serrate for some distance, after which comes a very large spine-like plate, then a projection of the margin, and beyond, at some distance, a single spine-like plate, and beyond this a pair of such plates, the formula for the spine-like plates being therefore 1, 1, 1, 1, 2. Circumgenital glands in five groups; median with 4 orifices, anterior laterals 10, posterior laterals 9 to 11.

Male scale a little over half a mm. long, parallel-sided, strongly tricarinate, but brown, with the same color and texture as the female scale.

Hab.—In groups on upper side of leaves of *Siphonodon celastrineus* Griff. (Celastraceae), the scales nearly all oriented in the same direction, much in the manner of *Hemichionaspis theae*. Los Baños, Philippine Is., Feb. 1, 1914 (C. F. Baker 2372).

Related to *Pinnaspis buxi* (Bouché), but readily distinguished by the double second lobe and the form of the median lobes.

***Neolecanium cribrigerum* n. sp. (Figs. 16-19.)**

♀. Perfectly flat, broad-oval, about 4.25 mm. long and 3.55 broad; no glassy or waxy covering; rich red-brown. (The larvæ are much narrower.) Derm translucent brownish after boiling, in the posterior region with scattered large glandular structures, shaped like an ink bottle, each emitting a very short bristle. In the abdominal region are six large patches which are more strongly chitinized than the surrounding tissues, and are perforated with a number of small round gland-orifices; these patches are three on each side, arranged in a semicircle, in the middle of which are the anal plates.

Mouth very small. Antennæ rudimentary, without joints. A rather large circular orifice in the derm on each side laterocaudad of the antennæ.

No legs. Margin with a very few exceedingly minute simple bristles.

Anal plates triangular, rounded at end, caudolateral side a trifle shorter than cephalolateral. Anal ring appearing moniliform.

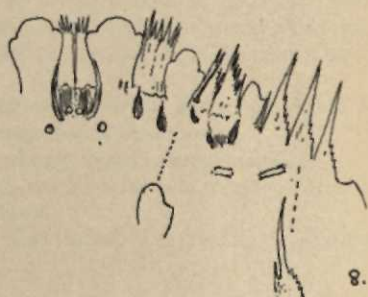
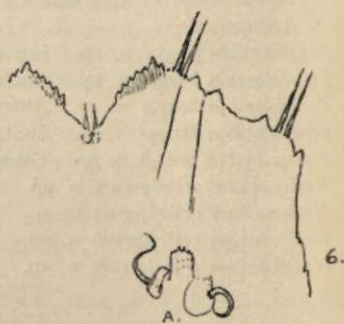
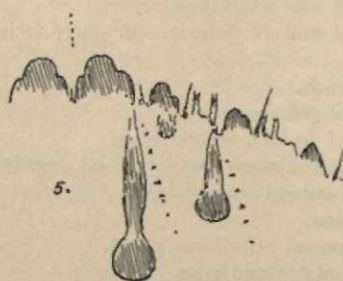
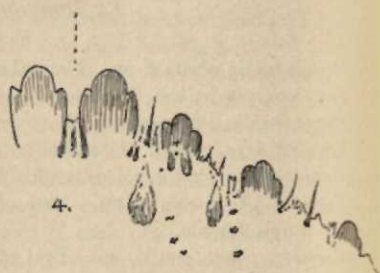
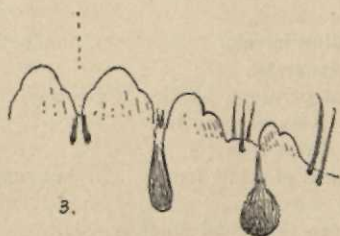
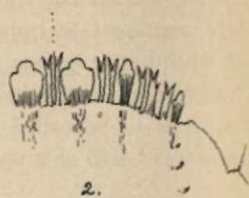
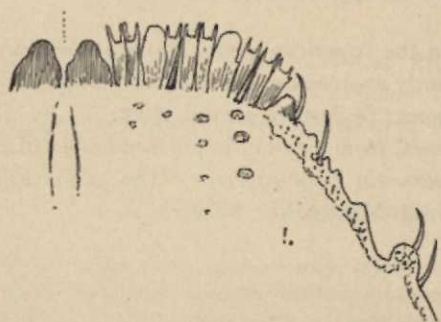
Hab.—On *Piper loheri*, occurring on the leaves; Los Baños, Philippine Is. (Baker 1754).

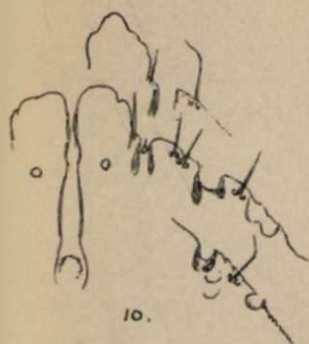
This is provisionally placed in the American genus *Neolecanium*, but it probably represents an independently evolved branch of the Lecanine series, which when better known will appear to deserve generic rank.

Neolecanium crustuliforme Green, from Ceylon, is not a member of this genus; it is to be called *Platysaissetia crustuliformis*. The genus *Platysaissetia* was based on a species from Mexico.

Explanation of Figures.

1. *Pseudaonidia obsita* n. sp. Caudal end of adult female.
2. *Pseudaonidia baikæ* (Newstead). After Newstead.
3. *Pseudaonidia tesserata* (de Charmoy). Coatzacoalcos, Mexico (Townsend).
4. *Pseudaonidia pæoniæ* (Cockerell). Japan. One of type lot.
5. *Pseudaonidia clavigera* Cockerell. Natal. From type.
6. *Fiorinia phantasma* n. sp. End of abdomen of adult female. A. Antennæ, adult female.
7. *Fiorinia phantasma* n. sp. End of abdomen of second stage female.
8. *Chrysomphalus pedroniformis* n. sp. End of abdomen of adult female.
9. *Pinnaspis siphonodontis* n. sp. Caudal end of adult female.
10. *Aspidiotus ehrhorni* Coleman. Caudal end of female. Boulder, Colorado (Bragg).
11. *Fonscolombia braggi* n. sp. Leg of female.
12. *Fonscolombia braggi* n. sp. Antenna of female.
13. *Fonscolombia braggi* n. sp. Antenna of female, second stage.
14. *Fonscolombia braggi* n. sp. Anal ring and adjacent parts of second stage female.
15. *Fonscolombia braggi* n. sp. Glands of second stage female.
16. *Neolecanium cribrigerum* n. sp. Antenna.
17. *Neolecanium cribrigerum* n. sp. Compound cribriform gland.
18. *Neolecanium cribrigerum* n. sp. Anal plates and ring.
19. *Neolecanium cribrigerum* n. sp. Dermal processes.





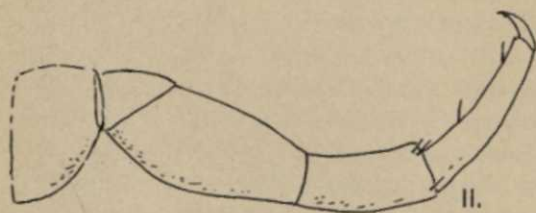
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