

SOME NEW AND LITTLE-KNOWN COCCIDÆ COLLECTED
BY PROF. C. H. T. TOWNSEND IN MEXICO.

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The Coccidæ herein described were collected by Prof. Townsend in 1896, and kindly transmitted to me for study by Dr. L. O. Howard. The collection made by Prof. Townsend will be fully enumerated in a paper to be published by him elsewhere, so the present contribution is confined to descriptions of the new species and descriptive notes on one hitherto imperfectly known. I have also included the description of a new variety of *Comstockiella* from Mexico, not found by Townsend.

(1.) *Aspidiotus reniformis*, n. sp.—♀ scale circular, diam. 2 mm., flat, pale reddish-brown; exuviae concolorous or slightly darker, covered, but both skins very distinctly visible, large, laterad of the middle. First skin when rubbed shining coppery.

♀.—Reniform, yellow with a brown margin; the posterior portion large, pale yellow, projecting with the outline of a cone, unusually produced and narrow, the sides meeting at less than a right angle. Pygidium (so-called) minutely striate; anal orifice oval or subtriangular, a long distance from hind end. Four very small low broad inconspicuous lobes, the plates between them scarcely visible; these lobes are twice as broad as long, the second about or nearly as broad as the first. Immediately cephalad of the second lobe comes a pair of small diverging spinelike plates; then after an interval somewhat greater (sometimes less) than the distance from the hind end to the plates just mentioned, comes a depression in which is a larger, but still small, pair of diverging spinelike plates; beyond this the margin is distinctly but very minutely serrate, with three small pointed prominences at rather long intervals, and a small rounded notch about half way between the first of these and the largest plates.

There are long tubular glands opening at the bases of the lobes, and also at the place of the obsolete third lobe; these are three on each side, with others, shorter and smaller, between them. Caudolateral grouped glands a long distance cephalad of the anal orifice. Four groups of ventral glands, caudolaterals 4 to 7, cephalolaterals 8. The antennæ are represented by small tubercles, each emitting a bristle. On each side of the mouth, some distance from it, is a small reniform orifice, its convexity directed laterad.

Hab.—Numerous on under sides of entire, lanceolate leaves, about 60 mm. long. Tehuantepec City, Mexico, May 26th (Townsend; Div.



Ent., No. 7196). This is related to the subgenus *Chrysomphalus*, and comes nearest to *A. perseæ*, Comstock. It resembles *A. mimosæ* in some respects, but the tubular glands are much longer than in that species, or in *smilacis*. The scale might be taken, at a superficial glance, for *am.untii*, *dictyospermi*, or one of the *wæ* group, all of which are quite different structurally.

(2.) *Aspidiotus (Hemiberlesia) tricolor*, n. sp.—♀ scales $1\frac{2}{3}$ mm. diam., crowded on twig, approximately circular, very little convex, white with a brownish stain; exuvizæ central or sublateral, covered by a film of secretion, appearing as a blackish spot; first skin in many examples uncovered, black or dark brown; second skin rarely uncovered, deep orange. Removed from the twigs, the scales leave a whitish film, quite conspicuous.

♀.—Circular, orange-brown. Only a single pair of lobes, these very large, entire, broad and low, much broader than long, gently rounded at ends, shaped like the end of an axe-blade; separated by a pair of well-developed spinelike plates. On the margin cephalad of the lobes is a group of five more or less serrate spinelike plates; then come three very short spinelike plates, after which the margin is more or less, irregularly, crenate. Anal orifice large, oval, distant from bases of median lobes less (sometimes a little more) than its own length. No groups of ventral glands. A few oval glands marking the lines of the obsolete segments. Two small saccular incisions with thickened edges on each side, one immediately laterad of the median lobe, the other cephalad (or laterad) of the obsolete second lobe.

Hab.—Salina Cruz, Mexico, May 29th (Townsend: Div. Ent., No. 7193). Distinguished by its very broad entire lobes, and the orange second skin. It will form with *A. rapax*, Comstock, and *A. ulmi*, W. G. Johnson, a little group, to which the name *Aspidites* is applicable, thus:

Subg. *Aspidites*, Berlese and Leonardi, 1896, s. str.—Scale white or whitish, no groups of ventral glands, only one pair of lobes.

Exuvizæ black or at least very dark..... *rapax*.

First skin black or very dark, second orange.. *tricolor*.

Exuvizæ wholly orange-yellow..... *ulmi*.

A. rapax is the type of *Aspidites*. *A. perniciosus*, *tenebricosus* and *smilacis*, included in it by Berlese and Leonardi, are not closely related to *rapax*, and should be placed elsewhere. [Since writing the above I have

found that *Aspidites* was proposed by Waagen in 1895 for a genus of Cephalopoda; *Aspidites*, Berl. & Leon., may therefore be changed to *Hemibertesia*.]

(3.) *Diaspis persimilis*, n. sp.—♀ scale about 1½ mm. diam., snow white, slightly convex; exuviae sublateral, brownish-orange, first skin wholly on second. ♂ scale unknown.

♀.—Circular, orange-brown, hind end strongly striate. Five groups of ventral glands, median 25 or more, nearly touching cephalolateral, cephalolateral about 15, caudolateral 7 to 12. Anal orifice small, caudad of caudolateral glands, but some distance from hind end. Only one pair of distinct lobes, these rounded, not particularly large, very slightly inclined to be crenate on edges, nearly touching at base; at outer base of each lobe a spine; then a spinelike plate, the branching tips of which slightly exceed the lobe; then a pair of minute tubercles representing the second lobe, then a spine; then a very large and stout spinelike plate, branched at tip; then three minute tubercles, then a spine; then a spine-like plate resembling the second but not quite so stout; then a slight notch, followed by a minute tubercle, then on the margin at intervals twelve ordinary spinelike plates of moderate size, and a few spines. At the bases of the median lobes are short dark sacs, a pair to each; and smaller sacs mark the places of the obsolete lobes on the margin. The oval and elongate glands in rows marking the obsolete segments are comparatively few in number.

Hab.—Crowded on fruit of "Chico Sapote," Laguna, Carmen I., Mexico, April 24, 1896. (Townsend: Div. Ent., No. 7184.) Very near to *D. amygdali* (*lanatus*); it may be recognized by the small number of orifices in the caudolateral groups of glands, the form of the lobes, and other minor details.

(4.) *Comstockiella sabalis*, v. *mexicana*, v. nov.—♀ oval, orange-yellow. Grouped glands as follows: Caudolaterals 14-17 (6-10 in type); mediolaterals 11-15 (4-7 in type); cephalolaterals 7-10 (4 in type). Scale as in type.

Hab.—On palms which arrived at San Francisco from Mexico; found by Mr. Craw, who thinks the palms came from near Maratlan, and were growing wild about 75 or 100 miles inland. The genus is new to the Mexican fauna.

(5.) *Lecanium* (*Eulecanium*) *perditum*, n. sp.—♀. Long. 3. lat. 2 to 2¼, alt. 1½ mm., general shape low-conical or hemispherical; very

dark brown, more or less shiny; sides with linear plications. Boiled in caustic soda turns the liquid yellowish-brown. Antennæ pale, well-developed, tapering, ordinary, 7-jointed, formula 3² (17) 5 (46); 3 extremely long, considerably longer than 4 to 7 together; 2 about as long as 4 + 5; a faint false joint marks the basal $\frac{1}{4}$ of 3; 1, 2 and 3 each with a pair of bristles, on 1 and 2 about the middle, on 3 near the end; 7 with several hairs, an especially long one, longer than itself, springing from its base. Rostral loop short. Anal plates yellowish-brown, the caudolateral margin somewhat shorter than the cephalolateral. Legs well-developed; pale. Digitules filiform, with large knobs. Tarsus hardly half length of tibia. Derm not reticulated, with sparse small round or oval gland orifices; a broad marginal area with very large round or oval gland-pits, the derm between them exhibiting a faint tendency to minute reticulation. These large gland-pits are double or more often complex; they are often nearer together than the diameter of one.

Embryonic larva (after boiling) pale yellowish-brown; rostral filaments in two coils. Caudal tubercles not or little projecting beyond body margin, though well-developed. Anal ring with six hairs, its broad margin conspicuously striate. Claw long; digitules of claw filiform, distinctly knobbed, extending beyond tip of claw; tarsal digitules stouter, with very distinct knobs, not nearly twice as long as claw-digitules, their origin some distance basad of base of claw.

Hab.—Xcolak, near Izamal, Yucatan, Mexico, March 10th, 1896. (Townsend: Div. Ent., No. 5663.) This is a most interesting species; the first *Eulecanium* ever found in the tropics. The antennæ are like those of *L. antennatum*, Signoret. The compound submarginal glands or pits remind one of the large double glands of *L. Fletcheri*. On the other hand, the large pits of the neotropical species *L. baccharidis* (from Brazil) and *L. batata* (from Antigua) are at once suggested, and it seems that we have here an indication of the affinities of these two species, which had been heretofore wholly obscure. *L. perditum* presents some superficial resemblance to small examples of *L. depressum* or *begoniæ*, but these belong to a quite different section.

(6.) *Lecanium chilaspidis*, n sp.—♀ very dark brown, shiny, but largely encrusted (especially at sides) with a dull dark grayish substance; strongly convex, long. $8\frac{1}{2}$, lat. 6, alt. 5 mm. Beneath, at the lateral (spiracular) incisions, are conspicuous patches of white secretion, only

visible after detaching the scale. Younger specimens are flatter, long. 6, lat. 4, alt. 2 mm. There is no waxy secretion on the surface.

♀.—Boiled in soda stains the liquid dark Vandyke-brown. No legs or antennæ found; probably they are rudimentary and easily deciduous. Anal plates small, pinkish-brown, together forming about a square. Derm pale reddish-brown after boiling, not reticulated, remarkable for an immense number of minute gland orifices, among which are interspersed a lesser number of larger, but still small, glands, which are circular and brown in colour. There are also large brownish patches. In places the tubular ducts of the minute glands are darkened, giving the derm a bristly appearance. The derm may be compared to the sky seen through a telescope, the minute glands being the fixed stars, the larger the planets, and the patches the nebulae, though of course the sky does not exhibit so many planets or nebulae.

Embryonic larva (after boiling) very pale pink, with very well-developed, stout, cylindrical caudal tubercles, which are the forerunners of the anal plates; each emits the usual long bristle, but these are easily broken off. Tarsus hardly or not over $\frac{2}{3}$ length of tibia, femur and tibia approximately of equal length. Digitules all filiform, the tarsal ones very long, twice as long as those of claw, and longer than the tarsus itself. Rostral loop extending considerably beyond the hindmost legs. Anal ring with apparently only six bristles. Last joint of antennæ long.

Hab.—On *Chilaspis linearis*, Tehuantepec City, Mexico, May 26th, 1896. (Townsend: Div. Ent., No. 7216.) On the *Chilaspis* at the same time and place were also taken species of *Aspidiotus* and *Mytilaspis*, but the material is inadequate for proper study. *L. chilaspidis* is a very distinct species, but more nearly allied to other neotropical forms than to anything else.

(7.) *Lecaniodiaspis (Prosopophora) radiatus*, n. sp.—♀. Long. 3, lat. 2 mm., often rounder, to long. $2\frac{2}{3}$, lat. $2\frac{1}{4}$ mm., more or less shiny, flattish, pale ochreous, with a longitudinal median keel, low but distinct, and well-defined radiating ribs, marking the segments. Removed from the bark, the scale leaves a whitish mark. Boiled in soda, it turns the liquid greenish. Antennæ pale brownish, apparently 8-jointed, but the joints obscure; 8 short, buttonlike; 3 longest, then 4, or these two about equal; 2 broader than long; 5 and 6 might be taken for one long joint, fully as long as 3; 7 very little smaller than 6. Dermis with numerous very small figure-of-8 glands, which under a low power look like

simple oval glands. Mouth-parts large, yellowish. Dermis not minutely wrinkled. Antennal formula (34) (12567) 8. 8 with some bristles, one longer than itself.

Hab.—On bark of branch of some woody plant, Salina Cruz, Mexico, May 29, 1896. (Townsend: Div. Ent., No. 7194.) *L. radiatus* is much more depressed than *quercus*, not marked like *dendrobii*, rounder than *acacia*, differently coloured from *eucalypti*, darker, rounder and smaller than *rufescens*, darker and more distinctly radiately ribbed than *yuccæ*. It seems to be very near to *Lecaniodiaspis atherosperma* (Maskell), by its small size, 8-jointed antennæ, and very minute figure-of-8 orifices; yet it differs in some particulars, and is, I believe, not the same. *L. atherosperma* is from Australia, but it may not be a native of that country. Mr. Maskell himself remarks that it is more like the neotropical *dendrobii* than the other Australian members of the genus.

(8.) *Conchaspis Newsteadi*, n. sp.—♀ scales crowded on the bark, overlapping; subcircular to oval, dirty white, low conical, diam. $2\frac{1}{2}$ mm. Apex sublateral, no radiating ridges.

♀ oval, orange-brown, similar to *C. angræci* in most respects. Antennæ 6-jointed, joints subequal, variable. Femur longer than tibio-tarsus, coxa about twice as broad as long. The round gland orifices with crenate edges (so strongly crenate as to appear moniliform) are very distinct; the hindmost segment that shows them is the fourth from the end, this has a pair, close together, on each side. The next segment has on each side four close together, one a little mesad of these, then two at considerable intervals mesad. The next has on each side five in an irregular row, and two pairs at considerable intervals mesad. The next has five and one mesad. The details of the arrangement will differ on the two sides of the same specimen. Long marginal hairs as usual in the genus. Lobes at end of body indistinct.

♂ scale similar to that of the ♀ in texture, but small and elongate.

♂ Pupa red-brown, antennæ stout, of about 7 joints, reaching beyond base of the large rounded wing-pads; end of abdomen with a short, stout caudal stylus, blunt at tip; on each side of the last abdominal segment, by the base of the stylus, are three bristles, two very small, one longer.

Hab.—On Zuchil tree (*Plumieria*), Vera Cruz, Mexico, Feb. 26th. (Townsend: Div. Ent., No. 7159.) I take the liberty of connecting with this insect the name of Mr. R. Newstead, who, under the name of

Pseudinglisia, has given us the best account of *Conchaspis* yet published. With Mr. Green's Ceylon *C. socialis*, this will make the third species of the genus so far discovered. The ♂ pupa, now described, is very interesting, as it is just like the pupa of a Diaspid.

(9.) *Llaveia axinus* (de la Llave).—Prof. Townsend found at Salina Cruz, on May 27th, specimens of a large monophlelid, which I believe is identical with the imperfectly described *Ll. axinus*. The specimens are red, with mealy powder, and are sparsely marked with small black spots; dried specimens appear more grayish, and look something like very large *Coccus cacti*. The legs and antennæ are red-brown, the inner side of tibia and tarsus presents a row of short spines, about 11 on anterior tibia, and six, very small, on anterior tarsus. There are two rows of longer spines on the under side of the femur. Dermis rather thickly beset with short hairs. The largest specimen sent to me is perhaps not adult, and has only nine-jointed antennæ. Its dimensions are, long. 13 mm., lat. $6\frac{1}{2}$, alt. $4\frac{1}{2}$ mm. It appears, however, that adults were certainly found by Townsend, as among the material received at Washington were both eggs and young larvæ. Dr. Howard has kindly lent me a mounted larva, from which I have made the following description:

Larva oval, bright red, beset with short, rather stout spines. Seven very long hairs on each side of hindmost half of body, one to each segment, each accompanied by a much shorter and more slender hair, the smaller hair on the penultimate segment longer than its representatives on those anterior to it, and about half as long as the long hair of the same segment. The long hairs of the caudal segment accompanied by two smaller hairs, of which the innermost are the longest. Legs long, femora moderately stout, those of front legs about as long as tibia, of hind legs shorter than tibia. Tibia and tarsus very slender; tarsus of front legs equal with tibia, of middle legs a little shorter, of hind legs conspicuously shorter than tibia. Claw long, little curved. Eyes very dark, subconical. Antennæ 6-jointed, last joint or club very large, much swollen, longer than 4 + 5, with three whorls of hairs. Second joint a little longer than third, 3 and 4 equal, 5 shortest. The joints from 1 to 4 might be called subequal, and the formula then written 6(2134)5.

I am inclined to suppose that *Llaveia* and *Ortonia* will prove to be the same genus, differing at any rate not more than do species now included under *Icerya*.