



Coccidæ Collected in Mexico by Messrs. Townsend and Koebele in 1897

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Hexamitocera vittata, sp. nov.

Head yellow, an oblong ocellar spot and a wide stripe extending from the upper part of each eye to the neck, dark brown; antennæ brown, the first two joints and base of the third yellow, third joint two and one-half times as long as broad, arista pubescent, palpi and proboscis yellow. Thorax yellow, the mesonotum, scutellum, metanotum and a vitta beneath each wing, dark brown, polished, the mesonotum marked with four yellow vittæ; two pairs of dorso-centrals, one pair of scutellar, two prothoracic and two stenopleural macrochætæ. Abdomen polished, dark brown, the hypopygium and the posterior margin of each segment, except the first, yellow, the hairs black, a few macrochætæ along the sides. Legs yellow, front and middle femora ciliate on the under sides with black bristles. Wings grayish hyaline, small crossvein slightly beyond middle of discal cell. Length, 6 mm.

Colorado. A male specimen. Type No. 5001.

**COCCIDÆ COLLECTED IN MEXICO BY MESSRS.
TOWNSEND AND KOEBELE IN 1897.**

BY C. H. TYLER TOWNSEND AND T. D. A. COCKERELL.

The following are species jointly studied by us (with certain exceptions duly noted) in working over the two lots of coccid material collected in Mexico by Messrs. Townsend and Koebele during 1897, which were sent to us for determination by the United States Department of Agriculture. An author's initials, bracketed at the end of a species, mean that the entire text under that species is to be accredited to that author alone. The work of mounting the specimens, drawing up the descriptions, and finally of preparing and writing the entire manuscript, was done by Mr. Townsend. Some notes on the forms of *Icerya purchasi*, based on material not represented in the above two lots, and also the description of a Brazilian species of *Capulinia*, are included in the paper, having developed in connection with the study of the other material.

***Icerya purchasi* Mask.**

Typical form (= *crawi* Ckll.).—On citrus trees in Magdalena, Sonora, Sept., 1894 (Townsend). Thriving colonies of the typical *purchasi* were found here, and must have been introduced from California. This, however, is so far the only authentic recorded locality for typical *purchasi* in Mexico. (See remarks under var. *maskelli* which follows.) [C. H. T. T.]

***Icerya purchasi* var. *maskelli* Ckll.**

On trunks of several orange trees at Aranjuez, six miles from Guaymas, Sonora, Sept. 23, 1894 (Townsend).^{*} This is the form that I took at Guaymas, and which has been published as *purchasi*. The specimens are noticeable for their small size and short subconic ovisacs.

The larval characters of *purchasi* (typical form) and var. *maskelli* do not differ appreciably except in the antennæ of first stage, and this difference is not apparently constant. Mounts were made of larvæ of *purchasi* (typ. form) from California and Magdalena, Sonora; and of var. *maskelli* from California and Guaymas, Sonora. The two mounts from California and that from Magdalena show the antennæ of first larval stage practically the same; *i. e.*, the last joint is irregular in outline, and the penultimate, as well as last joint, bears one or two of the very long hairs. The Guaymas mount, being from the present specimens, shows the last antennal joint of first larval stage almost uniformly to be rather swollen and regular in outline, well constricted at base, rather soda-bottle shaped, and with none of the long hairs on penultimate joint. But some specimens occurred exhibiting a tendency toward the other form, so that the character can hardly be called distinctive.

The difference between the typical *purchasi* and var. *maskelli* were pointed out by Cockerell in *Psyche*, July, 1897, under the heading "note on two forms of the fluted scale." These forms were recognized by Craw some seven years ago as differing from each other, and have ever since been noticed by him to retain their distinctive features. The finding of the present specimens, which seem to be an exaggerated *maskelli* form, near Guaymas, Sonora, suggested the possibility that *maskelli* might represent an endemic American form, not in any way connected with the Australian *purchasi*. This supposition fell after making an extended examination of the larvæ, which could not be satisfactorily separated (at least the Californian specimens could not), so that the two forms could hardly be natives of two widely separated countries. It is still possible, however, that the present specimens from Guaymas may represent an endemic form related to *purchasi*, and thus a new species, but I do not consider it probable.

The statement of Cockerell (*Psyche*, l. c.) that *maskelli* is *purchasi* in the strict sense, and agrees very nearly with Maskell's description,

^{*}These specimens were in all probability what I collected near Guaymas, but unfortunately they were sent out from the Department without label. I can state positively that I collected exactly similar specimens, so far as external appearance goes at the locality given.—C. H. T. T.

needs correction. It is *crawi* which agrees very perfectly with Maskell's description, and *maskelli* agrees very poorly. A photograph taken by Craw, in San Francisco, of Californian specimens of the two forms side by side, in situ on the branches, shows the differential characters very clearly. *I. purchasi* has the body covered, usually conspicuously, with a white or yellowish mealy secretion; the ovisac long, stout and sub-cylindric, the whole form of sac and insect robust; the edges of body with curled cottony filaments often of some length and pronounced, and the long glassy filaments normally present and conspicuous. *I. maskelli*, on the other hand, has the body usually nearly bare, dark in color; the ovisac short rounded subconic, being very conspicuously abbreviated compared with *purchasi*; the whole form much less robust, the edges of the body quite destitute of curled cottony filaments, and the long glassy filaments usually inconspicuous. [C. H. T. T.]

***Icerya montserratensis* Riley and Howard.**

On leaves of avocado pear, Tampico, Jan. 26, 1897 (Townsend). Div. Ent., No. 4708. Only one adult ♀, but many young.

***Icerya palmeri* Riley and Howard.**

One adult ♀, on *Coursetia* sp., * near Guaymas, Sonora, April 23, 1897 (Koebele, 1714), Div. Ent., No. 7893. This is the first and only adult specimen of *I. palmeri* known. As the specimen is an unique, it was decided not to boil it for a study of the adult ♀ anatomical characters. Unfortunately the antennæ were broken, so that it is impossible to say whether it possesses 9-jointed or 11-jointed antennæ, and therefore it can not yet be referred to its proper subgenus.

Length of scale including ovisac, over 11 mm. Greatest width of body and of ovisac, 5 mm. Width of ovisac at extremity, 4 mm. Height of insect, 4 mm.; of ovisac, 4½ mm.

Adult ♀. Body red; legs and antennæ black, covered as well as venter with a white mealy secretion. Edge of body with moderately long curled filaments of white secretion, a central dorsal patch of filamentous secretion being variegated with pale sulphur-yellow. No glassy filaments on body apparently.

Ovisac pure white, not fluted, presenting a smooth lime-like surface, large and stout, 8 mm. long below and 7 mm. above. The species resembles *rileyi* in its smooth unfluted ovisac.

Several larvæ extracted from the ovisac demonstrated the fact of this species being *palmeri*. The median constriction of last antennal joint of first larval stage is pronounced and seems a constant character. The

* The name was spelled *Cocersitia* on label. Presumably *Coursetia* was intended.

wax of first and second larval stages is pure white. The characters agree perfectly with Riley and Howard's description. A specimen of the second stage of ♀ larva was also obtained from within the ovisac, and shows two long hairs, a little shorter than width of body, sticking straight out from sides of body, well removed from each other. These were doubtless broken off from the dried cast larval skins, from which the original description and drawings were made. The several hairs on last antennal joint of first larval stage are somewhat longer in some cases than in the figure. The broken stumps of the pair of cephalic hairs between bases of antennæ appear in one specimen, but do not show in the others. [C. H. T. T.]

***Icerya rosæ* Riley and Howard.**

Seven ♀ specimens, all apparently adult, taken on bark of trunk of a tree which may have been *Prosopis* sp., in plaza at market place. Tehuantepec City, Oaxaca, May 26, 1896 (Townsend). Div. Ent., No. 7222. It is curious to note that the anatomical characters of the adult ♀ of *rosæ* are the same as those of *purchasi*; the antennæ of *rosæ* have been stated by Riley and Howard to be the same as *purchasi*, while an examination of the present specimens shows them to agree perfectly in all the other anatomical characters with the description of *purchasi* given by Comstock. The validity of *rosæ* stands on the absence of ovisac, absence of curled filaments of secretion on border of body, and absence of fine glassy filaments on body. Boiling in caustic soda gives first a pronounced rose-color, then a rose-brown.

***Icerya littoralis* Ckll.**

One adult ♀ on bark of tree which may have been *Prosopis* sp., in plaza at market, Tehuantepec City, Oaxaca, May 26, 1896 (Townsend). Div. Ent., No. 7222. The egg-sac is short, and is distinctly yellow on circumference of basal half. There is no sign of the fine glassy filaments of the body in this species. The fluffy waxy secretion enveloping the eggs and newly-hatched young is whitish, but the inside of the wall of egg-sac shows conspicuously yellow. The wax of first stage of larva is apparently quite pure white. The last antennal joint of first larval stage, taken from ovisac of present specimen, and from sacs of *littoralis* typical form, shows a slight constriction in middle, thus exhibiting a tendency toward *palmeri*. The first larval stage of *littoralis* has the third antennal joint uniformly the same as 1, 2 and 4, the approximate formula being 6 (1234) 5; while *palmeri* has the third joint uniformly longer than 1, 2 and 4, the formula being 63 (124) 5. The

antennæ of first larval stage of *littoralis* var. *mimosæ* Ckll., differ from typical *littoralis* in the more uniformly stout basal joints and stout last joint, the intermediate joints being narrowed, giving the antennæ a constricted appearance in the middle. In typical *littoralis* the basal joints seem nearly as narrowed as the intermediate ones. Both the typical form and var. *mimosæ* have the last antennal joint of first larval stage with several (about 3) very long hairs. Both also have the lateral bristles of border of abdomen anterior to anal bristles, in first larval stage, well differentiated from other lateral hairs, thus falling in the group with *rosæ*, *montserratensis* and *palmeri*.

The antennæ of adult ♀ were both broken, one showing nine joints, the ninth joint being fractured and the distal portion missing. But the identity of the newly hatched larva with that of *littoralis* proves the determination beyond doubt.

***Ortonia primitiva*, sp. nov. Towns.**

Differs from *O. mexicanorum* Ckll. as follows: Antennæ only 9 jointed, less than twice as long as femur plus trochanter, more than twice as long as femur alone, the first five joints being about equal in length to the femur plus trochanter. Approximate antennal formula, (39) (21) (678) (45). Ninth is not as long as seventh and eighth together. The only joints that are broader than long are 1, 2, 4 and 5. Joints 3, 6, 7 and 8 are about as broad as long. In some cases 8 seems a little longer than 6 and 7. The last three joints are approximately equal in width, while the other joints gradually narrow proceeding toward the base. Joint 1 is perhaps $\frac{1}{4}$ wider than 2. Tibia more than $\frac{1}{4}$ longer than femur, and but little more than $\frac{1}{2}$ as broad as femur, being rather slim. Tarsus (not including claw) about $\frac{1}{2}$ length of tibia, with about seven spines in a line on inner edge, tibia with about ten such spines. Claw apparently with a short stout rudimentary digitule. Under and outer edge of claw on each side delicately scalloped, showing four scallops. No bristles apparent on claw. Integument showing the large round and oval hyaline spaces said to be characteristic of the genus, and thickly covered everywhere with numerous long strong spines interspersed with shorter ones. Boiling in KHO stains the liquid brown. Length of ♀ after boiling, about 5 or 6 mm.; dried unboiled ones are 3 mm. long, by 2 mm. wide. One of the larger specimens is accompanied by a considerable amount of pure white, fluffy, cottony secretion, which may form a substitute for an ovisac in this species. This cottony secretion, which does not seem to be present in *mexicanorum*, together with the presence in the debris of small orange colored eggs, indicates that the material is adult.

This species and *mexicanorum* need the erection of a separate subgenus for their reception, perhaps two subgenera. I propose the name *Protortonia* for the present species, and it may even be found to merit generic rank, as being quite distinct from *Ortonia*. For the present, *O. mexicanorum* can be included in it also.

On "nettle tree," Cuantla, Morelos, May 31, 1897 (Koebele). Div. Ent., No. 7878. The nettle tree, as stated elsewhere in this paper, is probably *Manihot* sp. [C. H. T. T.]

Cerococcus corticis, sp. nov.

Adult ♀. Elongate-globular, balloon-shaped, apodous and without antennae, integument whitish and transparent after boiling; anal cone chitinous, yellowish at base, brownish on terminal margins, wide and stout, conico-cylindric, about as long as basal width, less in diameter at discal end than at base, the margin deeply notched on ventral and dorsal aspect, the notch reaching to about middle of length of cone, the margins with a row of strong bristly hairs curved at ends, the lateral lips externally rather thickly clothed with the same extending down about $\frac{3}{4}$ way to base of cone. Between bases of lateral lips of cone inside appears what is evidently a median tubercle though not distinct, corresponding to the median tubercle situated between the two elongate caudal tubercles of *C. quercus* Comst. Anal ring concealed, but the stout, long cylindriform hairs arising from it are conspicuous, six in number (3 pairs), and reach well beyond ends of lateral lips of cone. In a younger specimen these hairs reach fully as far beyond ends of lips as depth of notch of anal cone. In a still younger specimen they are not apparent at all. The clear light yellow surface of basal part of cone shows a pair of brownish spots on either side, the inner pair much the larger. Spiracles distinct. Mouth parts large and well-developed; ♀ full of large well-developed ova. Length of ♀ on slide, nearly 2 mm.; width, $1\frac{2}{3}$ mm.

♂ Scale white, irregularly oval in form, seed-shaped or bead-shaped, covered wholly with a waxy secretion which has a felted, sometimes cottony, appearance on the surface. Length, 2 to $2\frac{1}{2}$ mm.; width, about $1\frac{2}{3}$ mm.; thickness, about 1 to $1\frac{1}{2}$ mm. Apparently stuck into the surface of the rough bark.

On bark of *Quercus engelmanni*, Nogales, Sonora, April, 1897 (Koebele). Div. Ent., No. 7880. Professor Cockerell had determined this species rather hastily as *C. ehrhorni*, and Mr. Pergande called attention to the fact that it was very different in appearance and must be distinct. As will be seen, the anal characters show the species to be very distinct from *ehrhorni*. It will be well also to note the very marked difference between *corticis* and *quercus* in the anal characters, as shown in Comstock's figure of the latter.

Phenacoccus gossypii, sp. nov.

Sac pure lime white; length, 5 to $6\frac{1}{2}$ mm.; width, 2 to $2\frac{1}{2}$ mm.; parallel-sided, more widened, larger and stouter than in *helianthi*, and the body of ♀ not apparent at one end, the sac wholly covering the body. Boiling in caustic soda does not stain the liquid.

Adult ♀. Length of body, 3 mm. Approximate antennal formula 2 (39) (145678). The antennae and legs are practically the same as in *helianthi*. The digitules of the claw are distinct, rather slender, well knobbed, and extending beyond the end of the claw about $\frac{1}{4}$ the length of the latter. Antennae and legs pale brown.

This species may be considered as taking the place in tropical Mexico of *helianthi*, which is found in northern Mexico, Texas and New Mexico. While *helianthi* affects *Helianthus*, *Pluchea*, etc., in the temperate region just named, *gossypii* affects cotton and other malvaceous plants in the tropical region to the south. Probably the specimens found by Townsend on cotton at Santa Maria, Texas, May 7, 1895, and identified by Tinsley as *helianthi* var., are nearly or quite the same as the present form.

P. helianthi and *gossypii* both differ from *yuccæ*, the only other described Mexican *Phenacoccus* in lacking the characteristic dark coloring of the antennæ and legs. They may be separated from each other by the sac characters already given.

Massed on stems, stalks and leaves, mostly on underside of latter at base of cultivated ornamental plant called, "amistad," which is very closely allied to cotton and is probably a species of *Gossypium*. Frontera, Tabasco, June, 1897 (Townsend). Div. Ent., No. 7820.

Also specimens on twigs, leaves and squares of cotton, Frontera, Tabasco, June, 1897 (Townsend). Div. Ent., No. 7811. From this material only a single adult ♀ was obtained. It agrees in every respect with the specimens from amistad, except that the second and third antennal joints are equal in length. Only the first six of the antennal joints are represented in the specimen; the formula for these would be (23) 1 (456). The sacs are typical.

Var. *a.*—Sacs have same general characteristics and appearance, but are uniformly smaller than in typical *gossypii*. Length of sac, 3 to 5 mm.; width $1\frac{1}{2}$ to 2 mm. The legs, including digitules of claw, are same as in *gossypii*. So also are the other characters of the ♀, except only those of the antennæ, the second and third joints of which are normally quite equal; the approximate antennal formula is 23 (19) (45678).

Greatly massed on branches, twigs, stems, and leaves of *Mimosa* sp., called "sarsa," Las Islas del Rio Usumacinta, some 20 miles or more above Frontera, Tabasco, July 9, 1897 (Townsend). Div. Ent., No. 7281. The plants were growing on the edge of the river, and were partially submerged at the time by the high water.

Subsequently to writing the above, Professor Tinsley has carefully studied these forms of *gossypii*, and compared them with *helianthi*. His investigation convinces him that no antennal or other structural character of the adult ♀ will serve to differentiate *helianthi* and *gossypii*. The easily noticeable differences in external appearance are, however, sufficient to separate them.

Prosopophora manihotis, sp. nov.

♀. Scale suborbicular, averaging about 3 mm. long, by $2\frac{1}{2}$ mm. wide, and $1\frac{1}{4}$ to $1\frac{1}{2}$ mm. high. Color sordid yellowish-white or brownish-gray. Surface rugose near margin, dorsal surface faintly transversely ribbed, three longitudinal rows of slight tubercles more or less distinct; in some specimens the dorsal surface is worn smooth. Scale with conspicuous traces of a whitish chalky secretion. Boiled in KHO gives the liquid a reddish or brownish color. The dried females under the scales are black.

♀. Antennæ 8-jointed, moderately stout, gently tapering; first joint about twice as wide as long, second a little wider than long, third a little longer than wide, second and third about equal in width and considerably narrower than first; fourth considerably narrower than third, about half again as long as wide; fifth still narrower but not twice as long as wide; sixth shorter than fifth, and seventh shorter than sixth, seventh being slightly wider than long; eighth joint knob-like, circular in outline, surmounted by several hairs, diameter less than width of seventh. Usual antennal formula approximately (34) 5 (612) (78); varying in one case to (34) (512) 6 (78).

Spines of integument large, long and sharp. Double glands of integument not of the usual figure-eight form, but bent half double, thus presenting the outline of a pair of short ears. The integument shows the rod-like structures very numerous and rather stout, the whole surface being covered with them.

On bark of "nettle tree" (so called on label), Cuantla, Morelos, May 31, 1897 (Koebele 1757). Div. Ent., No. 7910. As there is no other possible plant in the tropics of Mexico, so far as I know, which could be called a nettle tree, other than what is known as the "mala mujer," which is a species of *Manihot* (or *Jatropha*), I take it that this is the plant in question. It especially merits the name of nettle, and assumes tree-like dimensions. Its spines are extremely irritating if only barely touched to the skin. The bark on which the scales occur resembles perfectly that of this giant nettle. [C. H. T. T.]

Tachardia nigra, sp. nov.

Single specimens show the lac to be disposed in a more or less stellate form covering the body of the female, the stellate shape being due to the similar shape of the body of the female. Usually, however, the specimens are massed together on the branches, being so close to each other that the lac becomes confluent, joining the specimens and presenting the form of irregular elongate globular masses more or less confluent. The lac usually has a decided blackish surface color, unlike any hitherto known species of the genus; it varies to dark brown in some cases, however. Average diameter of single specimens covered with lac, 3 to 4 mm.; height, 2 to $2\frac{1}{2}$ mm. Boiling the lac in KHO gives a dark crimson lake color.

♀. Spine is very long and thorn-shaped, perfectly regular in outline, widened at base, gradually tapering from near base to point, in length probably more than four times extreme basal width (the point in specimen studied is broken off). Perforated

plate of lac-tube subcircular; group of glands elongate-oval, widened end of group contiguous to border of plate; glands oval, closely packed. Anal tubercle prolonged at sides into long spine-like processes only a little shorter than width of tubercle at their origin, and longer apparently than the caudal filaments which are to be seen between them. The specimens are evidently adult. The lac of young specimens is disposed in a perfect star-like form, and the color is reddish-brown.

On branches of *Acacia* sp., Orizaba, Vera Cruz State, July 15, 1897. (Koeble 1721). Div. Ent., No. 7927.

***Tachardia mexicana* Comst.**

Lac in color reddish-brown, shaded to reddish-yellow.

♀. Antennæ 6-jointed, formula (23) 4 (15) 6, stout, outwardly bowed, nearly equal in width throughout, first joint a little wider than rest; sixth joint narrowest, rounded, very short; second and third about as long as wide.

On branches of *Mimosa* sp., Oaxaca, Oaxaca State, August 21, 1897. (Koebele 1664). Div. Ent., No. 871. [C. H. T. T.]

***Capulinia sallei* Sign.**

Adult ♀. Antennæ very short, atrophied, represented by a mere tubercle, not as high as broad, surmounted by several (about 4 to 6) hairs, not chitinous. Mouth parts large and well developed. Legs atrophied, front and middle pairs represented by a sharp conical stump, chitinous, triangular in outline, but little longer than basal width, usually distinctly 3-jointed, the third joint point-like. Hind legs nearly twice as long as others, of same structure, form and outline, except that they are nearly twice as long as basal width. The two stigmata on each side of body distinct, chitinous. Anogenital ring small, chitinized on its edge, without hairs; the integument thickly clothed all around it, within a radius of 8 to 10 times diameter of chitinous portion of ring, with what appear like short hairs but are probably minute elongate glands or tubular spinnerets, giving the area a thickly dotted appearance which ends abruptly. The specimens studied, after being boiled, measure $1\frac{1}{2}$ to $1\frac{2}{3}$ mm. in diameter. They boiled clear easily. Boiled in KHO stains liquid greenish-yellow.

♂. What is apparently the male scale is creamy-white, cottony but of close texture, entirely covering the immature male, subquadrangular in dorsal outline, a little flattened, and $1\frac{1}{2}$ to nearly 2 mm. long, by $\frac{3}{8}$ to $\frac{4}{5}$ mm. wide. An immature male pupa shows a broad stout chitinous anal horn, twice as long as width at origin, rather bluntly pointed, triangular in outline, and with a long strong chitinous spine approximated to it underneath, taking its origin on ventral surface at a distance anterad of origin of anal horn equal to fully or a little more than the length of latter, the point of spine reaching beyond the middle of length of latter and parallel with it. The legs are well developed; femora, tibiæ and tarsi rather swollen, coxæ and trochanters narrowed, the femora thinly and the tibiæ and tarsi more thickly clothed with minute bristles, the tarsi with a well-formed claw at end. Femur plus trochanter distinctly shorter than tibia plus tarsus. The long many-jointed antennæ do not show the segmentation distinctly enough to be described. The length of the pupa, as mounted, is $1\frac{1}{5}$ mm.

I have no doubt that this is Signoret's species. Not only do the

adult ♀ characters agree perfectly, as figured and described by Signoret, but the description of the appearance of the adult ♀'s in life, in situ on the food plant, agrees perfectly, the ♀ being covered with a cottony secretion and bearing pendant from the oval end a single long cottony filament.

Found on leaves and twigs of a wild shrub or small tree called "escobillo," in woods, Arroyo San Isidro (near Frontera), Tobasco, May 27, 1897 (Townsend). Div. Ent., No. 7659. The cottony filaments hanging pendant from the ♀'s reached a length of something like three inches.

This rediscovery of *Capulinia sallei* is of great interest, not only *per se*, but further as throwing much light on the affinities of several more recently described allied genera. The study of the present material has demonstrated the close relationship of *Capulinia* with *Sphaerococcus* Mask. (1891), and *Xylococcus* Loew (1882). Both *Capulinia* and *Xylococcus* fall in the *Idiococcinae* of Maskell, and in fact could both be included in the genus *Sphaerococcus* as characterized by that author. However, the genus *Sphaerococcus* may be maintained for forms of the *S. casuarinae* Mask. and *acaciae* Mask. type, while *S. inflatipes* Mask. needs the erection of a separate genus for its reception. *S. bambusa* Mask. has already been referred to *Antonina*. Other species described since by Maskell as *Sphaerococcus* will need similar revision. *Xylococcus filiferus* Lw. of Austria, resembles *Capulinia sallei* in the presence of the long pendant cottony filament of ♀, but apparently differs in the presence of an anal cone and other minor characters. The genus *Sphaerococcus*, as above restricted, will include such forms as have the feet entirely absent in the adult ♀, and the antennae either absent or rudimentary. *Capulinia* will include forms in which not only the antennae, but also the feet, at least the posterior pair, are represented in more or less rudimentary form, and are not entirely absent. While both the feet and antennae are said by Loew to be wanting in *Xylococcus*, the latter genus will remain distinct from *Sphaerococcus* by its chitinous anal cone or tubercle. [C. H. T. T.]

The description of the following Brazilian species is included here while on this genus:

Capulinia jaboticabae* Von Jhering.

Adult ♀. Round-oval in outline, $\frac{3}{4}$ to 1 mm. in length. Differs from *C. sallei* as follows: Antennae more developed but still rudimentary, about twice as long as

* We had named this species after Dr. Von Jhering, but in the meanwhile he has (Revista Agricola, June 1898, p. 188) proposed to call it *Capulinia jaboticabae*. Dr.

wide, distinctly 4-jointed, joints 1 to 3 more than twice as wide as long, last joint narrower and irregular with several hairs. Another specimen, probably of a previous moult, shows five joints in the antennæ. Front and middle pairs of feet entirely absent, without tubercular rudiments. Hind legs quite well developed, distinctly segmented, not tubercular but elongate; coxa subtriangular, as long as basal width, wide; femur (plus the small trochanter) wide, but only about two-thirds as wide as base of coxa, about as long as length of coxa; tibia narrower and a little longer than femur; tarsus tapering, fully as long as tibia, without apparent claw. In the immature specimen above mentioned the femora are relatively wider compared with the coxæ.

Brazil, probably Sao Paulo (Dr. H. von Jhering). On *Myrciaria cauliflora*. This is a very distinct species from *C. sallei*, in the complete absence of front and middle legs, and the comparatively well developed hind legs.

Lichtensia mimosæ, sp. nov.

Length of shrunk ♀, $3\frac{1}{2}$ mm.; of ovisac, 12 to 13 mm. Width of ovisac, 4 to $4\frac{1}{2}$ mm. Ovisac white, compact, surface with a satiny lustre, nearly parallel-sided, not ribbed or keeled, normally covering the insect.

Antennæ rather short, eight-jointed, without noticeable hairs except what appear to be two short ones at tip, second joint considerably shorter than third which is longest, fourth and fifth nearly equal and shorter than third, sixth about as long as second, seventh and eighth but little shorter. Approximate antennal formula 3 (45) (26) (78) 1. Tarsal digitules very long, slender, more than twice as long as the claw, not greatly knobbed. Digitules of the claw very stout, one quite equally thickened and not greatly widened at end, while the other is narrowed in the middle and club like at end. Claw digitules as long as the claw, which is rather large. Tarsus a little more than one-third length of tibia; femur markedly longer than tibia. Anal plates together forming a square, the outline of each being a right-angled triangle, each with two short hairs at posterior end. Integument with numerous oval or usually nearly spherical glands, the smaller ones so massed as to give a finely granulated appearance. Marginal spines small and simple, but fairly stout, about or hardly as far apart as their length.

As compared with *Lichtensia lutea* Ckll., from Vera Cruz on *Croton* being the only previously known tropical Mexican *Lichtensia*, the present species differs markedly in the claw digitules, besides having the ovisac pure white instead of lemon-yellow. In *L. lutea* the claw is smaller, and the digitules of the claw are about twice as long as the latter.

Occurring singly on branches of *Mimosa* sp., locally called "sarsa," Las Minas, near Frontera, Tabasco, June 4, 1897 (Townsend). Div. Ent., No. 7810.

Noack has also sent me some specimens *in situ*, collected by Dr. Campos Novaes at Itatiba, State of St. Paulo, and I find they live in little crater-shaped galls. The females have the antennæ with 5 or 6 segments — T. D. A. C.

Ctenochiton aztecus, sp. nov.

Length of ♀ scale, 2 to $2\frac{1}{2}$ mm.; width, $1\frac{1}{2}$ to 2 mm.; height, 1 mm. or a little less; in form convex, and leaving a very conspicuous white silk-like covering on the bark when detached. Boiling in KHO gives a pale brown color. The secretion of ♀ is glassy in appearance, and has the characteristic serrate frings on the edge. The marginal fringe shows 12 to 15 short teeth on each side. The adult ♀, after being denuded of the glassy secretion, is brown, but loses its color by boiling in KHO, except the anal plates and adjacent edges of cleft which remain brown. Integument shows a reticulated or honeycombed structure. Female apparently apodous and without antennæ. Marginal bristles extremely short, stout, and pointed, about as far apart as twice their length, but varying. Anal plates triangular, taken together hardly or nearly forming a square. Anal cleft deep, in some about one-fifth the length of whole body, in others less. Two bristles at end of each anal plate, and one on inner edge. Two longer bristles springing from their junction inside. The females are full of larvae.

Glassy secretion is minutely irregularly striate, but shows no distinct air cells; it is raised on the dorsal surface into tubercular processes, showing especially in the more immature individuals. In the latter the processes take the form of a median dorsal row, a marginal row, and a row on each side half way between the dorsal and marginal.

On bark of trunk of tree called "cafetilla cimarron," which means wild coffee, but the tree is very distinct from coffee. Arroyo San Isidro, near Frontera, Tabasco, May 27, 1897 (Townsend). Div. Ent., No. 7645.

Ceroplastes roseatus, sp. nov.

♀ scale. Greatest length, 11 mm.; greatest width, 8 mm.; height, 6 mm. Color pale sordid yellowish, with a very faint rose tinge. Younger (smaller) specimens measure 7 to 9 or 10 mm. in length, and show the wax clearer, whitish with a pronounced roseate tinge or blush. Wax not divided into plates, no nuclei present. Form in lateral profile low conical with the apex rounded, the two sides meeting at a little more than a right angle; in anterior profile the sides meet at less than a right angle. The younger more roseate scales, with the fresh appearance to the wax, are not so symmetrically formed, the anterior margin of the wax being lapped up in front, and presenting just posterior to this a deep notch in the profile. Median dorsal tubercle of the wax is pale yellowish. Margin a little scalloped in dorsal profile, showing about seven projections of the border. Thickness of wax at base, 3 mm. at ends, averaging 2 mm. at sides. Surface of wax smooth, a little roughened in the largest specimens.

Body of ♀, before being boiled, denuded of wax (basal measurements), 4 mm. long, $2\frac{1}{2}$ mm. wide; this being a specimen which measured $9\frac{1}{2}$ mm. in length with wax in situ. Dorsal tubercle prominent, high, narrow, but widened (or rather lengthened) longitudinally, the sides giving the outline in lateral profile of a perfect angle of 55 degrees. Sides of body showing seven distinct lateral tubercles, the anterior one being in the middle. Caudal horn very elongate and stout, about 2 mm. long, and $\frac{1}{2}$ mm. in diameter at base. Color of dorsum brownish-red, the caudal horn black, becoming brown at base. Boiling in KHO gives a faint rose tinge.

♀. Capitate spines of integument present same form as in *ceriferus*. Claw short, digitules of claw about twice as long as claw, unequal, one very stout and that knob extremely large, the other more slender and widened or flattened leaf like at end. Femur rather stout, swollen, rather long oval in outline, without the trochanter about as long as tibia; tibia about one third as wide, parallel-sided. Tarsus a little more than half as long as tibia. Tarsal digitules filiform, well knobbed at end, reaching a little farther than to the ends of claw digitules. Antennæ 6-jointed, the last three joints nearly equal in length, the sixth slightly longest, the third very long and a little wider than the following ones; the first and second about equal and each less than or about one-third as long as the third. The fourth and fifth are about one-half again as long as wide; the first is somewhat wider than length of second; the second is truncate-conical, its basal width being about equal to its length, its distal width a little more than one-half its basal.

The only other known roseate forms of *Ceroplastes* are, a variety of *floridensis*, which is easily distinguished by its much smaller size; and *albolineatis*, which was described from Jamaica, and is a very common species in Brazil, but is at once distinguished by the two conspicuous white lines on the sides.

On branches of a wild fruit tree locally called "cojon de venado," El Cuyo del Chicicapote, near Frontera, Tabasco, June 18, 1897 (Townsend). Div. Ent., No. 7611.

***Lecanium tuberculatum*, sp. nov.**

♀. Scale very convex, rounded-oval, sometimes nearly round, normally about 4 mm. in length, 3 mm. in width, and 2 mm. in height. Color clear reddish-brown, the margin narrowly dark brown. Scale finely tuberculate and pitted near border, coarsely and less conspicuously tuberculate on rest of surface, the low rounded tubercles with shallow pits or furrows between them. In shrivelled scales the fine tuberculation is more extensive and conspicuous. Most specimens also show a pair of longitudinal dorsal impressed lines, with one or two less distinct lines running across them at right angles. No glassy secretion apparent on surface of scale. The blackish rim and tuberculate character of the scale will serve to distinguish it from *perconvexum*, which is uniformly blackish and with only the row of fine tubercles near rim.

Legs very short, tibia and tarsus equal in length and about as long as broad; the tarsus hardly narrower than tibia, rounded apically and not pointed; claw short, stout, strongly hooked, and about half the length of tarsus; femur but little longer than tibia, wider basally than apically, and as long as apical width. Digitules of tarsus and claw stout, filiform, the claw digitule apparently longer than the tarsal, which latter is about as long as the claw itself. Anal plates subtriangular, together forming nearly a square, but somewhat rounded on the caudo-lateral margin. Anal ring with four bristly hairs showing between the opened plates. Dermis chitinous, with gland pits moderately small and rather numerous. Boiling in KHO stains liquid pale brown.

Belongs to the neotropical group of *perconvexum*, *chilaspidis*, *urichi*,

imbricatum, etc., characterized by the short rudimentary legs. It comes nearest to the Brazilian *perconvexum* Kkll.

On twigs of tree called "cafetillo," San Antonio del Sapotal, near Frontera, Tabasco, June 2, 1897 (Townsend). Div. Ent., No. 7809.

***Aspidiotus jatrophae*, sp. nov.**

Belongs in the subgenus *Diaspidiotus*. ♀ scale circular to suboval, convex, pale grayish-brown, $1\frac{1}{2}$ mm. in diameter. Exuviae nipple-like, situated usually to one side of the middle, concolorous with rest of scale but of a darker shade. ♂ scale suboval or oblong, same color or a little paler than ♀, 1 mm. long and about or little more than half as wide. Scales not leaving a white surface on the bark when detached.

♀. Circumgenital glands absent. Anal orifice near posterior extremity. Three pairs of lobes. Median lobes large, oblique, very strongly notched on outer side, not at all on inner side. Well marked glandular incisions in the interlobular intervals. Chitinous processes of the glandular incisions resemble those of *A. betulae*. First interlobular interval moderately wide. Second and third lobes minute, dentiform. Spines unusually large and stout. Outer spine-like plates much branched, those of first interlobular space simple and two in number. Body of ♀ broad pyriform, yellowish brown. Species doubtless viviparous, as the ♀ is filled with large well developed embryos, and lacks the circumgenital glands.

♂ and ♀ scales massed together on bark of main stems and branches of *Jatropha* sp., called "chaya," a cultivated plant whose green juicy stems are cooked for food. Frontera, Tabasco, May, 1897 (Townsend). Div. Ent., No. 7682. This is a southern species of a northern type.

***Aspidiotus agavis*, sp. nov.**

Belongs in subgenus *Chrysomphalus*. ♀ scale circular or subcircular, brownish-gray, the marginal portion whitish. Exuviae central, black or blackish, more or less covered with a gray secretion which is usually scaled off and shows only as a border to the exuviae. Diameter, 1 to $1\frac{1}{2}$ mm.

♀. Body deep yellow. Three pairs of lobes. Median lobes widened, appearing like human incisions, contiguous to each other. Second pair of lobes about one-fifth wider than median, third pair same as second. Distance between median and second pairs of lobes less than half width of one of the median lobes. Distance between second and third pairs nearly equal to width of one of the median lobes. Spine-like plates moderately short. There is a rudimentary angular fourth lobe beyond the third pair, and the margin of the body beyond the lobes is serrate for a distance equal to that occupied by the lobes of one side, the serration being composed of smaller spine-like plates. Beyond this the margin of the body is minutely serrate. Four groups of circumgenital glands, cephalolaterals 16 in each group in one specimen; in another 13 to 16, more or less prolonged inwardly in group outline instead of rounded as normally. Caudolaterals apparently with 8 glands each.

This species is allied to *A. nigropunctatus* Ckll. It resembles it in general appearance by the blackish exuvix, and the lobes are similar in form. It may be distinguished from that species by the lobes being entire, not notched. The scales are also uniformly smaller than in *nigropunctatus*.

Massed on leaves of *Agave* sp. Toluca, Mexico, August 29, 1897 (Koebele 1697). Div. Ent., No. 7935.

***Aspidiotus koebele*, sp. nov.**

Belongs in the subgenus *Chrysomphalus*. Allied to *A. albopictus* Ckll., from which it differs as follows: Caudal end not so narrow and pointed. Caudolateral glands 3, cephalolaterals 4. Tubular glands short, only about as long as the median lobes, eight in number, the median pair having their origin posterad of the rest. In immature females these glands are much longer, and much resemble those of *albopictus*. Median lobes well separated, about as wide as long, rounded, entire. Second pair of lobes removed from the median a distance equal to diameter of either lobe, about same width as median, entire. Third pair pointed, tooth-like, somewhat farther removed from second than are latter from median, less conspicuous than other lobes. Farther down the margin a rudiment of a fourth lobe appears. Anal orifice (apparently) close up near base of tubular glands.

♀. Scale circular to suboval, flat or but little raised, $1\frac{1}{2}$ to 2 mm. in diameter, usually clear light brown but sometimes more or less grayish. Exuvix a little to one side of center, marked only by a darker ring in some specimens, in others nearly concolorous with rest of scale, while in still others they are grayish or of a lighter color. ♂ scales oblong or long-oval, usually pale grayish-brown, the exuvix usually nearer one end and light reddish-brown in color.

Numerous ♂ and ♀ scales massed on leaves of orange, Oaxaca, Oaxaca State, August 22, 1897 (Koebele 1656). Div. Ent., No. 7935.

***Aspidiotus albopictus* var. *leonis*, var. nov.**

The characters of the ♀ are the same as in *albopictus*, except that the caudolateral glands number 5 to 6, and the cephalolaterals only 6 to 7. *A. albopictus* belongs in *Chrysomphalus*. One specimen is infested by an interesting fungus.

♀. Scale circular, flat, averaging $1\frac{1}{2}$ mm. in diameter. Color of scale flesh-gray, outer border more or less distinctly whitish, the whitish often invading most of surface. Exuvix often nearly central, pale brown. Although the characters of the ♀ insect are nearly the same as in typical *albopictus*, the present specimens represent at least a good variety in the considerable differences in the characters of the ♀ scale.

On leaves of orange, Linares, Neuvo Leon, Dec. 17, 1897 (Townsend). Div. Ent., No. 7935.

***Diaspis baccharidis*, sp. nov.**

♀. Scale rather broad oyster-shell shaped, 2 to $2\frac{1}{2}$ mm. long, $1\frac{1}{2}$ to 2 mm. wide, flattened, exuvix at smaller end which corresponds to the hinge end of an oyster shell, leaving a whitish film on bark when detached. The inside or underside

of the scale is grayish in color; the outside surface is wholly covered in all cases, with a fungus of a grayish-brown color, obscuring the color of the scale so that it is impossible to distinguish it.

♂. Scale is quite distinctly tricarinate, $1\frac{1}{3}$ to $1\frac{1}{2}$ mm. long, $\frac{2}{5}$ mm. wide white; exuvium at one end, brownish-yellow or yellowish-brown. The ♂ scale is different in texture from that of the ♀.

♀. After boiling, subcircular, tinged with brownish-yellow at least anally. Three pairs of lobes, the median largest, almost imperceptibly excavated on their outer posterior border, very slightly notched on inner posterior border, about as wide as long, slightly separated, not contiguous. Second pair of lobes subround, rather less than one-half the width and length of median lobes, each removed by about its own width from median lobes, entire. Third pair of lobes small, about half the size of the second pair, appearing as tubercles on the margin, removed from second pair a distance equal to rather more than twice their diameter. Small sac-like structures situated at bases of lobes resembling in form those of *Diaspidiotus*, those of each median lobe appearing nearly U-shaped, being very indistinctly separated at base; those of third lobes shaped like a pair of heavy dots, those of second lobes transitional in form between those of median and third lobes. There are also still a fourth pair, and even a rudimentary fifth. Spines rather small and short. Spine-like plates not large, not long, equalling in length the median lobes. Anal orifice about five times its diameter removed from anal end of body, well posterior to the level of the caudolateral glands. Five groups of ventral glands, in form mulberry-shaped, especially the cephalolateral pair. Caudolaterals, about 20; cephalolaterals, about 30 or more; median group, 15.

On bark of woody stalks of *Baccharis glutinosa*, Amecameca, Mexico, June 1, 1897 (Koebele 1758). Div. Ent., No. 7959.

***Pseudoparlatoria serrulata*, sp. nov.**

Distinguished at once from the other species of the genus so far known by the minutely serrulate character of the lobes. Five groups of circumgenital glands caudolaterals 11 to 15, cephalolaterals 12 to 15, median 2. Allied to *P. noacki* Kll., rather than to *P. parlatorioides* Comst., as indicated by the five groups of glands, the latter species having only four. The median lobes are not so pointed as in *noacki*, but are rather rounded; while not notched like *parlatorioides* (as in Comstock's figure), they are rather inconspicuously notched nearer the base. The spine-like plates of first and second interlobular spaces are shorter than in either species, projecting but little beyond the end of the lobes. Lobes of second pair divided into three lobules. Fish tail structure between the median lobes hardly projecting beyond the lobes.

♀. Scale $1\frac{1}{2}$ to 2 mm. in diameter, flattened, subcircular, whitish, grayish, or greenish gray; exuviae lateral, pale yellowish or yellowish-brown. ♂ scale small, subpyriform, about 1 mm. long, exuviae at the wider end; color grayish, with exuviae yellowish.

On leaves of unknown tree HERNOSILLO, Sonora, April 23, 1897 (Koebele 1719). Div. Ent., No. 7934.