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Article XXV.— DESCRIPTIONS AND RECORDS OF COCCIDÆ.

I. Subfamily Diaspinæ.

By T. D. A. Cockerell and Elizabeth Robinson.

Odonaspis schizostachyi n. sp. (Figs. 1, 2.)

Female scale circular, little over 1 mm. diam., dull white, concentrically wrinkled, the large first skin very pale yellowish. The second pellicle encloses the adult; its pygidial margin shows two pairs of lobes, formed like those of *O. secretus*, but the median ones, which are large and more or less elbowed or lobulate at sides, are separated by a rather wide interval; the second lobes, remote from the first, are much smaller. The lateral margins of the second skin show long bristles, similar to those on the adult. Adult female round; pygidium terminating in a large median lobe which differs from that of *O. secretus* in being without lateral indentations; the second and third lobes are each bilobed, the third much lower than the second, and their lobules have entire margins; there are two spine-like plates laterad of the median and second lobes, and two, far apart, beyond the third; margin beyond third lobe finely crenulate. The base of the second lobe is prolonged caudad into a long finger-like process, and this is contiguous, on the outer side, with a striated band which terminates at the anal ring. The lateral margins have five principal indentations, marking sutures, and along the latter, pointing caudad, are single rows of minute quadrate scales with finely serrate apical margins, closely resembling the scales on a lepidopterous wing. Circumgenital glands in two groups, each of about 150, the groups uniform in width throughout their length, with the ends rounded. There is no line of glands connecting the two groups.

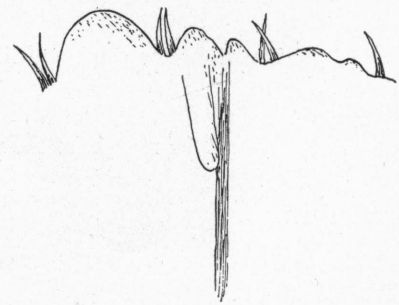

Fig. 1. *Odonaspis schizostachyi.* Caudal end of adult female.

Fig. 2. *Odonaspis schizostachyi.* Scales on adult females.

Hab.— Los Baños, Philippine Is., Dec., 1913 (*C. F. Baker*).

Related to *O. secretus*, but readily separated by the entire median lobe, character of grouped glands, etc. Professor Baker thus describes the occurrence of this interesting species: "In the thickets of climbing bamboo

(*Schizostachyum*), which occur here everywhere, one of the most conspicuous objects is a purplish-black fungus which sheaths the stem, often for a length of two to three feet." This fungus has been described by Patouillard as *Septobasidium bakeri.* "Very little examination suffices to show that it is not at all parasitic on the bamboo, but that in every case it sheaths a colony of Coccids; and I have not observed the coccids without the *Septobasidium*!" The specimens of *Odonaspis schizostachyi* do not, however, show evidence of fungous parasitism; but, as must necessarily be the case, live and prosper under the dense black coating. When the fungus is removed, many of the scales adhere to its inner surface.

Hemichionaspis aspidistræ (*Signoret*). (Fig. 3.)

On leaves of *Smilax*, Los Baños, P. I. (*C. F. Baker*, 1751.) We present a figure of the pygidial margin of the second stage.

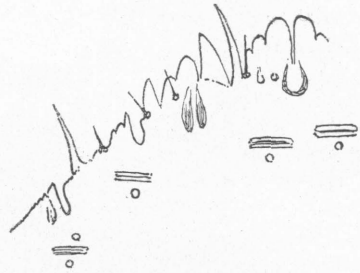

Fig. 3. *Hemichionaspis aspidistræ.* End of abdomen of second stage female.

Phenacaspis mischocarpi n. sp. (Figs. 4, 5.)

Female scale circular, about 1.75 mm. diameter, dull white, slightly transparent; exuviæ lateral, very pale orange, the first skin projecting beyond margin of scale; second skin broad-oval.

Female (after boiling in KHO) pale yellow, elongated, broadened anteriorly, conspicuously segmented; on each side of the mouth is a circular group of glands; pygidial area with three pairs of lobes; median lobes long, strongly divergent, serru-

Fig. 4. *Phenacaspis mischocarpi.* Caudal end of female.

late on inner margin, not produced beyond the level of the other lobes; second and third lobes each composed of two separate rounded lobules; a pointed glandular process laterad of each of the first and second lobes; long, spine-like plates (gland-spines) well developed, one laterad of each lobe, and three others on the margin beyond; margin beyond the lobes irregularly dentate, and with four incisions with thickened edges. Circumgenital glands with median group of 8–9 orifices, the lateral groups each of 16–17 orifices, the anterior and posterior lateral groups contiguous, almost confluent. Male scale about 1 mm. long, distinctly tricarinate; exuvia pale yellow.

Fig. 5. *Phenacaspis mischocarpi.* Side of abdomen of adult female.

Hab.— Los Baños, Philippine Is., Dec. 1913, on *Mischocarpus fuscescens* Blume (*C. F. Baker*, 2179).

According to the Index Kewensis, *Mischocarpus* Blume (Sapindaceæ) is the same as *Ratonia* D. C., but *M. fuscescens* is *Cupania helferi* Hiern.

P. mischocarpi resembles *P. strobilanthi* (Green) in the long serrated median lobes, but differs conspicuously in the form of the ♀ scale, and in the margin beyond the lobes, which is *strobilanthi* is coarsely serrate and finely serrulate. In the form of the scale the new species greatly resembles *P. latissimus* (Ckll.), but in that species the margin beyond the lobes is coarsely crenate, instead of being sharply toothed, while the male scale has only a very feeble median keel. *P. flava* (Green) has the region beyond the lobes crenate as in *latissimus*, and the scale is quite different from that of *P. mischocarpi*. *P. varicosa* (Green) has the margin beyond the lobes formed as in *strobilanthi;* while *P. dilatata* (Green) has shorter median lobes, not so close together at the base, and lacks well-defined third lobes. The other species of *Phenacaspis* are even more distinct.

Hemichionaspis minor (*Maskell*).

Swan Island; on fruit of *Anona muricata;* sent by Mr. Samuel Henshaw. No collector's name is given, but it was probably obtained by Mr. Geo. Nelson.

Targionia gutierreziæ (*Cockerell & Parrott*).

On *Artemisia tridentata*, Steamboat Springs, Colorado (*E. Bethel*).

Pinnaspis buxi (*Bouché*).

Los Baños, Philippine Is., abundant on leaves of *Aglaonema philippinensis*, Jan. 1, 1914 (*C. F. Baker* 2182). Grouped glands; median 4, cephalolaterals 9, caudolaterals 8.

Pinnaspis rhombica Leonardi, from Java, is a *Hemichionaspis; Pinnaspis javanica* Leonardi, also from Java, is a *Fiorinia.*

Hemichionaspis uvariæ n. sp. (Fig. 6.)

Female scale rich red-brown, about 1½ mm. long, very narrow, almost linear; exuviæ paler and yellower; second skin about 560 μ long.

Female greatly elongated, about 880 μ long and 250 wide, the sides not prominently lobed; yellowish, turning greenish in KHO, the eyes large and heavily pigmented. Base of mouth parts only 80 μ from anterior end. Grouped glands in five groups, caudolaterals and cephalolaterals 8 each, median 4, the laterals variable, but never as many as ten; genital orifice caudad of anal orifice, the latter 68 μ from bases of median lobes; median lobes large, dark, together forming a semicircle, their margins crenate or dentate, with six small teeth, the outer two very minute; second lobes represented by two small lobules, the first rounded, the second pointed, and beyond this a rudimentary prominence behind the spine; immediately laterad of the spine is a very large spine-like plate, after which the margin is abruptly directed cephalad, and is divided into two or three flattened lobules, immediately beyond which is a large spine-like plate.

Fig. 6. *Hemichionaspis uvariæ.* Caudal end of female.

Eggs large, about 175 μ long.

Male scale hardly over half a mm. long, white, parallel-sided, with an obtuse median keel, and no distinct lateral ones; larval skin pale orange fulvous.

Hab.— Los Baños, Philippine Is., in quantity on under side of leaves of *Uvaria* sp. (Anonaceæ); collected by Prof. C. F. Baker (738).

In the rather sharp teeth of the median lobes this resembles *H. scrobicularum* or *H. rhododendri,* but the apical crenation is narrower than in these species, and the margin beyond the lobes is different. In Cooley's table (1899) it runs to *H. mussændæ,* which has very much more numerous grouped glands, and differs in other particulars. In Green's table (1899) it goes to *mussændæ* and *rhododenderi,* but is quite distinct from both. It is not closely allied to *H. rhombica* (*Pinnaspis rhombica* Leon.).

II. Non-Diaspine Subfamilies.

By T. D. A. Cockerell.

Lecaniodiaspis rufescens (*Cockerell*).

Ceroplastes irregularis *Cockerell.*

These two species were collected by Mr. E. Bethel at Cañon City, Colorado, on *Atriplex canescens*. He writes that they "completely cover" the plants at a locality where honey ants abound, and suggests that they probably furnish part of the food of the ants. *L. rufescens* was also collected on *Fraxinus anomala* at White Water, Colorado, 1908, by Prof. C. P. Gillette.

Tachardia fulgens *Cockerell.*

Hills near Huasihuas, Sonora, March 25, on leguminous bush, 3 to 6 feet high, with yellow flowers (*C. H. T. Townsend*).

Ceroplastes gigas n. sp. (Fig. 7.)

Scale on branch of tree; wax white and smooth. Scale 17½ mm. long, 14½ broad, about 12 high; wax not divided into plates; a deep median dorsal pit; at sides are two angular projections clasping the branch. Wax about 5 mm. thick. Female oval, about 7 mm. long, chestnut red; antennæ and legs light ferruginous. Antennæ long and slender, second joint 75 μ long, third about 50. Cephalic margin of female broadly rounded, caudal margin trilobed.

Hab.— Philippine Islands, presumably near Los Baños, sent without any information by Prof. C. F. Baker.

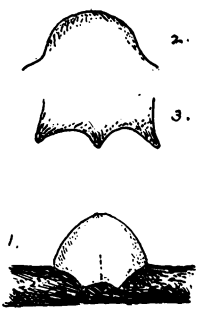

Fig. 7. *Ceroplastes gigas*. 1. Scale on branch. 2. Cephalic margin of female. 3. Caudal margin of female.

There is only a single scale, but it is such a remarkable form that it is safe to describe it. I removed it from the branch, and was able to make out some of the structural characters, and then replaced it.

The species closely resembles *C. vuilleti* Marchal, but the margin of the female is differently formed, and the antennæ of *vuilleti* have joints 2 and 3 equal. *C. vuilleti* occurs in western Africa.

Lecanium perinflatum n. sp. (Fig. 8.)

Female scale globular, 9 mm. long, 8½ broad, 8 high; dull orange (nearly apricot color), with sparse small round red spots, mostly with a black central dot; surface smooth and moderately shining, except for a fine pustulation, not visible without a lens. The scale clasps the twig below, with a thick reddened margin. Under the compound microscope the red spots exhibit no radial pattern, nor are they sharply defined; their diameter is about 240 to 400 μ. Posterior incision short (about 2 mm.); at its upper end the very small triangular anal plates visible, about 192 μ long. The submarginal area of the scale is strongly pitted.

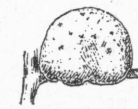

Fig. 8. *Lecanium perinflatum.*

A young scale, about 3 mm. long, is oval, convex, shaped like an ordinary *Eulecanium*, with small dusky spots, not very conspicuous. The marginal region is darkened and rugose.

Hab.— On small twig of some herbaceous (shrubby?) plant with entire leaves, the twigs distinctly angular in section; Santa Ana, Misiones, Argentine Republic (*Lahille*, 10.)

Related to *L. verrucosum* Signoret from Montevideo, but much smaller, and less densely spotted. I have had this species for many years, awaiting material for dissection, but obtaining none, I at length describe it.

L. perinflatum and *L. verrucosum* cannot be referred to *Akermes;* they do not agree well with any described genus, and are referred to *Lecanium* in the broad sense.

Protopulvinaria longivalvata bakeri n. sp. (Fig. 9.)

Female scale 2¼–2⅜ mm. long, 1¾ broad, light ferruginous; shape, appearance and markings as in typical *longivalvata* (cotypes compared); marginal spines few, rather

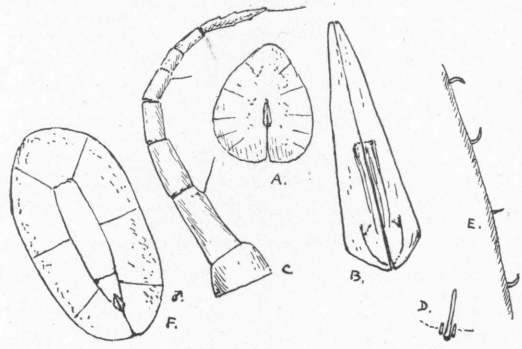

Fig. 9. *Protopulvinaria longivalvata bakeri.* A. Female scale. B. Anal plates of female. C. Antenna of female. D. Stigmatic spines of female. E. Marginal spines of female. F. Scale of male.

stout, bent, very small and short, about 3 μ long; stigmatic spines in threes, one long (about 22 μ), the others very short; mouth-parts small, 103 μ wide; anal plates greatly elongated, near middle of scale; each plate 375 μ long, 65 μ wide, the length varying in different individuals from 272 to 432 μ; distance from tips of anal plates to hind margin (opening of anal cleft) about 750 μ; legs ordinary, claws strongly hooked at end; antennæ eight jointed. The following measurements are in microns:

	Femur + trochanter.	Tibia.	Tarsus (excl. claw).
Anterior legs	130	80	45
Middle legs	133	80	50

Two antennæ measured, the joints enumerated in order from first to eighth.

28.	48.	33.	28.	23.	18.	23.	48.
25.	50.	35.	25.	28.	20.	23.	53.

There is hardly any cottony secretion.

Hab.— Los Baños, Philippine Is., Jan. 25, 1913, on the lanceolate-ovate entire leaves of "bocanga." (*C. F. Baker*, 976.)

Typical *P. longivalvata*, from Ceylon, has the third antennal joint longest, the anal plates longer (length 480-592 μ), and the marginal spines longer (length about 5–7 μ). The marginal spines are rarely somewhat bifid at end in *longivalvata*, but in my material they do not appear to be distinctly fimbriate.

I suppose that *P. bakeri* is endemic in the Philippine Is., and should properly be regarded as a distinct species, but it is so close to the Ceylon insect that for the present I give it only subspecific rank. The glassy male scale was found, and has been figured; it presents no remarkable features. The plant, "bocanga," is not given in Merrill's list of Philippine plant names.

Paralecanium luzonicum n. sp.

Female scale very broad oval, 4½ mm. long, red brown; marginal zone ill-defined, but apparently occupying nearly ¾ the distance between tips of anal plates and hind end; dorsal surface thrown into folds and reticulations, as in several of the Ceylon species; ends of anal plates very sharp, the apicolateral sides of plates longer than the basolateral; stigmatic spines in threes, very stout, blunt, the margin of the stigmatic notch much thickened; legs well developed, tarsus longer than tibia; the following measurements are in microns: anterior leg, femur with trochanter, 130, tibia, 68, tarsus 75; middle leg, tibia 73, tarsus 105; another middle leg, tibia 68, tarsus (without claw in each case) 95; claw digitules stout; antennæ apparently 7-jointed, but joints 4 to 6 are more or less fused, so that they cannot be clearly differentiated; measurements of joints in microns (1.) 23–25, (2.) 23, (3.) 63–70, (4.) 30, (5.) 25, (6.) 30, (7.) 33–38. The marginal plates are transversely broad-oval, overlapping, about 38 μ long and 30 broad, their margins entire.

Hab.— On leaves of *Alectronia viridis*, Los Baños, Philippine Is., Feb. 15, 1913 (*C. F. Baker* 1161).

By the structure of the marginal area this would fall with *P. marginatum* (Green), which is however much smaller, and differs in details of structure. It also resembles *P. peradeniyense* (Green), differing by the broader form, the much more sharply pointed anal plates, and the different legs and antennæ.

P. cocophyllæ Banks, described from the Philippine Is., has much more degenerate antennæ, and no legs at all.

Tachardia gemmifera *Cockerell.*

Dr. M. Grabham sends specimens from Kingston, Jamaica, and writes: "I visited Mr. Vendryes's garden some years ago and found the *Tachardia gemmifera* in abundance on the *Chrysobalanus*. The garden and trees have been destroyed since, but I have found the same creature in several other gardens." It is remarkable that this striking species, described in 1893, has never been found anywhere but at Kingston.

Llaveia luzonica n. sp.

♂. Length about 6 mm., not counting caudal tassels; wings about 6½ mm.; antennæ reddish-black; head mostly yellowish flesh-color, dark about bases of antennæ, and occipital margin dusky; thorax pale carneous, the dorsal region shining black, but the scutellum very pale yellowish-carneous, abruptly contrasting with the black mesothorax; abdomen very broad, pink with eight long hairy plumbeous tails, their length however not equal to the diameter of the abdomen; legs dark castaneous; wings ample, black, with the usual venation and two light lines. At the sides of the thorax anteriorly, from the occipital region to a short distance before the wings, are very large rounded upwardly directed lobes or lappets. In the middle of the antennæ are three nodules to a joint, each bearing a whorl of very long black bristles.

Hab.— Mt. Makiling, Luzon, Philippine Is., (*C. F. Baker*, 1615). A cotype, a little smaller than the type, is from Los Baños, P. I. (*Baker*, 1081).

Close to *Llaveia dalbergiæ* (*Monophlebus dalbergiæ* Green), but considerably smaller. On comparison with Green's figures of *dalbergiæ*, our species appears to differ by the long and narrow halteres, which are shaped like a spear-head with a blunt apex, the broadest part below the middle; also, the four apical caudal tassels are considerably shorter.

Our insect is larger than Green's *Monophlebus stebbingi* var. *octocaudata*. The penis is much shorter than in *L. saundersii*, but as in that species, is thickened apically.

The generic arrangement of the monophlebines is still unsettled, but it appears certain that *Monophlebus* must be restricted to forms with two caudal

tassels in the male, such as *M. pallidus* Newst., which is so admirably figured in the Report of the Swedish Expedition to Kilimandjaro (1908).

Eriococcus borealis *Cockerell.*

On *Artemisia tridentata,* mixed with *Targionia gutierreziæ,* Steamboat Springs, Colo. (*E. Bethel*). The creamy-white ovisacs are 2 to 3 mm. long. The antennæ of the larva have joints 2 to 6 measuring in μ: (2.) 18, (3.) 28, (4.) 13, (5.) 15, (6.) 23. Thus the antennæ of the larva quite closely resemble those of adult *E. neglectus* Ckll.

Icerya purchasi crawii *Cockerell.*

Dr. E. P. Van Duzee sends numerous specimens, with the following data: "From an *Acacia* or "wattle" tree growing at Alpine, 30 miles east of La Jolla, California, at an altitude of 1800 feet. The tree was nearly killed by the freeze of a year ago, and now these insects are likely to finish the work."