

iib all separate, no subprimaries. A small trapezoidal cervical shield and rounded anal plate.

*Stage II.* Head broad, the lobes produced with short points directed forward; sutures impressed; dull, dark black-brown, a little mottled; secondary hairs present, short, black; width .5 mm. Body slender, the centers of the segments a little swollen; all dark blackish vinous with an olivaceous tint, under the lens obscurely finely lined longitudinally with darker ventrally. In the position of tubercle iv an elevated rounded dark spot. Segments centrally dorsally shaded with dark. Skin covered with fine, short, dark, secondary hair arising from black tubercles. Venter of joint 10 protruded, the segments finely annulate, all essentially as in the mature larva, though darker.

*Stage III.* With the characters of the mature larva. Head .7 mm. The black rounded stigmatal lumps and the paired posterior dorsal ones present on joints 8 and 9, the latter one smaller. Dark, blackish brown, a little lighter and greenish ventrally, peppered by the dark secondary tubercles. The fine secondary setae black. Head points distinct. The ends, joints 2 to 4 and 10 to 13, are nearly black. No marks nor lines.

*Stage IV.* Head bilobed, the lobes produced into cones with sharp tips curved forward, not long but pointing obliquely forward and outward; clypeus as high as two thirds of the front; cheeks rounded, quadrate below,

mouth projecting. Blackish, dotted with pale, an irregular white fleck on the face of the lobe below the horn; densely covered with short, black, secondary pile; width 1.4 mm. Body as in the next stage, the color darker, less green, the prominences a little less pronounced.

*Stage V.* Head bilobed, the former points represented by slight elevations on the upper front side; color as before; width 2.1 mm. Body nearly cylindrical, the subventral fold distinct and arched on the segments; a pair of short, erect, black lumps on joints 8 and 9 in the position of tubercle ii, those of joint 8 the larger; a slight elevated black spot in the position of tubercle iv on joints 5 to 9; venter of joint 10 protruded. Body all densely covered with fine, black, secondary pile from small black tubercles, almost spiny on the dorsal elevations. Dull olivaceous green, the green predominating with growth, though some examples remain vinous to the last, shaded with brown, especially in the centers of the segments dorsally and on the posterior rims, darkest on the contracted end parts; a series of fine medio-ventral dashes; segments very obscurely 8-annulate; spiracles white, black rimmed; feet brown.

The larva pupates in the sand, spinning a very slight cocoon of silk. The slender light brown pupa has long projecting leg cases.

Food plant, *Coccoloba floridana*, only the young leaves being eaten. Larvae from Palm Beach, Florida.

## SOME COCCIDAE QUARANTINED AT SAN FRANCISCO.

BY T. D. A. COCKERELL, N. M. AGR. EXP. STA.

Mr. A. Craw has recently sent me a fresh lot of Coccidae, which he detected on plants about to be landed at San Francisco; and it is interesting to note that, even after so many years of horticultural quarantine, new species are met with. Thus we can never know what new pest may arrive at our ports,

the absence of an insect in the past proving nothing in regard to the future.

1. *Antonina crawi*, n. sp. — ♀ in a closely felted white sac, about 4 mm. long, with a long, white, brittle, glassy tail projecting from the hind end; ♀ removed from sac,  $3\frac{1}{2}$  mm. long,  $1\frac{2}{3}$  broad, subcylindrical, smooth,



purple-black, with much the color and surface of a prune; abdomen segmented, cephalic end truncate, subemarginate; boiled in liquor potassae, it turns the liquid a beautiful deep reddish-purple, or plum color. Skin hyaline after boiling, with very numerous round glands of two sizes; antennae conical, rudimentary, obscurely 4-jointed, about  $54\ \mu$  long; no legs; spiracles moderate; anal tube about  $180\ \mu$  long, and  $105\ \mu$  broad, at its mouth very thickly beset with round glands, and having short, stout spines at its sides; anal ring with six long, stout bristles extending the whole length of the anal tube.

*Hab.*—Japan, on bamboo, at sheathing bases of leaves. Very close indeed to *A. purpurea* Signoret, but larger; I am not sure it is more than a subspecies of *purpurea*, which, however, lives at the other end of the palaearctic region.

2. *Pseudolecanium tokionis* (Ckll.).—Japan, on bamboo. Females, 6 mm. long, are yellowish white, which appears to be the color of the insect until the latest stage. Mr. S. I. Kuwana has recently found this species on bamboo at Stanford University, California.

3. *Asterolecanium variolosum* (Ratz.) var. *japonicum*, n. var.—♀. Scale only about 1 mm. diam., greenish or pallid; fringe very short, pinkish; ♀ pinkish when alive, turning orange in liquor potassae; margin with two rows of glands, one minute, simple, the other figure-of-8, thirteen figure-of-8 glands in  $150\ \mu$ ; scattered tubular glands.

*Hab.*—Japan, on *Quercus glandulifera* Blume, inhabiting the bark of the twigs, with *Aspidiotus cryptoxanthus*. Perhaps a distinct species, but the tangible differential characters are few, as usual in the genus.

4. *Lecanium cerasorum*, n. sp.—♀. Globose, very convex,  $5\frac{1}{2}$  mm. long and wide, about 4 mm. high, shiny, pale ochreous, soft, with scattered pits, having much the color and texture of a ripe berry of *Melia azedarach*; anal region suffused with reddish brown; a good deal of white cottony secretion

inside (beneath) the scale, not visible on the outside. Skin with tubular glands; anal plates ordinary; area around anal plates for quite a distance strongly tessellate in *Saissetia*-fashion; marginal spines small and simple; anal ring with about seven stout bristles, about  $210\ \mu$  long; mouth-parts small, transverse diameter about  $210\ \mu$ ; legs and antennae small; coxa about  $75\ \mu$  long, femur stout, with trochanter about  $140\ \mu$ , tibia about  $90\ \mu$ , tarsus about  $75\ \mu$ , claw large; antennae 6-jointed, 3 very long (about  $90\ \mu$ ), the others all about  $30\ \mu$ , except 5, which is about  $24\ \mu$ .

*Hab.*—Japan, on bark of twig of cherry tree. In color and shape it resembles *L. globulosum* Maskell, but differs at once by the strong tessellation of the anal area.

5. *Aspidiotus* (*Diaspidiotus*) *cryptoxanthus*, n. sp.—♀. Scale on bark of twigs, almost invisible, its color being that of the bark, about  $1\frac{1}{4}$  mm. diameter, circular to suboval, often massed, very slightly convex, with covered deep orange-red exuviae, very conspicuous when exposed by rubbing; young scales with a dot and ring; scales removed from the bark leave a whitish patch. ♀ bright orange when alive; five groups of circumgenital glands, median of 4 to 5, anterior laterals of 10, posterior laterals of 7 to 8; two pairs of lobes; median lobes contiguous in the middle line, large, produced, broadly rounded at ends, with the long outer slope crenulate; second lobes similarly formed but much smaller, separated by an appreciable interval from the first; third lobes represented by a small nodule; squames short and pointed, dagger like, inconspicuous, the best developed are a pair at the second interlobular incision; spines quite large; interlobular incisions with chitinous thickenings, the inner one of the first incision nearly straight but greatly swollen; anal orifice small and round, very near to hind end.

*Hab.*—On bark of twigs of *Quercus glandulifera*, in Japan. Differs from the European *A. zonatus* by the longer median lobes,



crenulate on outer side; more produced second lobes, also crenulate; longer spines, etc.

6. *Aspidiotus lataniae* Sign. — On a cocoanut palm from Central America. The living ♀ is bright lemon yellow; the second and third lobes are represented by little spear-head shaped lobules, as Green figures in *A. camelliae*.

7. *Spatheaspis secreta* (Ckll.) — Japan, on bamboo. The living ♀ is pale pinkish lilac, with the caudal parts brown; caustic potash turns the ♀ bright apple green. Eggs pale lilac.

8. *Spatheaspis bambusarum* (Ckll.). — Japan, on bamboo. I am willing to recognize *Spatheaspis* (or *Odonaspis*) as a valid genus, and *Froggattiella* Leonardi (type *Spatheaspis inusitata*) as a good subgenus of it; but it seems to me that *Anoplaspis* Leonardi (type *S. bambusarum*) is scarcely to be separated from *Froggattiella*.

9. *Chrysomphalus scutiformis* (Ckll.). — On leaves of cocoanut palm from Central America.

SOME MATING NOTES.—In the summer of 1899 several larvae of *D. rubicunda* were brought me. They were nearly full fed and soon pupated. On Aug. 3rd a ♀ moth

emerged and began ovipositing before her wings were fully developed, and before 3 p.m.

The next day two males emerged in the same cage, and one must have mated with the female, although I did not see them in coition.

The sixty eggs laid before the males emerged remained unchanged, while those laid later became orange, then greenish, then almost colorless, and hatched on August 20th.

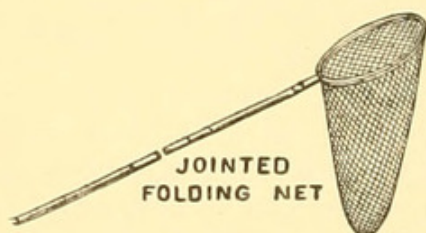
This is the first instance I have had of a ♀ moth's mating after ovipositing had begun.

On April 10th, 1900, a ♂ *A. cecropia* emerged in one of my cages. Next day a ♀ and a second ♂ emerged, and after midnight the ♀ and the first ♂ mated. The following night the ♀ laid 31 eggs. On the next night she laid 64 eggs, on the next 48 eggs, and on this night she mated with the second male, remaining in coition from a little after midnight until 6.15 p. m.

On this night she laid 73 eggs, and continued ovipositing for two nights, laying 269 eggs in all, then died next day. The two males died on the day following their mating.

Caroline G. Soule.

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