

seen prominences, as they are called—huge incandescent masses, extending sometimes for thousands of miles from the sun's surface, of varied shape and continuance. As the sun is globular and rotates on its axis, there is no reason to think that these prominences do not exist all over its surface, their visibility at the edge only being accounted for by the relatively darker background. Nor is it unlikely that the faculae are really prominences. By employing a certain part only of the solar spectrum, and by means of a very ingenious apparatus devised by himself, Professor Hale, of the Kenwood Astrophysical Observatory, at Chicago, has succeeded within the last few months in obtaining photographs of the sun, such as have never previously been seen: faculae all over the disc, spots and prominences—all obtained simultaneously with one short exposure.

The United States have been well to the fore in recent astronomical discoveries. It was there, too, that about three years ago the discovery was made that the duplicity of stars, too close to be optically separated, could be detected by means of the spectro-scope. We hear of wealthy citizens of the States devoting their dollars to the establishment and magnificent equipment of astronomical and physical observatories, and we hear of the good results obtained thereby. It is not from the other side of the Atlantic that we hear of physicists clamouring for state aid to enable them to ventilate their fads, and batten on the already overburdened tax-payer.

A CURIOUS GROUP OF COCCIDÆ—THE LECANIODIASPINI.

By T. D. A. COCKERELL.

ON the twigs and leaf-stalks of the Akee-tree (*Cupania adulis*), in Kingston, Jamaica, one meets with numerous greenish-yellow scales, slightly convex, and more or less circular in outline. On examination with a lens, they are seen to have a remarkable pinkish fringe; and if the insect is further studied by the aid of caustic soda and the microscope, it appears that the scale encloses the oval body of the female, which is so degraded in its characters as to possess neither legs nor antennæ. Not so the larvæ, however; these have legs and stout antennæ, and are able to move about.

This remarkable Coccid belongs to a group which Ashmead* has called *Lecaniodiaspini*. This is not by any means identical with the *Lecanodiaspidæ* of Maskell, though it is the group so called by Targioni-Tozzetti. Mr. Maskell refers *Lecanodiaspis* to *Lecanodiaspidæ*, together with such genera as *Vinsonia*,

Ceroplastes, *Carteria*, etc. *Planchonia* he places in *Coccidina*, subdivision *Acanthococcidæ*; and *Pollinia* and *Asterolecanium* form a new subdivision, *Cryptokermidæ*, of *Hemicoccidina*.* *Pollinia* is stated to have a "single fringe," but in Ashmead's generic synopsis it is said not to be fringed.

Five genera have been admitted as constituting the group; and up to the present time thirteen species have been described. The purpose of the present paper is to indicate two new species, and give such an account of the others that they may be recognised.

One of the genera, *Pollinia*, may be distinguished from the others because it lacks the double fringe. Of the others, *Lecaniodiaspis* is recognised by the presence of antennæ in the adult female, the legs being absent. There now remain three supposed genera called *Asterolecanium*, *Planchonia*, and *Asterodiaspis*. The last was separated by Signoret on the ground that the male resembled that of the *Diaspina*. If this were so, the separation would be well warranted, but from the close resemblance of the female to that of the other two genera, it is hard to avoid the conviction that there must have been some mistake. It seems probable, indeed, that the three last-mentioned genera may have to be merged in one: in this article, *Asterolecanium* is kept distinct, but *Asterodiaspis* is merged in *Planchonia*.

POLLINIA, Targ.

(1). *Pollinia pollini*, Costa.

This is the *Coccus pollini* of Costa, and the *Pollinia costæ* of Targioni-Tozzetti. The whitish scales are found adhering to the bark of olive-trees in Europe, and according to Signoret, resemble in superficial appearance those of a *Diaspis*. The much degraded female is oval in outline.

Recently, as is related in "Insect Life," vol. iv. p. 347, this species has been accidentally imported into California. It was found there on some olive-trees which had been brought from Italy five years before.

LECANIODIASPIS, Targ.

(2). *Lecaniodiaspis sardoa*, Targ.

Found on *Cistus* in Europe; the scale is oval, and of a greyish-yellow colour. The adult female has short thick antennæ composed of nine joints, of which the second and third are the longest.

(3). *Lecaniodiaspis yuccæ*, Riley MS, Towns.

Found on *Dasyllirion* and *Yucca* in New Mexico U.S.A. It has not been formally described, but

* See Maskell's "Account of New Zealand Scale-Insect

Professor Townsend* has given characters by which it may be recognised. The scale is round, hemispherical, and whitish, 3 to 4 millim. diameter: it has a median longitudinal carina. It infests the upper sides of the leaves of the host-plants, chiefly at and near their bases.

ASTEROLECANIUM, Targ.

(4). *Asterolecanium bambusæ*, Boisduval.

Found originally on cultivated bamboos in Algeria: but I have been so fortunate as to meet with it in some numbers on the stems of a bamboo growing by the hotel at Moneague, Jamaica. The ♀ scales (Fig. 59, N) are about 3 millim. long, oval, slightly

(6). *Asterolecanium palmae*, n. sp.

A very small species found with *Fiorinia florinæ*, to which it has some superficial resemblance, on leaves of cocoa-nut palm, collected by Dr. Sinclair near Montego Bay, Jamaica. The scale (Fig. 59, P) is lemon-yellow, with a well-formed fringe, and long pink filaments at each end. The fringe consists of waxy filaments, mostly in pairs, diverging from one another near their ends (Fig. 59, Q). The shape of the scale is elongate, narrower than *A. miliaris*.

(7). *Asterolecanium aureum*, Boisd.

Found on *Maranta vittata* in hothouses. It is of a golden yellow colour.

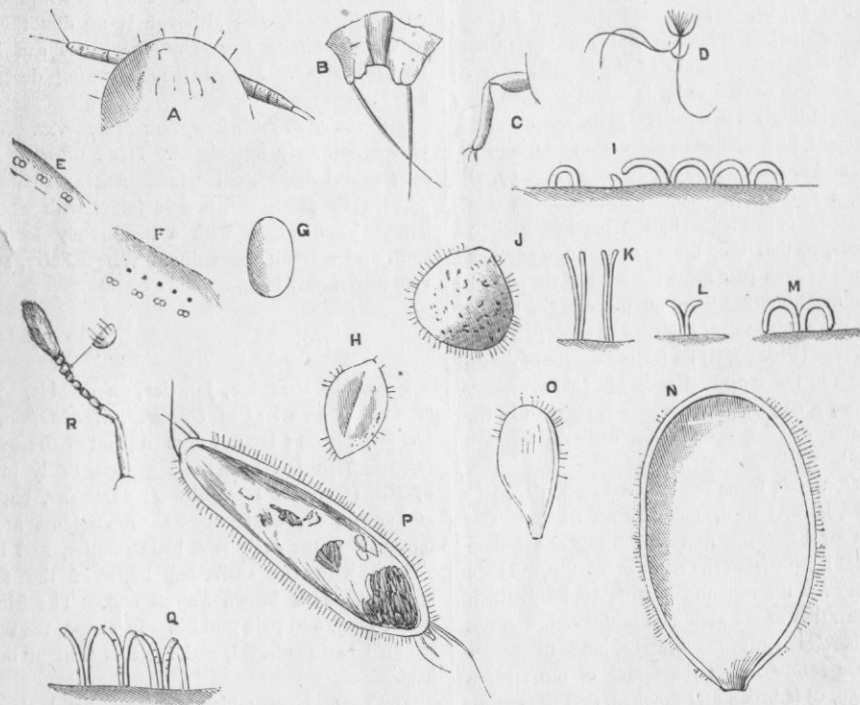


Fig. 59.—*Planchonia oncidii*: A, cephalic portion of young larva, to show antennæ. *Planchonia pustulans*: B, posterior end of body of adult ♀; C, middle leg of young larva; D, mouth parts of adult ♀; E, F, abdominal and thoracic marginal glands of adult ♀; G, egg; H, immature scale; I, fringe of immature ♀; J, mature ♀ scale; K, fringe of mature ♀; L, M, figures to illustrate nature of fringe. *Asterolecanium bambusæ*: N, adult ♀ scale; O, supposed ♂ scale. *Asterolecanium palmae*: P, adult ♀ scale; Q, fringe of same. Parasite: R, antenna. (All magnified.)

convex, pale greenish-white. The slightly pinkish fringe is very distinct, but easily falls off. The male scale is apparently undescribed. I found many little flask-shaped scales, only 1 millim. long, (Fig. 59, O) which I suppose to be those of the male.

(5). *Asterolecanium miliaris*, Boisd.

This was found on different cultivated bamboos in Algeria, and is much like the last, but more elongate, and keeled.

PLANCHONIA, Sign.

(8). *Planchonia fimbriata*, Fons.

This species occurs in the neighbourhood of Aix on *Coronilla glauca*. It is oval, light yellow, with distinct fringe. The larva has 6-jointed antennæ.

(9). *Planchonia pustulans*, Ckll.

A West Indian species, briefly indicated as *Asterolecanium pustulans* in Journ. Inst. Jamaica, Aug., 1890, p. 143, but now first described in detail.

The scale is slightly convex, in outline

* "Scale-Insects in New Mexico" (1892), p. 13.

(1893)

76 circular, with a slight inclination to be triangular, less than 2 millim. diameter (Fig. 59, J). Its colour is greenish-yellow, with the fringe pinkish. Immature scales (Fig. 59, H) are broadly oval, and more or less longitudinally keeled. The surface of the scale presents many gland orifices, some single, others double (figure-of-8), which secrete waxy rods, similar to those which compose the fringe. Round the margin is a distinct row of figure-of-8 glands, secreting the fringe; these, on the thoracic margin, are accompanied on their distal side by a row of simple glands.

The adult female is oval, attenuate towards the hind extremity, and showing on the dorsum many round gland-spots. The segmentation is still indicated, though indistinctly. The mouth-parts are of ordinary (Fig. 59, D). The posterior extremity (Fig. 59, B) shows distinct tubercles emitting the rather stout caudal setæ. The colour of the female, as seen after immersion in caustic soda, is bright crimson.

In a young individual (second stage) the antennæ and legs are present, and yellow in colour. The fringe is that colourless, and remarkable in appearance (Fig. 59, I), that resembling a number of hoops placed side by side. This appearance is produced by the bending-back of the wax rods, so that they diverge from one another, and the ends of each pair meet the ends of the nearest rods of the neighbouring pairs on the margin of the scale. In the adult scales, the rods of each pair only slightly diverge (Fig. 59, K); a further degree of divergence is seen in the marginal rods of *Asterolecanium palmæ* (Fig. 59, Q); and the extreme is reached in the second stage of the species under consideration (Fig. 59, M).

The larva, which turns scarlet on being placed in caustic soda, is long oval, and has no fringe. The eggs are set far back, the first pair being about one-third of total length from the anterior margin. There is a tendency for the cephalic portion to be distinct. The segmentation of the abdomen is distinct, and the caudal tubercles emit moderately long filaments.

The legs are rather long; the femur of the middle pair (Fig. 59, C) is broad and notched, that of the first pair narrow and normal. The antennæ appear to have six joints; they are stout, the last joint not at all acuminate, but rounded, emitting two long hairs, and two or three shorter ones.

The eggs (Fig. 59, G) are oval, greenish.

This species occurs on a variety of plants, and is very destructive. In British Guiana it is found on the akee, on *Castilloa*, etc. In Kingston, Jamaica, I find it abundantly on akee, infesting the leaf-stalks and twigs, and producing a pustular appearance. Dr. Riley informs me that it is found in Florida, on *Nibiscus*. In Montserrat it is abundant and injurious: Mr. C. A. Barber sent me specimens collected in that island on pigeon-peas and white oleander. It is so found on oleander in Jamaica.

It has been confounded with *P. fimbriata*, which it

resembles. Except the difference of locality and food-plant, and the double row of figure-of-8 glands in *fimbriata*, there would not be much difference so far as one could judge from published descriptions; but Dr. Riley informs me that there are in the collection at Washington, specimens of *P. fimbriata* received from Lichtenstein, and that there is no question as to the distinctness of *P. pustulans*.

A yellowish-red mite was found among some scale taken from an akee in Kingston; it may very likely be predatory upon the eggs. There is also a Chalcidid parasite. Some specimens on oleander, in Kingston, show parasite-holes, but the parasite was not obtained. In the case of a parasite of this species in Montserrat, I was more fortunate, as I obtained a fragmentary imago. This was with the scales on pigeon-peas, and although it no doubt belongs to the sub-family *Encyrtine*, the genus can hardly be ascertained. I made the following descriptive notes:—

Parasite of P. pustulans from Montserrat. Thorax brown, minutely reticulated. Head brown. Abdomen shovel-shaped, colourless. Antennæ pale (Fig. 59, R), club pubescent, funicle joints with whorls of hairs. Middle tibia with a moderately long stout spur, and a small short one. Wings hairy, stigmal vein moderately long.

(10). *Planchonia oncidii*, n. sp.

Found in Kingston, Jamaica, on orchids. I first received it on a leaf of *Oncidium tetrapetalum*, from Dr. Henderson; later, I found a plant of *Broughtonia sanguinea* in Dr. Strachan's garden, badly infested by it. It closely resembles *P. pustulans*, but is, I am convinced, distinct. The food-plants are different, and the scale is a little smaller, and bright yellow, with the shrivelled body of the female appearing dark brown at one end. The fringe is rather long, and pale pinkish. In shape, the scale is inclined to broad-oval, and there is a slight median keel.

The young larva, which is quite active, is elongate-oval, bright yellow, with the segmentation fairly distinct. The cephalic margin shows a few hairs. The antennæ (Fig. 59, A) are stout, the last joint emitting two very distinct pairs of moderate length. The terminal segment emits two caudal filaments as in other species, but these are short, not much longer than their distance apart, and much shorter than the maximum width of body. Legs well-developed, tarsi with slender but long-knobbed hairs. The larva, as in *P. pustulans*, has no fringe.

The *Lecanium epidendri* of Bouché seems to be a *Planchonia*, and it may even be the same as the present species. The female scale is said to be rounded, depressed, greenish-yellow, the margin ciliated; the male is dark yellow, with the head brown. It was found on *Epidendrum cuspidatum*.