PSYCHE.

THE BOMBYCINE GENUS LAGOA, TYPE OF A NEW FAMILY.

BY A. S. PACKARD, PROVIDENCE, R. I.

In its general appearance the larva of Lagoa is in some respects intermediate between the Cochliopodidae and the Liparidae. It resembles the former group in the short thick body; in the head being concealed by the prothoracic hood; and in the venomous spines.

On the other hand it resembles the Liparidae in the hairy body, the hairs being finely plumose, a peculiarity of more common occurrence in the Liparidae than in the Cochliopodidae.

As regards the cocoon this is intermediate in form and texture between that of Orgyia, etc., and the Cochliopodidae, but it more closely approaches that of the latter; it varies somewhat in density in different species, being usually quite firm and dense, like parchment, nearly as much so as in those of the Cochliopodidae, and also approaching them in shape, being oblong-cylindrical, oval, contracted at the anterior end, and with a separately-spun lid, closing the front end. As Dr. Lintner has shown with many interesting details, "The lid is woven by the caterpillar separately from the rest of the cocoon, and is not a section cut from it after its completion." Ent. contr., ii. p. 142.

The pupa is much like that of Limacodes, etc., the integument or cast cuticle being remarkably thin, and after the exit of the moth the antennae and legs, as well as the wings, are free from the body; while the latter is split both down the back and along the under side to the end of the thorax. Moreover when the moth escapes, the pupa-skin is left with the head and thorax projecting out of the end of the cocoon.

As regards its imaginal or adult characters it is also intermediate between the two families mentioned. In the short stout body and short broad wings it has the habit of a Limacodes rather than of such Liparid genera as Porthesia, etc. In the shape of the antennae and palpi it is about as near the Liparidae as the Cochliopodidae.

In respect to the denuded head, Lagoa is much more like Euclea than the Liparidae. The clypeus is rather long and narrow, similar in shape to that of Euclea, though rather narrower, and is thus more like that of the Cochliopodids than that of the Liparidae, represented by Orgyia and the European *Porthesia chrysorrhaea*, whose denuded heads I have examined. The epicranium and occiput taken together (on the median line of the body) are about one third as long as the entire clypeus.

As regards the venation, Lagoa is

decidedly nearer Euclea and other Cochliopodids than the Liparidae (I have examined the venation of Orgyia and Parorgyia). Lagoa has the same wide costal region of the fore wings as in Euclea, that of the Liparidae being very narrow; the five branches of the subcostal vein are thrown off in nearly the same manner as those of Euclea and Limacodes. The discal veins and origin of the independent (6th subcostal) are almost precisely as in Euclea, and the four branches of the median vein are also similar in their mode of origin, and unlike those of Orgyia and Parorgyia.

In the hind wings, as in the Cochliopodidae, there are ten veins, in the Liparidae only nine; there are but two branches of the subcostal vein, the third branch being detached, so that there are two independent veins, one arising from the anterior, and the other from the posterior discal vein. In the Liparidae mentioned there is no independent vein. The four median veinlets have the same peculiarities in their mode of origin as in Cochliopodids and the same differences from the Liparidae.

To sum up: in the superficial characters of the imago, and in having abdominal legs in the larva, Lagoa resembles the flat, scale-like Liparidae, but in all its essential characters, those of the egg, of the larva, pupa, and imago, it belongs with the Cochliopodidae, except in the matter of the presence of abdominal legs in the larva. On this account it seems fairly entitled to be regarded as the type of an independent group. We may regard it as a generalized, ancient group of Cochliopodidae, and refer it to a subfamily Lagoinae, or we may boldly remove it altogether from either of the two families mentioned and consider the genus as the representative of a distinct family and designate the group by the name of *Lagoidae*. This on the whole seems to us to be perhaps the most judicious course to pursue. At all events the insect is plainly enough an ancient, ancestral, or generalized form. It is a Cochliopodid with larval abdominal legs. It lays eggs like those of Limacodes, etc.; its head in the larval state is concealed from above by the prothoracic hood; its larval armature is more of the Cochliopodid type than Liparid; so are the pupal characters and the nature of the cocoon; and the shape of the important parts of the head, and the essential features of the venation, are overwhelmingly Cochliopodid. Under these circumstances we feel justified in regarding Lagoa as a most interesting ancestral form, and as affording arguments for considering the Bombyces as a whole as a generalized and ancestral group, and as epitomizing the other higher lepidopterous families.

The genus is peculiar to North and South America, and may rank with such forms as the colossal sloths, and certain American vertebrate survivors of middle Tertiary times. In some respects it is intermediate between the Saturniidae, especially the higher Attacinae and the Cochliopodidae.