Lepidoptera.—*By the Rev. A. E. Eaton.*

Larvæ of at least two, perhaps of three, species of Lepidoptera were obtained in the vicinage of Observatory Bay. One sort was occasionally brought off to the ships by the men in gatherings of *Pringlea* in October and the early part of November. It would probably develop into a moth about as large as an *Agrotis* of medium size, and was conjectured to belong to the *Noctuina* (Etn., Proc. Roy. Soc. 1875, xxiii. 354). Its affinities, however, may be very different, as it is likely to have been the larva of the insects referred to by Dr. Kidder as "lepidopterous "insects of moderate size, with very imperfect and abbreviated wings, active in "their movements, and . . . with . . . antennæ . . . long and thread-like" . . . [and labial palpi] "pectinate, and curling backward over the top of the head." These were obtained by him "on the evening of December 18 . . . . from the "roots of grass" (Kidder, Bulletin U. S. Nat. Mus. 1876, iii., 50). If the larvæ above mentioned and these moths are the same insect, the condition of the palpi of the imago seems to indicate that it is related to the *Gelechiidæ*. And this supposition is quite consistent with the form of some other larvæ (believed to be younger examples of the species obtained in October) which were found commonly in moss in December and February near Observatory Bay. They could be identified on the island, in situ, by the following brief description.

Larva Gelechiidiform with 16 legs, grey, paler beneath and along the spiracles; head and dorsum of first segment pale corneous, the usual raised dots of the other segments dark grey, shining, each bearing,—some a short, others a long,—testaceous hair. Length 13 mm. and upwards. Common in wet places on the hill sides near the sea, making galleries in moss.

All of these larvæ died before our arrival at the Cape. (Etn., Proc. Roy. Soc. 1875, xxiii. 504).

In Sir J. Hooker's MS. Journal mention is made of a moth with rudimentary wings clothed with mouse-coloured hair found at Christmas Harbour, which may have been Dr. Kidder's insect.

The other larvæ observed belonged to the moth described below.

Dr. Kidder reports "a single flying tineid moth was observed soon after our "landing, but supposed to be a clothes-moth from our own boxes." This could not have been the *Embryonopsis* because that is unable to fly; and as no other instance is on record of a moth being seen on the wing in Kerguelen Island, there is good reason for concurring in the opinion that it was an introduced species. *Endrosis fenestrella* had been transported to Cape Town in some boxes belonging to the English expedition a few weeks earlier.

Embryonopsis, *Eaton*, 1875.

Imago. Labial palpi long, recurved, smooth; the first joint very short, the second of moderate length, the third longer than the other two together, tapering

to an acute point. Antennæ simple, filiform, the basal joint slightly larger than any of the others; in the ♂ as long as the abdomen, in the ♀ rather shorter. Anterior wings subcorneous, acuminately ovate, convex, extending almost to the apex of the abdomen in the ♂, and only as far as its middle in the ♀; longitudinal nervures 5, simple, the subcosta extending nearly to the middle of the costa, the next two nervures subequal and just falling short of the apex of the wing, the fifth terminating about as far from the fourth, as the fourth from the third; no transverse veinlets; the posterior wings extremely minute, not reaching even to the base of the abdomen; posterior femora thickened; genital appendices of ♂ abnormal, very broad, comprising two lateral pairs arising from the pleuro-ventral region; ♀ the ovipostor 2-jointed, extensile.

Larva Gelechiidiform, with 16 legs.

The smoothness of the head, and the conformation of the tri-articulate labial palpi, together with the form of the larva, attest the relationship of *Embryonopsis* to the *Gelechiidæ*. The exceptional shortness of the wings, and the presence in the male of an outer pair of lateral appendages ensheathing an inner pair, and also the broadness of these last, readily distinguish it from other genera in that family.

Embryonopsis halticella. (Pl. XIV., fig. 8.)

Eaton, Ent. Mo. Mag. 1875, xii. 61. See also E. Doubleday, Ann. Ent. Soc. Fr. 1848, Bull., p. lxiii; Thomson, Good Words, 1874, November, p. 750; Eaton, Proc. Roy. Soc. 1875, xxiii. 354; Moseley, Journ. Lin. Soc. Botany, 1876, xv. 54.

Imago ♂ ♀, sooty black varied with ochraceous; antennæ black, their basal joint, the vertex, and the palpi, sprinkled with ochraceous; forewings with a wide longitudinal ochraceous streak through the middle; hind wings pale; legs somewhat ochraceous; abdomen ochraceous at the sides; in the ♂ the last dorsal segment is triangular and is bifid at the apex, the last ventral segment is semi-elliptical; the outer pair of lateral appendages parabolic, papyraceous, about half as long as the inner, externally clothed with scales, internally glabrous and smooth; inner pair of lateral appendages corneous, very closely invested by the outer pair, and very broad, subcircular, externally flatly convex, lutescent, polished and glabrous, traversed with a few fine raised lines, and slightly incrassated towards the margin, furnished at the extreme base with a series of very long appressed hairs which spread fanwise over them; internally they are very abundantly furnished with an ochraceous tomentum disposed in slender toothlike bundles; lower penis cover (?) linear lanceolate, longitudinally concave above, narrowed suddenly to a slender point whose extreme apex is slightly turned upwards, piceous; penis sheaths strong, slender, tapering, finger-like, slightly arcuate, connivent towards their tips, and strongly bearded beneath with rigid obliquely set testaceous bristles; upper penis cover scaphoid, carinate, obtuse, testaceous. Long. corp. 5—5·5 mm.

Larva.—Dull pale yellowish, with the paler dorsal line bordered by a pale brownish lilac stripe on each side extending from the first to the penultimate

segment. Head dark piceous; first segment with a transverse dorsal fuscous blotch which posteriorly is incised by the dorsal line; spiracles, the usual dots and their hairs, two dorsal spots on the penultimate segment, the dorsum of the last segment and a spot at the base of each of its prolegs on the outer side, black. Frons pale green. Long. corp. " 5 lines," probably a note-book error for 5 mm.

Hab.—Common in the vicinage of Royal Sound. The larva was found on the 17th of November (the first day the imago was noticed), feeding upon and residing within the sheathing leaves of the young shoots of *Festuca cookii*. Several specimens were obtained in patches of that grass close to the shore in Observatory Bay. It was afterwards detected in other places, and in shoots of *F. erecta*. The moth also occurs on the slopes of the inland hills. It is unusual for larvæ belonging to this family to burrow within grass shoots.

The homologies attributed to the elements of the genital armature above, are different from those which were given in the original description. Subsequent examination of the genitalia in recent representatives of most of the principal groups of Lepidoptera has led to a modification of the views entertained in 1875 concerning the nature of some of the parts. What was then taken to be the termination of the anus is now believed to be in no way connected with that outlet, and is considered to be a portion of the accessories of the genital apparatus; and similarly that which was specified as the penis in the earlier diagnosis, is now described as the lower penis cover. Many persons would doubtless be disposed to question the validity of this last correction, and maintain that the earlier view was the right one; but so far as has been ascertained the penis in the Lepidoptera is in most, if not in all cases, an erectile, membraneous introvertible tube, which is invisible in dried examples. This tube, which can be protruded by means of pressure in the living insect or one freshly killed, is closed at the apex by a sphincter, which is relaxed spasmodically at intervals to discharge a coloured fluid supposed to be *meconium*, until a doubt led to its being examined under a high power, when it was discovered to be in all cases crowded with spermatozoa. The lower penis cover projects immediately below this membraneous tube, and in the present insect is longitudinally concave above, as if with a view to its accommodation; and there is some reason for suspecting that it enters the vagina simultaneously with the penis. The upper penis cover is used in the introversion of the penis after it has been distended, thrusting it inwards as it were with the pecks of a bird's beak by its up and down motion.

Plate XIV., fig. 8, *Embryonopsis halticella* (from above). *a*, head (from the side); *b*, anterior wing; *c*, appendages of ♂ (from the side); c^1 and c^{1*} inner lateral appendages (from without and from within); c^2 genitalia ♂ (from the side, the lateral appendages being removed); *p*, upper penis cover; *q*, penis sheaths; *r*, lower penis cover (?).