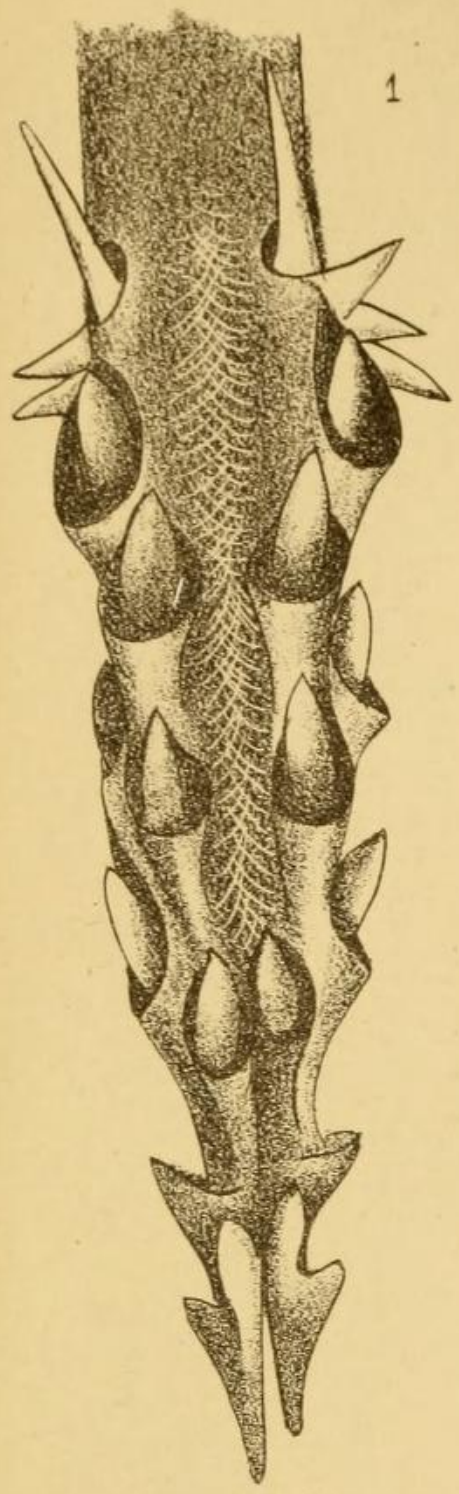
1

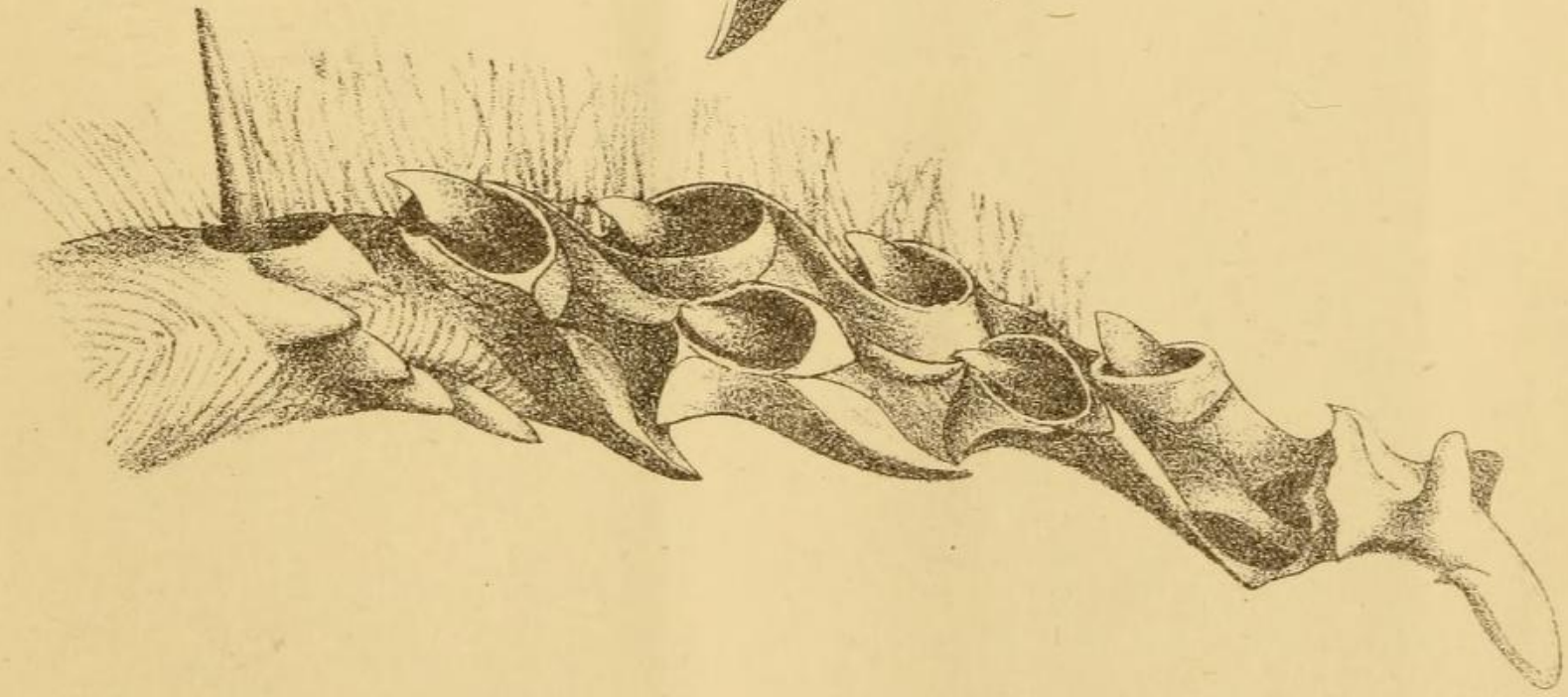


5

2

3.

4



If the society regard the establishment of such a zoological station desirable, I shall have much pleasure in laying before its next meeting a *sketch of the building required*, together with a *brief table of rules* as to the mode in which the station shall be used.

NOTE.—A Committee of Members was appointed to consider Baron Maclay's proposal, and to report thereon at the next monthly meeting of the Society.

———o———

LEPIDOPTERA having the ANTLIA terminal in a TERETRON or BORER.

By REGINALD BLIGH READ, M.R.C.S.

Plate 14.

EARLY in the present year, (1878) the enquiry was addressed to the Microscopical Section of the Royal Society of New South Wales, on behalf of the President of the Royal Microscopical Society of London, H. T. Slack, Esq—"Whether there existed in the colony any butterflies or moths with a boring proboscis similar to those which attack the orange tree in South Australia?" which was sent on to this Society to answer. Mr. Slack's enquiry was a little puzzling, since it is the orange and not its tree which is attacked by these Lepidoptera, which are fortunately very rare in those districts adjacent to Sydney which are the chief commercial seat of the production of the orange in Australia.

The fertilisation of flowers by insects has led botanists to bestow particular attention to the arrangements whereby insects are attracted to flowers as well as those various modifications of the organs of the flower by which its cross-fertilisation may be most readily effected. In the study of the antlia of these Lepidoptera which assist in this fertilisation, the entomologist will find a large field, hitherto scarcely touched upon, and which will prove the more interesting, as it will have, probably, an important part in the future classification of Lepidoptera. In the genus which forms the subject of this paper the adaptation of the organ is of a most remarkable character.

The fullest notice of these Lepidoptera is contained in a most interesting communication by M. T. Künckel, of 30th Aug., 1875, to "Comptes Rendus," which is translated in the Annals and Magazine of Natural History, accompanied by drawings, at p. 371 of vol. XVI., for 1875.

Mr. Slack has just forwarded me a paper read by him before the Royal Microscopical Society on 6th October, 1875, on "Perforating Proboscis," in which he called attention to a short notice in April, 1874, by Mr. M'Intyre, describing the perforating proboscis of a moth said to have come from West Africa. Mr. Slack also refers to the paper by Künckel, whom he corrects in an important detail, viz., the asserted rigidity of the trunk.

Had, however, the publication been continued of Scott's "Australian Lepidoptera," notice would have been attracted as early as 1864, since in a lithograph (exhibited to the Society) prepared for Part IV by Miss Scott, the Antlia are figured with "serrations immediately behind the sharply pointed tip," the description given in Mr. Scott's M.SS.

The genus *Ophideres Boisd.*, to which the possession appears to be confined of Antlia whose terminal forms a teretron (*τέρετρον*. a borer, gimlet) is represented in New South Wales by two species, *O. fullonica*, and *O. Atkinsoni* (Scott. M.SS.), and as these species are also found in Queensland at Rockhampton, they are probably identical with those which attracted the notice of the French botanist, Thozet, who first drew Künckel's attention to their depredations on the Orange.

Of the specimens from which the accompanying drawings have been made, I am indebted for those of *O. fullonica*, to Wm. Macleay, Esq., whose valuable Museum at Elizabeth Bay, is of such service to students of Natural History; and for those of *O. Atkinsoni*, to the kind courtesy of Walker Scott, Esq.

In his paper, Künckel stated that *Ophideres* were exceptional to the other Lepidoptera, since they possessed a rigid trunk; in this he was in error, since the Antlia coil in the usual way, although the terminal portion which may be designated the teretron possesses considerable rigidity.

Although aware of Künckel's description and illustration, I was quite unprepared for the wonderful appearance the antlia dis-

played when placed under a power of 60 to 85 of the microscope, and it required considerable and patient attention to master the details presented. The varied appearance and wonderful display of color has made it an object of attraction to all who have seen it. Premising that the two applied maxillæ constitute the antlia, the extremity or terminal portion which forms the teretron is about one-eighth of the whole length of the antlia. The description subjoined is of the terminal of one of the maxillæ, being one-half of the teretron.

Upper and outer surface (fig. 1, 3, 4). Tip acutely pointed, expanding upwards into three barbs, two of which, the first and third, are placed on the outer side, whilst the second is intermediate between them and next the line of junction of the maxillæ. From the barbed portion the terminal begins to expand, and on its upper surface is presented in a line above the second barb a curved projection terminating abruptly, shewing a sharp oval, gouge-like edge; the interior of the projection is sharply hollowed out, and from it arises a large rounded tooth-like process. From this point commence two or more rows of thickly set setæ, which continue the whole length of the antlia. Above and on the outer side of the terminal is placed, diagonally, a second process similar to that already described, whilst above, in a line between the first and second, occurs the third. The fourth is placed above and in a line alternating between the second and third. The fifth is similarly placed in relation to the third and fourth, and the sixth and last in repect of the fourth and fifth. Each superior process is slightly larger than that below it. At the base of the sixth process, in a slightly cupped hollow, is a solitary long spine, whose office may be to prevent the teretron being plunged too deeply into fruits to permit of withdrawal.

Under surface (fig. 2). Tip acutely pointed, expanding upwards, then suddenly contracting, gives a sharp transverse ridge one-half way up the barbed portion, which again expands upwards and outwards, and forms a second sharp edged transverse ridge. The remainder of the terminal is divided unequally into three divisions, each of which presents a very strong sharp lancet-like

process. At the junction of the terminal with the remainder of the maxillæ are set diagonally upwards and outwards four conically shaped spines, then, a space intervening, there is placed higher up the maxillæ a set of three similar spines; after a longer interval a set of two spines occurs, and finally a single spine is placed at a considerable distance from the last two, making ten in all placed like the teeth of a long harrow (fig. 5).

Furnished with this extraordinary apparatus these species of *Ophideres* are able to pierce the skin of the orange even before it has turned yellow, two or three sometimes attacking the same fruit. They can also pierce the tough rind of the banana whilst still green.

It is to be hoped that this paper will lead other observers to watch the habits of these interesting Lepidoptera, and I shall be obliged for any communications respecting them, and also for fresh specimens for dissection.

Microscopical examination of numerous specimens of *Catocala Anocala* and *Spanocala*, Scott, disclose a wonderful diversity of arrangement of papillæ and spines, so that it may probably be found advisable to arrange the Antlia of the Lepidoptera in four divisions, viz. :—

Antlia — Smooth.
Ex. *Danais Erippus.*
— Partially papillate.
Ex. *Vanessa Atalanta* (?)
— Partially papillate, with spines set at intervals along the whole under surface of antlia.
Ex. *Anocala, n. sp.*, Scott.
- Furnished with teretron and with spines along part of under surface of antlia.
Ex. *Ophideres fullonica* and *Atkinsoni.*

At p. 223, Vol. VIII of Nature there is a description and drawing of the proboscis of a Sphinx (♀) by Herman Müller, which proves the correctness of Darwin's assertion as to the fertilisation of *Anagrœcum cesquipedale*—"there must be moths with a proboscis capable of extension to a length of between 10 and 11 inches."

EXPLANATION OF PLATE 14.

Fig. 1.—Upper surface of borer.
Fig, 2.—Under surface of borer.
Fig. 3 and 4.—Side views of same.
Fig. 5.—Arrangement of spines.
Figs. 1, 3, 4, × 85. Fig., 2 × 60.

Note on the tracheæ of certain Australian Ducks.

By E. P. RAMSAY, F.L.S.

In our Proceedings for the year 1877, I made some remarks on the *Anas castanea* of Eyton, our common Australian Teal, and referred to Professor Newton's remarks on the tracheæ of this species, *see* P. Z. S. 1871, p. 649. I was not a little surprised at the statement that a *bulla ossea* was fouud in the tracheæ of *both* sexes, having some years ago examined a considerable number of the same species without finding any *bulla ossea* in the female, but in the males it was well developed. I have recently examined six females with the same results, finding no trace of this organ in any of them, I believe therefore that Professor Newton must have been misled by the carelessness of his taxidermist.

In *Myroca australis* the *bulla ossea*, found in the males only, is of large size; in the Freckled Duck, *Stictonetta nævosa*, it is not found, either in the male or female, but the tracheæ of the male has a slight swelling about $\frac{1}{3}$ of its length from the root of the tongue, and in this enlargement the rings are divided, by a narrow slit, of which however more hereafter, when I hope to be able to offer the Society some remarks on this and other species of Australian Ducks. For the present I wish merely to correct an error into which my friend, Professor Newton, has fallen, and which I quoted in the above mentioned paper on Australian Birds.
