

between the cells, which open into follicles connected with sinuses in the granular tissue of the body, and that the orifices (the spiracles) at first very closely resemble the stomata of plants. The parietes of these follicles in *Meloë* are formed by aggregations of exceedingly minute, nucleated embryo-cells of rounded shape, and about one five- or one six-thousandth of an inch in diameter.

The tegument of the head, and more especially that of the eye of the young *Meloë* was then examined, and the cornea, which in this stage of the insect's existence is a single structure, fitted only for near vision, was shown to be composed of numerous transparent dermal cells, continuous with those which form the surface of the head, while the centre of the cornea, the axis of vision, is occupied by a single cell, more projecting and twice the size of those which surround it.

The changes which take place in the relative development of different parts of the tegument of the young *Meloë*, which lead to its entire alteration of form, were then pointed out, and shown to occur chiefly in the rapid growth of the dorsal region, which from being originally the smallest, as it is the last-formed part of the body, becomes the most voluminous, and occasions a complete alteration in the position and size of the limbs and in the entire form of the insect.

The stages of this process and the formation of the dermo-skeleton, the author proposed to be considered in the next section of this memoir.

Nov. 16.—The Lord Bishop of Norwich, President, in the Chair.

E. Doubleday, Esq., F.L.S., read a paper "On the Pterology of the *Diurnal Lepidoptera*, especially upon that of some genera of the *Heliconidæ*."

After expressing his regret at the little attention bestowed in this country upon the anatomy of the *Annulosa*, the writer proceeded to remark that he was not aware that any author had recorded the fact of a sexual variation in the neuration of the wings of *Lepidoptera*, a fact extremely interesting from the light it throws on the homologies of the nervures and nervules.

The variation takes place in the genera *Ithomia*, *Mechanitis* and *Sais*, all remarkable also for the great sexual variation in the structure of the anterior legs, those of the males being the least developed, those of the females the most developed, of any butterflies with suspended pupæ.

The state of atrophy of the anterior feet of the males is not, he states, the consequence of excessive development of the other pairs of feet, or of any other organs, nor does it appear to depend on any peculiar habits of the insect; neither can the greater development of these feet in the females be accounted for by any difference of habits. For the more developed anterior feet of some male *Coleoptera*, for the powerful jaws of the leaf-cutting or timber-boring bees, there are obvious uses; but a greater development in the one sex of organs almost atrophied in the other, which still leaves them unfitted



for the functions they perform in a normal state, and apparently does not render them useful for any other function, can only be explained by conceiving it in some way to depend on the position of the animal in the system of Nature.

The system of neuration of the posterior wings in the *Diurnal Lepidoptera*, which may be considered normal as regards this group, is abnormal as it respects the whole order; and it would seem as though Nature, by a partial return to a normal structure in a few genera, wished to indicate to us the real homologies of these parts.

In general the posterior wings of the *Diurnal Lepidoptera* have the discoidal nervure, which in these wings never branches, so placed as to seem to be a third subcostal nervule; but in some genera, although its basal is always wanting, its real character is very evident, and it is united to the subcostal nervure or one of its nervules, and also to the median nervure or one of its nervules, by distinct upper and lower disco-cellular nervules. In the *Heliconiæ* we find this structure, almost normal as it respects the order, in the genus *Ituna*, and also in *Ithomia*. It is found in some female *Ithomiæ*, of which the males have a different structure, giving indications of that change of position which in the next genus might lead us to mistake the discoidal nervure for a fourth median nervule, the disco-cellular nervules being placed more obliquely, the cell becoming thereby more elongated, and the lower disco-cellular nervule appearing almost to form a continuation of the median nervure. In *Mechanitis* both sexes have this character further carried out, and the wing appears to have a subcostal nervure dividing into two nervules, and a median dividing into four, so completely has the discoidal nervure assumed the position of a branch of the latter nervure. The females of the genus *Sais* have also this character, but in the males we find a still further change of structure. In these the second subcostal nervule assumes the position of a fifth median nervule, and the subcostal nervure consequently appears simple.

Thus, leaving the genera *Heliconia*, *Lycorea* and their immediate allies, which have the structure which is normal as regards the *Diurnal Lepidoptera*, though abnormal as regards the order, we find in *Ituna* and some female *Ithomiæ* a structure nearly normal as regards the whole order, but the males of the latter become abnormal in an opposite manner to the prevalent character of the group; next in *Mechanitis* we find this structure common to both sexes; and then in *Sais*, the females retaining the same structure as in *Mechanitis*, but the males varying still further from the type.

This gradual change in the position of the discoidal nervure actually occurring first in the two sexes of the same species, and then becoming common to both sexes, is, in the opinion of the writer, confirmatory in the highest degree of the theory laid down by him in a former paper, as to the structure of the anterior wings of the *Diurnal Lepidoptera*, and leaves, he thinks, no room to doubt the correctness of the explanation there given of the apparent anomaly of those wings in the *Papilionidæ*.



In the sexual variations detailed above, it is the male insect which varies most from the type, but the females of some species of *Mechanitis* present a remarkable structure in the anterior portion of the wing, the costal nervure being united to the subcostal for the greater part of its course.

An additional interest attaches to these peculiarities of the wings, from their being combined with the great peculiarities above referred to in the structure of the anterior feet.

The writer then proceeded to point out some analogies in the structure of the wings of the *Ithomia* and some *Hymenoptera*, especially as regards the inner margin of the anterior wings and the anterior margin of the posterior wings, and also with reference to a fringe of hairs on the latter, analogous to the hooks occupying the same position in the Bees and other *Hymenoptera*.

December 7.—E. Forster, Esq., V.P., in the Chair.

Read a "Description of a new genus of *Lentibulariæ*, with remarks on some Indian species of *Utricularia*." By M. Pakenham Edgeworth, Esq., F.L.S. &c.

Gen. Nov. DIUOSPERMUM.

*Calyx* bilabiatus, labio superiore 2- (rarius 3-) dentato. *Corolla* bilabiata, tubo brevi, labio superiore brevissimo truncato, inferiore 3-dentato. *Stamina* inclusa. *Stylus* brevis, stigmatibus dilatato. *Capsula* ovata, oligosperma; placenta centrali libera conica in apicem producta. *Semina* pauca (prope 6), ovata, testa laxa striato-rugosa, utrinque pilis paucis longis caudata. *Nucula* compressa, submarginata. *Embryo*? —Herba pusilla, acaulis, foliis radicalibus, radicibus utriculiferis.

DIUOSPERMUM ALBUM.

*Hab.* super rupes madidos, in Vishnugangetis valle, Himala; alt. 8000 ped.

This little plant, the author thinks, forms a link connecting *Lentibulariæ* with *Cyrtandraceæ*, to which order its tailed seeds show an approximation. Unfortunately he has not been able to separate the embryo so as to be satisfied with its nature and direction. In habit it resembles slightly some of the section *Oligocista* of *Utricularia*.

UTRICULARIA (subgenus *Oligocista*) FOVEOLATA, radicibus fibrosis brevibus, scapo simplici aphylo 2—6 floro racemoso sinistrorsum volubili, bracteis solitariis ovatis acutis basi-fixis pedicello vel longioribus vel multo brevioribus, lobis calycinis pedicello longioribus ovatis acutis corollam subæquantibus in fructu cum pedicello defracto valde auctis, corollæ labio inferiore vix concavo margine 3-lobo superiore bifido: calcare conico labii inferioris longitudine, capsulâ cernuâ calyce aucto obtectâ, seminibus majusculis compresso-trapezoideis rugoso-foveolatis foveolis nitidis punctatis.

*Hab.* in Bengaliâ, uliginosis, Januario.

An *U. uliginosa*, DC., no. 66. vol. viii. p. 15? Flos purpureus, scapus rubescens.

UTRICULARIA POLYGALOIDES, radicibus fibrosis, scapo aphylo erecto plus minus ramoso 2- v. multi-floro, squamis adpressis ovatis acutis, bracteis ternis exterioribus ovatis acutis interioribus subulatis pedicello compresso æqualibus vel longioribus, lobis calycinis ovatis acuminatis sub-