

*rugiceps* ; but there can be no doubt, from the figure and description, that it is the *Uperodon ornatum* of Mr. Bell, which is figured in the Zoology of the Beagle, p. 50. t. 20. f. 6.

Dr. Hallowell, in a paper in the same volume, describes and figures some Snakes as new, which Dr. Gunther informs me are well-known species, described many years ago, thus :—

*Zamenis tricolor*, Hallow. = *Herpetodryas margaritiferus*, Schleg.  
*Elapoidis fasciatus*, Hallow. = *Streptophorus* Sebæ, Dum. & Bibr.

XXXIII.—*On the Relation of the Raphe to the Coats of the Vegetable Ovule.* By ARTHUR HENFREY, F.R.S. &c.

IN the last number of the 'Annals' appeared a paper by Mr. Miers explanatory of his views on the subject named in the heading of this note. A clear statement of opinion is most valuable for the settlement of debated questions ; and the setting-out therein of the premises on which all the reasoning depends, is just what is required for the decision of the value of the arguments in the present case.

These premises appear to us open to adverse criticism, taking away the principal grounds of the subsequent arguments. We will consider them *seriatim*, as laid down at pages 276–8.

1. That "vegetable growth in all its stages is regulated by the ordinary laws of mechanical action," is incorrect if taken without qualification, since all the *peculiar* phænomena of organic development are indications of the action of a special force modifying the effects of simple mechanical laws ; but this question has no important bearing in the present case.

2. It is by no means true that every tunic of an ovule is formed of three elementary parts, *epiderm*, *mesoderm*, and *endoderm*. No such distinction of parts occurs in the ovules of *Orchis* and many other plants, where the ovules are composed of comparatively small quantities of cells.

3. Communication of vessels can only take place between one tunic and another at points where they are *organically continuous*.

4. The organic communication of the first and second tunics, testa, and tegmen, is *usually* confined to the vicinity of the chalaza or ganglode.

5. In erect ovules the chalaza is, of course, contiguous to the hilum.

6. In anatropous ovules the chalaza is removed from the vicinity of the hilum ; but the inversion of the ovule takes place by a *one-sided development of the tunics of the ovule*,—of the single coat where only one exists, of the *outer coat* where two exist ; and the cord of vessels lying in what is called the raphe is organically

continuous with the coat in question, the raphe *being a mere thickening of that coat*, in all the cases which have come under our observation. We have never seen such conditions as are represented in fig. 1 of Mr. Miers's paper, where the testa is shown distinctly separated from the raphe (or placental sheath). The cellular structure is uninterrupted between raphe and testa where the two are in contact, and the line of division running down between *b* and *c* has no existence in any case that we have observed.

7. Consequently there is no necessity that branches of the raphal vessels must set out from the ganglyode or chalaza to enter the testa; they may be sent out laterally in any part of the raphe between the hilum and the chalaza.

8, 9 and 10 fall away, if the foregoing statement be correct. We do not venture to assert that it is universally true, but it is the correct account of what we have found to exist in a large number of cases.

As regards specialities referred to in the paper, we must declare in favour of the superior value of such evidence as that furnished by Dr. Gray, in the case of *Magnolia*, to any analogical reasoning, which, in the case of the changes occurring during the maturation of seeds and fruits, is a most unsafe guide. And when Mr. Miers finds a difficulty in comprehending how an originally homogeneous tunic becomes developed into a double layer, one hard and the other soft, we think he must have overlooked the familiar case of the fruits of the *Amygdaleæ*, where the stone and pulp are clearly produced from the simple pericarp.

The cases where a branching of the vascular structure from the hilar end of the ovule takes place, are most simply explained on the above grounds, as developments within the substance of the testa; and the "placental sheath" is a needless assumption. In the case of *Citrus*, where the branching vessels start from the chalaza, they ramify in the *tegmen*, or inner coat, as this is only organically continuous with the outer tunic and raphe at that point.

April 3rd, 1858.

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XXXIV.—*Further Observations on the Nature and Origin of the External Coatings of Seeds.* By JOHN MIERS, F.R.S., F.L.S. &c.

THE arguments which I lately offered, relative to "the nature and origin of the external coatings of seeds," are founded principally upon the facts recorded by the most eminent physiological botanists, who have described and figured the gradual



Henfrey, Arthur. 1858. "XXXIII.—On the relation of the raphe to the coats of the vegetable ovule." *The Annals and magazine of natural history; zoology, botany, and geology* 1, 356–357.

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