NOTES.

THE PROTHALLIUM AND EMBRYO OF DANAEA.—PRELIMINARY

NOTE.—In July, 1908, a fine series of prothallia and young plants of *Danaea* was secured in Jamaica. The greater number of specimens belonged to *D. Jenmanii*, Underw., but there was a good series of *D. elliptica*, Sm., and a smaller number of specimens of *D. jamaicensis*, Underw. The latter were collected at Morce's Gap, the others in the vicinity of Vinegar Hill, both stations being a few miles distant from the Cinchona Botanical Garden.

The prothallia differed from those of *D. simplicifolia*, Rudge, described by Brebner (On the Prothallus and Embryo of *Danaea simplicifolia*, Rudge, Ann. of Bot., x, 1896, p. 109), in their much larger size and elongated form. Most of the larger specimens, which reached a length of twenty-five mm., were several times longer than wide, and often the posterior end was much attenuated and quite thin, the archegonial cushion not extending into it. Forked prothallia were also found, and one specimen of *D. Jenmanii* had four archegonial cushions.

The margin of the prothallium is often deeply lobed like that of *Osmunda* or *Gleichenia*. The rhizoids, as described by Brebner for *D. simplicifolia*, are multicellular.

Archegonia and antheridia resemble in form those of the other Marattiaceae, but the former are remarkable for the imperfect development of the ventral canal-cell, which in many cases could not be demonstrated at all.

The embryo becomes elongated in the direction of the archegonium-axis before division, and at this time resembles that of *Botrychium obliquum*. The first division-wall is transverse, as in other Marattiaceae, but the hypobasal cell either does not divide at all or divides only once and forms a short suspensor, all the organs of the embryo arising from the inner or epibasal cell. The latter undergoes a somewhat irregular quadrant division, the two lower quadrants forming the foot, the upper two giving rise to the stem-apex, the leaf, and later the root.

A single large apical cell can usually be demonstrated in the stem-apex at a very early period. No single initial is present in the young leaf, which does not appear to be always formed at the same point.

No trace of the root can be made out until the embryo has reached a considerable size. The root is strictly endogenous in origin and its single initial cell arises nearly in the centre of the embryo, probably from the stem-quadrant. With the elongation of the root downward, it carries with it the foot, which covers the growing point of the root like a root-cap.

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