

younger anterior region of the prothallus. Figure 4 is of a lobed gametophyte; figure 6 shows a similar condition in which two embryos, *em.* 1, *em.* 2, are to be seen. The depression of the antheridial ridge in the posterior region by marginal growth is particularly well-marked. These lobed forms are quite abundant among the Metis specimens, but the Toronto plants did not manifest this peculiarity. I am inclined to believe that the conditions of life in the two cases may have been the cause of this difference. The Metis specimens were found in wet, peaty soil. The Toronto plants, on the contrary, grew in rich, yet rather dry, forest mould. Older lobed prothallia have almost invariably two sporophytes attached to them. In figure 7, is represented an example in which the first root of the young sporophyte has reached a considerable size. At this stage the axis of the young sporophyte, which, in earlier phases, is nearly always at right angles to that of the prothallus, becomes often more or less oblique, as in the example figured. This rotation of the axis is probably due to the continued growth of the prothallium after the formation of the embryo. Figure 8 shows a prothallium in which two roots of the attached sporophyte have grown to a considerable length, although the cotyledon is short and still unfolded. In figure 9, we have a small gametophyte with only one root, and yet having the cotyledon fully expanded. The first leaf may expand either after one, two, or three roots have been formed, according to the vigor of the plant, and may always be recognized by its seeming to grow out of the proximal end of the first and stoutest root. Figure 10, is of a strong plant with three precotyledonary roots. The lamina of the cotyledon is not bilaterally symmetrical, as in most of the *Filicinae*, but of the palmate type represented by *Ophioglossum pedunculosum*. As may be seen from figures 9 and 10, the first leaf varies considerably in complexity in accordance with the greater or less robustness of the plant from which it originates. In the next drawing, figure 11, is represented a lobed prothallium, on which are two older sporeplants, deprived of the leaves of the year of their collection. Figure 12 shows a Toronto specimen, bearing two well-advanced sporophytes. Figure 13 is a representation of a bifurcated sporeplant, two examples of which have been found. Figure 14 is interesting, for it represents a sporophyte which has already developed the fertile ventral segment, and is yet still attached to the mother prothallium. The sporeplant in this case is eight years old, as indicated by the number of foliar lacunæ in the fibro-vascular cylinder. There seems to be little danger of error in drawing this inference, for a considerable acquaintance with the young sporophyte enables me to state positively, that never more than one leaf is developed at a time, and in all