leafstalk is forced continually outwards and eventually decays, leaving no trace of its existence. This is the reason that, in transverse sections of older stems, the foliar bundles of fallen leaves apparently disappear before reaching the external cortex. The periderm formation of *B. virginianum* is thus connected with the occlusion of the leafstalks, and is probably to be explained as an adaptation for protecting the subterranean stem from infection by the fungi of the soil.

In a transverse section through the older region of the stem, the periderm is never found to form a continuous investiture as in the higher plants, but is strictly localized in areas representing the points of origin of former leaves. The writer has not yet had an opportunity of investigating whether the mode of cork formation obtaining in *B. virginianum* is common to the whole group, but it seems probable that this may prove to be the case. Periderm is also often formed both in the sporophyte and in the gametophyte where surface injuries have occurred: a striking case of correspondence between the two generations.

The cotyledonary trace originates from the central cylinder as a single strand, figure 61, *cot.*; but separates shortly after reaching the petiole into two approximately collateral bundles. These pass upwards through the long leafstalk into the lateral lobes of the lamina, one of them giving off a bundle for the median lobe, exactly as in the postcotyledonary leaves of many *Filicineæ*. The endodermis is never quite continuous on the inner side of the cotyledonary trace, and in subsequent leaves becomes less and less marked, till at the stage in which there are four petiolar bundles, it is entirely absent. Figure 67 represents the laminar portion of the ninth leaf of a sporophyte which was still attached to its prothallium. The fertile segment, *f. s.*, of the lamina is already present. This plant was at the same time the oldest sporophyte still in connection with the gametophyte, and the youngest already producing spores, which has come under my notice during the present investigation.

In figure 68 is a still attached young sporophyte. Its prothallium is infected with the already defunct symbiont, *a*. The spore-plant still bears its cotyledon l^1 and two younger leaves, l^2 and l^3 are in the process of formation. In the primitive root, *r*, can be seen at *x* and *y*, certain dark spots which are cells occupied by the sporophytic endophyte. There is no resemblance between the latter and that of the gametophyte as its mycelial filaments are much larger, being generally about eight micra in diameter. There are no vesicles nor *conidia* present, and in fact the sterile *mycelium* is uniformly filamentous in character. These features are reproduced in figure 69. The occurrence of a symbiont in the roots