junction of the cotyledon and root, probably the foot, fastened the young sporophyte to the base of the *archegonium*. The apical bud appeared sometimes at the point of union of root and leaf, and sometimes further down on the root, thus simulating the adventitious buds arising from the roots of the adult plant.

The most recent contributions to our knowledge of this group is due to the discovery of the gametophyte of *Botrychium virginianum* by Professor Douglas Campbell[3] at Grosse Isle, Michigan, in 1893. The prothallia were unfortunately, like those of Hofmeister's *Botrychium Lunaria*, which they resembled in appearance, although larger in size, too old for the study of the development of the sexual organs and embryo. They are described as being flattened tubers with folded upper margins, covered with root-hairs and bearing the reproductive organs on the superior surface. Brown externally, white in section, the lower part of the gametophyte harboured an endophytic fungus. The *archegonia* had rather long and straight necks, while the *antheridia* were quite endogenous like those of *Equisetum* and *Marattia*. No young embryos were found, but only advanced young sporophytes, bearing already the first or a subsequent leaf.

Professor Campbell was the first to bring about the germination of the spores in this group. The process is exceedingly slow, requiring, even in the warm climate of California, for *Botrychium virginianum*, eighteen months or more, and for *Ophioglossum pendulum*, somewhat less than that time. The most advanced stages yet obtained by him, had only undergone two or three divisions. Chlorophyll was found in the young prothallium of *Botrychium virginianum*, and a suspicion of chlorophyll in that of *Ophioglossum pendulum*. This may have been due merely to the fact that germination took place in the light.

As there has been a tendency in recent years to associate the *Ophioglossece* with the isosporous *Lycopodineæ*, it is necessary to state briefly what is at present known concerning the gametophyte in the latter group. Fankhauser[4] discovered in 1872 the brown subterranean prothallus of *Lycopodium annotinum*. The examples found by him were lobed, tuber-like, and marked by numerous ridges and depressions. *Antheridia* and fully formed sporophytes were found on them, hence the prothallia must have been monœcious. In 1884, Bruchmann[5] found some much younger prothallia. These were of oval and flattened form,

3. Trans. British Association, Oxford Meeting, 1894. Structure of Mosses and Ferns, 1895, pp. 224-228

4. Bot. Zeitung, 1873. No. 1.

5. Bot. Centralblatt. Bd. i., 1885, pp. 23-28.