

THE GAMETOPHYTE OF BOTRYCHIUM VIRGINIANUM.*

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I.

ON account of their subterranean and inconspicuous prothallus and the slow germination of their spores, the literature on the subject of the sexual generation of the *Ophioglossaceæ* is somewhat scanty.

Hofmeister¹ was the first to give an account of the gametophyte in this group. His friend Irmisch sent him specimens of the very young sporophyte of *Botrychium Lunaria* in 1854. On visiting the spot where the young plants had been discovered, he found other examples, some of which were still attached to the maternal prothallus. The latter, he describes as being oval in shape and about a millimetre in length, of light brown colour externally, and yellowish white in section. The cells were filled with clumps of material not of a starchy nature. *Antheridia* were found mainly on the upper surface, the *archegonia* being situated below. Root-hairs were sparingly interspersed among the sexual organs. The antherozoids resembled those of the other *Filicinae*, but were about one-half larger in size. The *archegonia* were sunk almost level with the surface of the gametophyte. One prothallus was found still attached to its spore, but attempts to germinate other spores, under observation, were unsuccessful. No young embryos were obtained, nor was it possible to study the development of the sexual organs. As a result of the inferior position of the *archegonia*, the young sporophyte appeared on the lower surface of the prothallus. The root grew out first, indeed two roots often made their appearance, before the first leaf became visible. The latter was bract-like and colourless. The two following leaves resembled it, but they had, either one or both of them, green tips. The fourth frond conformed to the usual type, and probably made its appearance in the next period of vegetation. From the situation of the embryo on the lower surface of the prothallus, the

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1. Abhandl. d. k. Sächs. Gesellschaft d. Wissch. Bd. ii., pp. 657-662.