

the seed. The plumule is green and located in a furrow formed by the large cotyledon, the margins of which tightly enclose the plumule. The germination commences while the seed is still floating upon the water, and the first sign of the young plant is the plumule breaking out through the mucilaginous envelope and separating itself from the clasping margins of the cotyledon; the first leaf succeeding the cotyledon is exactly opposite this, and represents merely an open sheath-like organ with two ribs. This rudimentary leaf-structure may be frequently observed also in the second and third leaf of the seedling, while in some seedlings I noticed that already the second leaf showed a distinct petiole and a small elliptic blade. In regard to the root system, the primary root does not develop, but secondary roots in pairs appear at an early stage, and attain a considerable length, though without ramifying.

*Orontium aquaticum*, L. germinates in the same way, but the plumule is here located in a shallow cavity of the cotyledon without being surrounded by this. The first leaf succeeding the cotyledon is terete, not bicarinate, and this form of foliage becomes repeated in several of the following leaves; the primary root stays rudimentary, but soon becomes replaced by several lateral.

We have thus in monocotyledonous seedlings several interesting types, in which quite a prominent variation is noticeable in respect to the structure of the cotyledon, the first leaf or leaves succeeding this, and the root system. In some of these the seed is exalbuminous, and the cotyledon epigeic, as in *Alisma*; or we have the peculiar, globular cotyledon in the exalbuminous seeds of the aquatic *Orontium* and *Peltandra*. Epigeic is, furthermore, the cotyledon of *Agave*, but not until it has absorbed the food-substances of the endosperm. The hypogeic cotyledon is much more frequent, but varies in regard to the structure of the absorbing portion, for instance, if we compare the scutellum of the *Gramineæ* with the club-shaped cotyledon of *Cyperaceæ*, *Smilax*, *Commelina*, *Arisæma*, etc. Sometimes the cotyledon possesses a distinct sheath which envelopes the plumule, as in *Arisæma*, *Smilax* and *Agave*; if the coleoptile of the *Gramineæ* and *Cyperaceæ* might prove to represent the sheath of the cotyledon, this would then frequently appear at some distance above the scutellum, separated from this by an internode or node, according to some authors. The cotyledon may subtend a bud as in *Smilax*, and we remember that in several *Gramineæ* a bud has been observed in the axil of the coleoptile, whether this be an independent leaf or merely a part of the cotyledon. The foliage of these seedlings is, also, characteristic; for instance, the epiblast and coleoptile in