

spread over a large area, since the roots attain quite a considerable length, and it is very common to find specimens of which the secondary root (r. 1) is terminated by a similar shoot. In respect to *Isotria* we meet here with the same structure as in *Pogonia*, but the roots are somewhat thicker, fleshy, and short-hairy; the internal structure of the vegetative organs of *Pogonia*, *Isotria* and *Triphora* has been described by the author in the American Journal of Science⁹). The rhizomes described above were composed of relatively slender cylindric internodes, and we shall now pass to give some illustration of the remaining genera in which tubers are developed. We must here distinguish between two kinds of tubers, viz., those that merely consist of the swollen base of the floral stem, and those that consist of several smaller internodes. The first type is represented by *Liparis* and *Microstylis*, and I have figured two specimens of *L. liliifolia*, Rich., (Plate 2, figs. 10-11) which agrees with *L. Loeselii*, Rich. The tuberous body (fig. 10) is here the basal portion of the flowering stem, and is therefore situated above the uppermost of the two green leaves, which may be seen from figure 11, where S. indicates the flowering stem, L. the green leaf, and B. an axillary bud. When the flower-bearing stem withers the swollen base persists with a scar at the apex (S. in fig. 10.) This tuber shows a large cavity on the one side (the right in the figure), and it is here that the axillary bud is located; the first leaf of this bud is a large, two-keeled, fore-leaf or prophyllon (P. in fig. 10), with its back turned to the mother-axis, and there are generally two membranaceous, scale-like leaves succeeding the prophyllon, and preceding the two green, assimilating leaves at the base of the flowering stem. There are several slender, very hairy roots developed from the base of the bud, and the tuber remains active generally for two years. As mentioned above this structure of the tuber is, also, characteristic of *Microstylis*. In the remaining autophytic genera *Arethusa*, *Calopogon*, *Calypso* and *Aplectrum* we meet with the second type of tuber which consists of several internodes, and in which the tubers show annular markings from the withered, membranaceous leaves. In regard to the ramification this is sympodial in these four genera, but if we examine the composition of the shoots from the tuber to the aerial, the

⁹) Vol. IX, 1900, page 13.