vertically and to a very considerable depth. In the following spring the leaves develop, forming a small rosette, while the hypocotyl, and the base of the root commence to increase in thickness, resulting finally in the formation of the very large root which characterizes the species. The plumule develops only a very short axis, and a few leaves, which winter over, and these become then succeeded by a small rosette surrounding the terminal bud, which is purely vegetative, the axis being a monopodium. A similar structure of the hypocotyl and primary axis may be observed in *Geranium maculatum* L. In this the hypocotyl increases in thickness so as to form a roundish tuber, and the apex of the axis is, also, here vegetative, developing a few leaves during the first season; the primary root persists, but does not increase in thickness to such an extent as in *Claytonia*. The seedling of *Baptisia tinctoria* R. Br., shows the same contraction of the hypocotyl and root as observed in *Claytonia*, but the primary shoot dies down to the cotyledons, and the vegetative reproduction is secured by the development of two overwintering buds, located in the axils of the cotyledons. In *Gillenia trifoliata* Moench (Figs. 36-37), in *Ceanothus Americanus* L., and *C. ovatus* Desf., the hypocotyl simply makes a bend toward the surface of the ground, and cotyledonary buds are, also, developed in these species, one in *Gillenia*, but two in *Ceanothus*, which replace the primary axis above the cotyledons; in these the hypocotyl and primary root persist for several years. We have, thus, in this type a hypocotyl whose function is first to raise the cotyledons and plumule above the ground, and afterwards either by contraction or simply by a bend to bring the overwintering bud or buds nearer to the ground for protection against the cold.

A third type is represented by *Ranunculus abortivus* L. (Figs. 34 and 35); in this the hypocotyl raises the cotyledons above ground, but soon afterwards it bends downward (Fig. 35) and dies off, together with the primary root. However, just before the hypocotyl and primary root cease to be active, a new root-system becomes developed from the cotyledonary nodus, and these secondary roots soon attach the seedling to the ground and nourish it. A mature specimen of this species, thus, lacks a taproot; this manner of germinating was, also, observed in R. *recurvatus* Poir., and is undoubtedly common to several other species of the genus. The same is, furthermore, the case with *Sanicula Marylandica* L.,while in several other Umbelliferæ, e.g. *Thaspium barbinode* Nutt., *Osmorhiza longistylis* DC., etc., the primary root develops as a persistent taproot with rapid increase in thickness. Somewhat different from this type is the germination of *Sarracenia purpurea* L., in which a very distinct tuft of long hairs develop at the base of the hypocotyl where the