APIACEAE (UMBELLIFERAE) (Carrot Family)
(Mathias and Constance, 1944–1945)

Plants annual or perennial herbs. Stems usually branched, often hollow between the nodes. Leaves alternate and/or basal, less commonly opposite or whorled, variously compound or simple, petiolate or less commonly sessile, rarely perfoliate or peltate, the petiole base often expanded and somewhat sheathing, the stipules partially fused to the petiole base or lacking. Inflorescences simple or compound umbels of small flowers or sometimes condensed into heads, rarely appearing as small spikes, often with bracts subtending the flowers and at the branch points. Flowers mostly perfect (functionally staminate or pistillate flowers mixed with the perfect ones in some genera, or occasionally the outermost flowers of an umbel functionally sterile and with enlarged corollas), epigynous, actinomorphic or occasionally the outermost flowers of the inflorescence with some of the petals enlarged. Sepals reduced to 5 small teeth (slightly larger in *Eryngium* and some genera with enlarged perianth in the outer flowers), sometimes absent, when present usually persistent in fruit. Petals 5, the tips usually curved or curled inward. Stamens 5, the filaments free. Pistil 1 per flower, composed of 2 fused carpels, the ovary inferior with a swollen nectar disk at the tip, the styles 2, often expanded at the base. Fruits schizocarps consisting of 2 mericarps that separate along the inner side at maturity, the tips of the inner sides often remaining attached for some time to a slender, sometimes Y-shaped stalk. Mericarps indehiscent, 1-seeded, oftensomewhat flattened, with 5 more or less prominent ribs, some or all of these sometimes winged. Three hundred to 450 genera, 3,000–3,550 species, nearly cosmopolitan, most diverse in temperate portions of Northern Hemisphere and mountainous regions of the tropics.

Genera and species in this family can be difficult to determine. As with many large, morphologically complex families, a set of specialized terms has evolved to describe variation in the Apiaceae and to facilitate discrimination between genera. In species with compound umbels, the branches (stalks) of the inflorescence are called rays. When present, the involucresubtending an inflorescence consists of bracts, whereas the involucel subtending an individual umbellet of a compound inflorescence is composed of bractlets (sometimes referred to as bracteoles in the literature). The small petals (0.5–3.0 mm in most Missouri species) are usually incurved or rolled inward, making size measurements difficult, and petal lengths thus are not useful for differentiating most genera. In the fruits, the usually persistent stalk positioned between the mericarps, to which they often remain attached after beginning to break apart, is called a carpophore. Details of the fruits often require viewing under magnification. The sides of the mericarps that are joined prior to breaking apart are known as commissures, and the two ribs along the edges of each commissure are referred to as lateral ribs, to distinguish them from the dorsal rib along the opposite margin and the two intermediate ribs on the mericarp face between the lateral and dorsal ones. Fruits that are laterally flattened have narrow commissures relative to the sides and individual mericarps that appear relatively plump, whereas fruits that are dorsally flattened have broad commissures and individual mericarps that appear strongly flattened. In most species, longitudinal secretory canals known as oil tubes occur between the ribs; these contain aromatic oils or resins and, although usually visible on the fruit surface, are most easily seen in cross-sectioned samples.

The relationship between the Apiaceae and Araliaceae, as traditionally circumscribed, continues to be imperfectly understood, and some authors have advocated uniting the two into a single family, Apiaceae.
Molecular studies of a number of independent gene sequences (summarized in Plunkett et al., 1997; Downie et al., 2000) have suggested that although the situation is complicated, most of the genera can be classified into two lineages that correspond roughly to Apiaceae and Araliaceae. However, the genera traditionally included in Apiaceae subfamily Hydrocotyloideae, whose relationships were controversial even before the advent of molecular systematics (Cronquist, 1981), have been shown to represent several groups with different affinities. One cluster, including *Hydrocotyle* and some other non-Missouri genera, appears to be more closely related to the Araliaceae than Apiaceae, and probably is better classified as a morphologically aberrant basal group in that family. Because further studies involving larger samples of additional species will be necessary to resolve the complex relationships among the umbellifer genera, the traditional classification of the two families continues to be followed in the present treatment.

Most Apiaceae contain aromatic oils in secretory canals present throughout the plants (although not evenly distributed in all parts; canals in the mericarps, for instance, are known as oil tubes), and many species emit characteristic strong odors when bruised or crushed. In part because of these terpenoid oils, many species are used as food, garnishes, and/or spices, including dill (*Anethium graveolens* L.), celery (*Apium graveolens* L.), caraway (*Carum carvi* L.), coriander (*Coriandrum sativum* L.), carrot (*Daucus carota* L.), parsley (*Petrosalinum crispum* (Mill.) Nyman), and parsnip (*Pastinaca sativa* L.). A number of species also are cultivated as garden ornamentals. However, many members of the family are extremely poisonous when ingested, especially the hemlocks (*Cicuta, Conium*), and inexperienced individuals should resist the urge to harvest plants from the wild for culinary experiments. After contact with the skin, a number of species also cause dermatitis, in particular phototoxic reactions (those brought on and mediated by continued exposure of the skin to sunlight or other strong light sources). The information presented for individual taxa below was taken primarily from Kingsbury (1964) and Roth et al. (1994) but should not be considered an exhaustive account of all toxic species in the family. Unless sure knowledge of the identity and properties of a given species is known, all wild members of the Apiaceae should be considered potentially poisonous or toxic to the skin.

Steyermark (1963) reported *Aegopodium podagraria* L. (goutweed) (Pl. 202 c, d) from Missouri, based on a single specimen from Jefferson County. This specimen, cited as being collected by Bill Bauer in 1940, could not be located during the present study. *Aegopodium podagraria* is commonly grown in gardens as a ground cover and spreads vigorously by branched rhizomes, often forming irregular patches of basal rosettes of large, glabrous leaves, these 1 or 2 times ternately compound, with large, oblong to ovate, coarsely toothed leaflets. The white-petaled flowers are in dense compound umbels usually lacking bracts and bractlets, and the flattened fruits are inconspicuously ribbed. Steyermark did not state whether the specimen he reported had green or variegated leaves (var. *variegatum* L.H. Bailey), but forms with mottled or white-margined leaves are common in gardens. Goutweed can persist at old homesites and eventually may become naturalized in Missouri.