Pentacrest Heritage Walk

The “Pentacrest” is the historic heart of the University of Iowa campus. It consists of the four-block area that today contains the Old Capitol Museum and the four grey stone buildings surrounding it. On the 1839 map of Iowa City, this area was designated as “Capital Square” and was reserved as the building site for what was to become the Territorial and later the State Capitol building. Old photos from the 1850s show the Capital Square surrounded by a stout wooden fence designed to keep out roving livestock and vehicular traffic. These old photographs and written accounts from that period indicate that the grassy crest of the bluff had only a scattering of Oak trees.

In 1857, the state government was relocated to Des Moines, and the Old Capitol building and surrounding site were deeded to the University of Iowa. The early 1860s were difficult financial times and to help defray expenses the grass on the lawn was cut and sold as hay. By the late 1860s, the University was in a position to improve its facilities and advertised that “no pains will be spared to make the grounds attractive.” Photos from that period show improvements that included the addition of an ornamental iron fence, sidewalk, and the planting of numerous young trees in grid-like patterns on the east lawn. In the 1870s and 1880s, several new brick buildings were added to the north and south of Old Capitol and two graduation classes donated the commemorative glacial boulders that can still be seen on the east lawn.

With the approach of the twentieth century, University President Charles Schaeffer envisioned major changes for the central campus. The brick buildings were to be removed, and four new stone buildings were to be built. As part of this central campus redevelopment, the prestigious Olmstead Brothers firm (planners of New York City’s Central Park) were consulted about landscaping. By the late 1920s, the major transformation had been accomplished, and the Pentacrest looked much as it does today with its five stone buildings, west terrace and stairs, and surrounding low pipe-rail fence.

The present landscape plan represents an outgrowth of the picturesque park style with broad grassy lawns and loosely symmetrical groupings of trees and shrubs framing axial vistas of the Old Capitol. Today, approximately 40 kinds of trees and shrubs can be found on the Pentacrest. Through the year, they greatly enhance the beauty of this area by providing bright spring flowers, cooling shade in summer, brilliant fall foliage, and delicate branch patterns against the winter sky. This walk is designed to introduce you to twenty-eight of the oldest and most interesting of these trees as well as important events in the University’s history and sites of geological significance.

The Pentacrest Heritage Walk begins and concludes at the Old Capitol. 
Casual walking time is 1.5 hours.
Please refer to Map # 1.
◊ Denotes trees native to Iowa

1.) Geology of the Pentacrest buildings The site of Iowa’s Territorial Capitol was selected, in part, because of the nearby availability of building stone along the Iowa River. Initial quarrying of stone for construction of the Old Capitol began in 1840 at the old Public Quarry (also known as North Capitol Street Quarry, tour site 41), located along the bank to the west of The University of Iowa President’s Residence. The quality of this Cedar Valley Limestone was subsequently deemed unacceptable, leading to substitution of the State Quarry Limestone from some 10 miles upstream. The former was used to the top of the second-story windows of Old Capitol, and the latter for the remainder of the walls and most of the trim; both are Devonian age (375 million years). The State Quarry Limestone from the Iowa River site has the distinction of serving for both Iowa’s Territorial Capitol buildings and for the foundation stone of the present State Capitol in Des Moines.

The buff-colored Cedar Valley Limestone preserves abundant solitary and colonial corals, stromatoporoid sponges, and other shallow tropical marine organisms that are readily visible in the walls of Old Capitol. Brachiopods and crinoid fragments that characterize the coarse lime sand of the light grey State Quarry Limestone are best observed in the walls that border the steps on both the east and west sides of the building. The floors on both porches are slabs of Silurian age (410 million years) Anamosa Dolomite, from Jones county, that display concentric laminations of crenulated algal mats. Benches and walkway stone to the west of the building are Rockville Granite, a Precambrian-age igneous rock (some 2 billion years old) that is quarried extensively in south-central Minnesota. It is used for foundations in the Iowa Memorial Union, Macbride Hall, Gilmore Hall, and for steps at Old Capitol, Trowbridge Hall, the Chemistry Building, and several other campus structures. This granite is recognized by the large pink and white feldspars, and smaller grey quartz and black biotite crystals.

Buildings on the Pentacrest display the major types of dimension stone used in campus construction. Most common is the Salem Limestone, a Mississippian-age (330 million years) formation from south-central Indiana. All Pentacrest buildings except Old Capitol are constructed primarily of this light grey sedimentary rock, which commonly displays distinctive cross-bedding and contains numerous bryozoan and crinoid fragments that confirm marine origin. The Salem Limestone is also the primary structural material in Gilmore Hall and serves widely as stone trim mainly on brick buildings, such as the Iowa Memorial Union, the Chemistry Building, Trowbridge Hall, and the Main Library. Examples of off-campus buildings constructed of the Salem Limestone include the US Bank (204 E. Washington Street) and the Old Post Office (28 S. Linn Street).

2.) Macbride Hall Historical Plaque You may want to stop back to visit the Museum of Natural History now housed within Macbride Hall. The Museum of Natural History, established in 1858, is the second oldest museum west of the Mississippi River. Originally housed in Old Capitol, the museum’s swelling collection forced a move to the Old Science Hall (now Calvin Hall) in 1885, and to this building in 1907. The museum features a billion-year walk through Iowa’s natural history in the Iowa Hall gallery, including dramatic dioramas of a Meskwaki village, a nine-foot-tall giant Ice Age sloth, and the bluffs overlooking the Mississippi River. The Bird Hall gallery displays more than 1,000 North American birds. Mammal Hall presents wildlife dioramas from all over the world.
3.) Black Walnut [Juglans nigra] The Iowa Department of Natural Resources lists this Black Walnut tree as one of the largest of its kind in the state. It towers more than 100 feet tall, has a trunk more than 15 feet in circumference, and may be nearly as old as the Old Capitol building itself. The prominent vertical gashes on the trunk were caused by lightning damage in 1982. Black Walnuts are native throughout Iowa, especially on river flood plains. The distinctive compound leaves are large, 1 to 2 feet in length, with 5 to 11 pairs of leaflets. Since pioneer times, these trees have been valued for their lumber and edible nuts. The rich brown heartwood was particularly prized for making gunstocks and Victorian furniture like that used in furnishing the Old Capitol.

4.) Hackberry [Celtis occidentalis] A relative of the Elms, this tree commonly grows throughout the state. Its simple leaves have oblique bases and frequently bear wart-like insect galls, which do no serious harm to the tree. The surface of the bark is usually very rough with prominent warty to ridged outgrowths. Many kinds of birds feed on the small purple to black cherry-like fruits.

5.) Hard or Sugar Maple [Acer saccharum] In Iowa forests, the Sugar Maples commonly grow in natural association with the American Lindens [Tilia americana], especially on the north and east facing river bluffs. In the autumn, few trees produce as striking a combination of yellow, orange, and deep red foliage. The typical Maple leaf form is described as being “palmate” or hand-like with five lobes and veins radiating from the base. The distinctive double-winged fruits mature in late summer or early autumn. When they fall from the tree, their slow whirling descent enhances wind dispersal. The dense, hard texture of this tree’s wood makes it ideal for flooring, like that found in the lobby of the Natural History Museum in Macbride Hall. The common name “Sugar” Maple refers to the practice of boiling down the sweet sap to make syrup and sugar. It takes about thirty-five to forty gallons of maple sap to make one gallon of syrup.

6.) European Larch [Larix decidua] Although native to the mountainous areas of central and eastern Europe, this tree was widely planted in Iowa in late Victorian times. The Larch is one of the few conifers (trees with needle-like leaves) that is not evergreen. In its leafless overwintering condition, its distinctive growth form is especially apparent with a prominent mast-like trunk and tier upon tier of gracefully sweeping lateral branches. These lateral branches in turn bear numerous slender drooping twigs studded with small, knob-like spur shoots. Each spring, these spur shoots produce clusters of soft green needles and small reddish cones. During the summer, the Larch appears like most other conifers, having a basically conical silhouette, needle-like leaves, and seeds produced in woody cones.

7.) Douglas Fir [Pseudotsuga menziensii] Although this conifer is native to the Rocky Mountains and Pacific Northwest, it is widely planted throughout Iowa because of its hardiness, compact pyramidal growth form, and attractive blue-green foliage. The individual leaves are 3/4 to 1 1/4 inches long, do not have a sharp tip, and remain alive on the twigs for several years. Its distinctive seed cones are red-brown in color and have protruding three-pronged bracts. In the western United States and Canada, the Douglas Fir is an important source of lumber, paper pulp, and Christmas trees.

8.) The Pentacrest Historical Plaque
9.) Pin Oak [*Quercus palustris*] Although originally growing wild in the river valleys of the eastern part of the state, Pin Oaks are now one of the most popular and widely planted landscape trees. Its mature growth form is unusual among Oaks in that the columnar trunk extends to considerable height without major branching. The lower branches are usually rather slender and sweep downward. The common name is said to refer to the numerous small pin-like short branchlets it produces. The leaves have 5 to 7 slender lobes, each tipped with a bristle. In the autumn, the foliage color varies from brilliant red to reddish brown. In the spring, Oaks produce very small inconspicuous flowers of two distinct types. The numerous pollen-producing flowers occur in slender drooping tassel-like clusters. The seed-producing flowers are fewer in number, occur at the tips of very small branchlets, and eventually develop into the characteristic “acorn” fruits. The acorns of Pin Oaks are relatively small, hemispherical in shape, and often have dark vertical lines or pin stripes. The acorn cap covers just the base of the nut and is composed of very closely fitting scales.

10.) Honey Locust [*Gleditsia triacanthos*] Commercial horticultural varieties such as ‘Shademaster,’ ‘Moraine,’ and ‘Sunburst’ are commonly planted throughout the state because they are fast growing, suitable to a wide range of soils, and produce a light shade that allows grass to grow well beneath them. The large leaves may be up to a foot in length but have a delicate somewhat fern-like appearance because they are much divided with numerous small elliptical leaflets.

The popular commercial varieties differ from wild native trees in that they lack certain potentially objectionable features such as the large bayonet-like spines and numerous bean-like fruits up to a foot in length.

At the time of settlement, the native Honey Locust was rather uncommon, but early farming practices resulted in it becoming an increasingly common sight in pastures and fencerows. Cattle and other free-ranging livestock eagerly sought out and fed on the sweet pulpy fruits. The trip through their digestive tracts frequently resulted in enhanced germination and dispersal of the tough seeds.

11.) Black Oak [*Quercus velutina*] Black Oaks are most common in the southeastern part of the state along sandy bottomlands and bluffs. Although rarely planted as a landscape tree, it can develop into a handsome shade tree. The leaves are somewhat similar to those of Pin Oak with 5 to 7 sharply pointed lobes; however, one pair of lobes is much larger and broader than the others. Black Oaks also differ from Pin Oaks in that their buds are densely covered with light brown hairs and their egg-shaped acorns have caps composed of loose, hairy scales that cover almost half the nut. The young twigs have an inner bark with a distinctive yellow or orange color, which was used to make a natural dye before the development of aniline dyes.

12.) American Elm [*Ulmus americana*] At the time of settlement, the American Elm was a dominant tree in the floodplain forests of Iowa. In the last half of the nineteenth century and the first half of the twentieth century, it became the most popular shade tree for planting in lawns and along streets. In the 1960s, there were an estimated 2000 Elm trees on the UI main campus. Unfortunately in the 1950s, a fungal disease spread into the eastern part of the state and gradually killed most of the mature trees. In the 1970s, more than 100 dead Elm trees were removed from the Pentacrest alone. This incredible survivor is more than 110 feet tall, has a trunk almost 15 feet in diameter, and exhibits the “v-shaped” silhouette of a mature American Elm. Based on its size, it may well have been one of the landscape improvements added in the late 1860s. The pipe that you see inserted in this Elm was installed as a treatment for a bacterial disease. This treatment is no longer used.
13.) Green Ash [Fraxinus pennsylvanica] The bark on the trunk of Green Ash trees has a distinctive pattern consisting of a network of narrow ridges demarcating elongated, diamond-shaped areas. Ash wood is very strong, straight grained, and has long been used for making baseball bats, oars, and handles for garden implements.

During a storm in 1991, a large branch split off the west side of this tree. The bark has now partially overgrown the edges of this wound, and a young branch that sprouted at the base of the scar will in time fill out the gap in the tree's canopy. Although Green Ash is native to Iowa's river and stream floodplains, it is now commonly planted as a mid-sized street and shade tree. The compound leaves are about a foot long, have 5 to 9 leaflets, and turn bright golden yellow in autumn. In spring, this tree has clusters of very small pollen-producing flowers. Clusters of small seed-producing flowers occur on separate trees (male and female), such as the one located about 40 feet to the north. The mature paddle-shaped fruits are about 2 inches long and often persist on the tree through the winter. Eventually these winged fruits are dispersed by the wind and frequently sprout as "weeds" growing in hedges, fencerows, and flower beds. This characteristic explains the present landscaping practice of planting only pollen-producing or so-called "seedless" varieties.

14.) Slippery or Red Elm [Ulmus rubra] Like its relative the American Elm, this tree is native to Iowa but has seldom been used in landscape planting. Although generally smaller than the American Elm, the two are sufficiently similar in most respects to be frequently confused. Among the features that can be used to distinguish the two are the following: (1) the upper surface of Slippery Elm leaves is hairy and feels rough as sandpaper, whereas that of the American Elm is usually hairless and smooth; (2) the young twigs of Slippery Elm are ashy gray in color, while those of American Elm are reddish brown; and (3) the overwintering buds of Slippery Elm are covered by dark purple scales with hairy margins, whereas the bud scales of American Elms are red-brown in color and have smooth margins. The common name "Red" Elm refers to the typically reddish cast of its heartwood. The common name "Slippery" Elm refers to the mucilaginous nature of the inner bark. In territorial times, the inner bark was widely regarded as having soothing medicinal properties and was used as a wound dressing, poultice, sore throat remedy, and in the treatment of cholera. This species is not susceptible to Dutch Elm Disease.

15.) Schaeffer Hall Historical Plaque

16.) Ginkgo [Ginkgo biloba] This male (does not bear fruit) Ginkgo is an example of an extraordinary tree sometimes referred to as a "living fossil" because it has remained essentially unchanged since the time of the dinosaurs. These primitive seed plants or gymnosperms are native to southern China and are more closely related to the conifers than to other broadleafed trees. The Ginkgo's distinctive leaves are fan-shaped and have fine, radiating veins. In the autumn, they turn a bright yellow before dramatically falling off with the first hard frost. The pollen and seeds are produced on separate male and female trees. The mature seeds, which are reminiscent of apricots, ripen to a tan-orange color in the late summer and remain on the tree until after the leaves fall. After falling to the ground, the decaying outer layer has a foul odor similar to vomit or rancid butter. For that reason, it should come as no surprise that pollen-producing trees are almost exclusively used in landscaping. Unfortunately, the Pentacrest has a large seed-producing tree that overhangs busy sidewalks at the southeast corner of Old Capitol. Every fall, people walking in those areas can be heard to exclaim "What's that smell?"

17.) MacLean Hall Historical Plaque

18.) Mugo or Mountain Pine [Pinus mugo] This conifer has a shrubby growth form with numerous branches arising at ground level. In pines, the needle-like leaves occur in groups of 2 to 5 and remain on the plant for several years. Mugo Pine has stiff needle-like leaves about 2 inches long that occur in pairs. The seeds are produced in woody cones requiring 3 years to mature. Although this pine is native to the mountainous areas of central and southern Europe, it grows well throughout Iowa and is commonly used for low evergreen plantings, especially around building foundations.