

THE PLANTS OF CASTLE ROCK

A PRELIMINARY REPORT

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Castle Rock is a butte left by the eroding waters that swept through the present Rock River valley in the far distant past. It stands alone, separated by stretches of sand from the bluffs along the river below and those stretching back north and west of it. It is different from the others, which are wooded. It is on the west bank of Rock River three miles south of Oregon. It is much visited by tourists since it commands a very beautiful view of the Rock River valley. This, of course, is an important factor in its plant population, though there is some effort made to protect the wild flowers and shrubs growing there.

The rock is composed of almost pure sandstone (St. Peter's), and is part of the same rock formation which has been sculptured into canyons by tributaries of the Illinois and Vermillion rivers at Starved Rock. This sandstone is soft and crumbles easily so the rock is surrounded with deep sand, loosened by weathering, giving sandy slopes by way of approach which are very similar to the dunes. Castle Rock is composed of a series of terraces, which no doubt are responsible for its fanciful name. The upper parts of the rock are nearly devoid of vegetation except for a few crustose lichens and mosses found in the crevices. Castle Rock is interesting from an ecological point of view because of its well marked plant succession passing from extreme xerarch condition at the top where there are only xerophytic lichens and mosses, through ferns, xerophytic herbaceous plants and shrubs down to the oak-hickory stand on the south side. The succession reaches an extreme mesophytic condition on the east side.

The south slope is the most gradual. It is covered part way up by a sparse growth of black oak (Hill's) and white oak. On this side there are many herbaceous perennials including blazing star, three species of goldenrod, several species of grass, the ferns *Polypodium* and *Pteris* (the brake fern), and many others listed below.

The most interesting of these plants was the blue toad flax, *Linaria canadensis* (L.) Dumont. This exquisite flower, very small, clear blue, was borne on small plants not more than four

or five inches high when first seen, May 23. It was still blooming, August 30, but it had grown tall and its lower flowers had ripened into mature fruits. This species seems to be rather rare for it was seen in no other place during a summer's collecting at various places along the river in Ogle and Winnebago counties, nor was it seen at Starved Rock.

The north slope, which is very steep, has a thicket of witch hazel which extends around the western side, but there are fewer shrubs on the west. Associated with the witch hazel are many sand plums, which are characteristic dune plants, gooseberry and black-berry bushes. Scattered among the shrubs in open spots are numerous plants of the great Solomon's seal and the ferns mentioned before.

The east face, which is towards the river, is quite different, being a steep rock cliff. The upper part is xerophytic with lichens and mosses and small polypody ferns on its face, but lower down larger ferns and herbaceous plants find foothold on the narrow ledges. At the base of the rock in the numerous shallow caves cut by the water there is a luxuriant growth of liverworts, *Conocephalus* and *Reboulia*, and such mesophytic ferns as *Woodsia* and *Cystopteris*. In the moist soil bordering these, shaded by the overhanging branches of a service berry tree (shad bush) there are such typical mesophytes as wood nettle and Virginia creeper.

The steep sandy eastern slope below the rock is covered by a thicket of black-berries, but the other parts of the slope are covered with common weeds such as mullein, ragweed, climbing false buckwheat, field bindweed, etc. The eastern slope merges into a narrow flood plain covered with grass and many herbaceous plants including black night shade, several species of the mustard family, evening primrose, nettle, verbena, knotweeds, and others. The flood plain ends in a gravel beach at one point with rather interesting growth of *Amaranthus* and *Bidens* and scattered plants of asters, two species of *Chenopodium* (lambs' quarters), horsetails and several others. At another place the flood plain ends in a fen at the water's edge, where there is a typical fen association including arrowhead, bulrush, sedges, iron weed and several others. There is some telescoping of the flood plain with the fen in the occurrence of dogwood, ash, cottonwood and white maple.

The list of plants occurring in the several habitats des-

cribed are listed below. This is, of course, a preliminary list which it is hoped may be completed at some future time.

Plants Observed.

1. Top of rock—extremely xerophytic

Thallophytes:

Lichens, crustose, unidentified (yellow, greenish, brown)

Bryophytes:

Grimmea sp.

Polytrichum juniperinum Willd.

Herbaceous Plants:

Sedge, unidentified

Juncus tenuis Willd.

Panicum capillare L. (?)

Woody Plants:

Acer negundo L. (small seedling)

Quercus ellipsoidalis E. J. Hill

Rhus copallina L.

Vaccinium canadense Kalm

Vaccinium vacillans Kalm

2. South slope—xerophytic, sandy

Herbaceous Plants:

Achillea millefolium L.

Amaranthus retroflexus L.

Ambrosia artemisifolia L.

Antennaria plantaginifolia (L.) Richards

Anthemis cotula L. (?)

Anychia canadensis (L.) BSP.

Artemisia caudata Michx.

Arctium minus Bernh.

Aster lateriflorus (L.) Britton

Capsella bursa-pastoris (L.) Medic.

Coreopsis sp.?

Erigeron ramosus (Walt.) BSP.

Euphorbia corollata L.

Fragaria virginiana Duchesne

Gnaphalium polycephalum Michx.

Hypericum ellipticum Hook.

Hypericum gentianoides (L.) BSP.

Lactuca scariola L.

Lepidium virginicum L.
Liatris graminifolia (Walt.) Willd.
Linaria canadensis (L.) Dumont
Linaria vulgaris Hill
Lythrum alatum Pursh
Mentha sativa L.
Oxalis corniculata L.
Phlox divaricata L.
Polygonatum commutatum (R. & S.) Dietr.
Rumex Acetosella L.
Sisymbrium incisum var. *filipes* Gray
Sisyrinchium angustifolium Mill.
Solidago Boottii Hook.
Solidago hispida Muhl.
Solidago nemoralis Ait.
Tephrosia virginiana (L.) Pers.
Tradescantia virginica L.
Viola sp. (blue)

Woody Plants:

Quercus ellipsoidalis E. J. Hill
Quercus alba L.
Rhus copallina L.
Ribes Cynosbati L.
Rosa acicularis Lindl.
Smilax herbacea L.
Ulmus fulva Michx.
Vaccinium canadense Kalm.
Viburnum lentago L.?
Vitis vulpina L.

3. East slope

- a. Face of rock—xerophytic, perpendicular with narrow ledges projecting.

Herbaceous plants

Cystopteris fragilis (L.) Bernh.
Linaria canadensis (L.) Dumont
Maianthemum canadense Desf.
Pentstemon sp.
Polypodium vulgare L.
Polygonatum biflorum (Walt.) Ell.
Polygonatum commutatum (R. & S.) Dietr.
Pyrrhopappus caroliniana (Walt.) Raf.

Woodsia obtusa (Spreng.) Torr.

Woody plants

Aralia nudicaulis L.

Hamamelis virginiana L.

Prunus angustifolia var. *Watsoni* (Sarg.)

Waugh

- b. Base of rock—xerophytic above on steep sandy slope, changing to mesophytic below, where it merges into the flood plain.

Herbaceous plants

Datura tatula L.

Heuchera hispida Pursh

Ipomea pandurata (L.) G. F. W. Mey.

Laportea canadensis (L.) Gaud.

Lepidium virginicum L.

Linaria canadensis (L.) Dumont

Pentstemon sp.

Polygonum pennsylvanicum L.

Polygonum scandens L.

Rumex Acetosella L.

Solanum nigrum L.

Tradescantia sp.

Urtica gracilis Ait.

Verbascum thapsus L.

Woody plants

Amelanchier canadensis (L.) Medic.

Celtis occidentalis L.

Populus grandidentata Michx.

Prunus americana Marsh.

Prunus serotina Ehrh.

Psedera quinquefolia (L.) Greene

Rhus toxicodendron L.

Rubus allegheniensis Porter

Rubus odoratus L.

Smilax herbacea L.

Tilia americana L.

- c. Shallow cave, water worn, at base of rocks, shaded by trees (*Tilia* sp. and *Amelanchier canadensis*).

Reboulia sp.

Heuchera hispida Pursh

Psedera quinquefolia (L.) Greene

Woodsia obtusa (Spreng.) Torr.

4. Flood plain, between Castle Rock and Rock River.

Herbaceous plants

Abutilon theophrasti Medic.
Datura tatula L.
Duchesnia indica (Andr.) Focke
Erigeron canadensis L.
Mollugo verticillata L.
Oenothera biennis L. (?)
Phytolacca decandra L.
Polygonum aviculare L.
Rumex Acetosella L.
Sisymbrium officinale (L.) Scop.
Solanum nigrum L.
Teucrium occidentale Gray
Urtica gracilis Ait.
Verbena urticaefolia L.
Vernonia fasciculata Michx.

Woody plants

Acer saccharium L.
Fraxinus americana L.
Quercus stellata Wangenh.
Tilia americana L.

5. Flood plain telescoping into fen, hydrophytic

Woody plants

Acer negundo L.
Acer saccharum L.
Cornus stolonifera Michx.
Fraxinus pennsylvanica var. *lanceolata* (Borkh.)
Sarg.
Populus deltoides Marsh
Salix longifolia Muhl.

6. Fen—mesophytic to hydrophytic

Herbaceous plants

Actinomeris alternifolia (L.) D. C.
Amaranthus hybridus L.
Bidens cernua L.
Cyperus sp.
Leonurus Cardiaca L.
Lippia lanceolata Michx.
Polygonum lapathifolium L.
Rudbeckia laciniata L.

Rumex Britannica L.
Sagittaria sp.
Scirpus americanus Pers.
Vernonia fasciculata Michx.
Xanthium sp.

7. Beach gravel and sand

Herbaceous plants

Amaranthus hybridus L.
Anthemis Cotula L.
Aster vimineus Lam.
Bidens frondosa L.
Chenopodium album L.
Chenopodium hybridum L.
Equisetum arvense L.

8. North slope—mesophytic

Herbaceous plants

Dicentra cucullaria (L.) Bernh.
Poa pratensis L.
Polygonatum biflorum (Walt.) Ell.
Polygonatum commutatum (R. & S.) Dietr.
Polygonum scandens L.
Pteris aquilina L.
Smilacina racemosa (L.) Desf.

Woody Plants

Amelanchier canadensis (L.) Medic.
Celtis occidentalis L.
Hamamelis virginiana L.
Prunus americana Marsh.
Prunus serotina Ehrh.
Quercus alba L.
Quercus ellipsoidalis E. J. Hill
Ribes Cynosbati L.
Rubus allegheniensis Porter
Smilax hispida Muhl.
Vaccinium vacillans Kalm.
Vitis vulpina L.

9. West slope—xerophytic

Herbaceous plants

Antennaria plantaginifolia (L.) Richards
Maianthemum canadense Desf.
Polytrichum juniperinum Willd.

Woody plants

Amelanchier canadensis (L.) Medic.*Aralia nudicaulis* L.*Hamamelis virginiana* L.*Populus alba* L.*Vaccinium canadense* Kahm.