

SOME THINGS LEARNED IN MANAGING A BOTANIC GARDEN

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Instead of waiting for the endowment of a botanic garden to be managed by him, the writer, a man with no experience in such matters, began in 1877 in a very small way to carry some of his ideas into practice, making many mistakes, especially in reference to treatment of hardy plants as suggested by English writers. The mistakes were inexpensive, because the experiments were made on a small scale; but he kept learning. To begin with, the writer possessed some knowledge of landscape gardening, horticulture and systematic botany and a desire to produce a garden which should attract the public and especially be useful to serve as a laboratory for students. He kept studying all phases of the subject, visiting several gardens of this country, talking with directors and reading reports.

As the garden grew, the authorities of the college became interested, and were willing to furnish more needed money and labor.

At its best, the garden consisted of two areas, one of them on both sides of a brook containing about two acres and a half, the other of one acre on a gentle slope for growing grasses and other forage crops and weeds, a total area of about three and one half acres; the highest number of species reached was 2,500.

During an experience of thirty-three years, the following are some of the most important things learned: labels are made of iron galvanized, the top portion placed with one edge up instead of sloping, this to prevent the birds from soiling them.

Now comes a very important and convenient addition to the system of labels: a strip of zinc with a number punched on the upper end is thrust full length into the ground adjoining and on the back side of the standard of the label; the numbers on the strip of zinc are recorded in a book opposite the corresponding name of the plant.

For about six months of the year these labels are gathered up in bundles, each family kept by itself. When each label is taken out a small stake is put in its place, for convenience in returning the labels.

The label for a family is larger and the text somewhat extended. It did not seem possible to arrange the families in order of rank, for most of them need a change every few years. For each family a spot was selected of suitable size and exposure to sun and shade. For instance, there was only one place just suited to ferns and that could not be at one end of the list if placed to show the relative rank. Preferably each species was given room enough to fill the eye, a patch three feet in diameter not only for appearance, but there is less risk of losing all of the plant in case of severe cold weather or hot, too wet or too dry.

In some families a few trees were planted, and these were occasionally cut back or a small tree substituted for a large one.

The writer soon learned that to grow violets and keep them true to label they must be scattered not nearer than eight feet of each other, because when mature they shoot their seeds in every direction, some of them to a distance of ten feet. The same is true of some species of plants of the family Euphorbiaceae, Geraniaceae, and species of oxalis, balsam and others.

Poison ivy and poison sumach are grown on an island not far from the path that visitors may not touch them.

Aquatics placed in the larger pond were not equally content with a reasonable amount of space. The most rampant one of the lot was *Cabomba* from the south. We had to draw off the water, clean out the surplus plants and prepare a separate place for *Cabomba*.

On the banks of the brook tarred paper subdued quack grass, proving much superior to common salt.

Moles and quack grass frequently invaded the garden from the surrounding campus. This was most successfully prevented by the following device: dig down a narrow trench about eighteen inches deep, leaving one wall smooth and sloping a trifle; on this wall we placed a coat of cement mortar an inch to an inch and a half thick, carefully filling in the dirt. Quack grass stopped then and there; cement was preferable to hemlock boards and lasted longer.

Occasionally a plant, like Indian hemp or bind-weed is inclined to roam about instead of remaining where it is given a place. An inclosure of cement is efficient.

By repeated trials the writer has learned that rhododendrons, azaleas, kalmias, and bluets will not flourish in the garden on account of lime in the soil.

After three to five years, some species of *Helianthus* and most kinds of mint seemed to dwindle or poison the soil. The plants or the soil had to be changed.

After ten years, in spite of all we could do, insects disfigured or killed nearly all umbellifers. We had to give them a rest or a shift. Darwin and Wallace refer to similar incidents.

Why not cover top and sides over a bog with a screen and grow a nice assortment of mosses? The writer tried it for two years and had to admit the effort was not a success.

Spring is a busy time; for this reason we did as much work as possible in the fall previous. At this time we would mulch with coarse sedges and avoid scattering seeds which make trouble the next season.

With few exceptions, unless the writer knew exactly what he wanted, he found little satisfaction in exchanging or buying seeds; it is very much more satisfactory to visit nurseries and gardens when the display is good and secure living plants.

For growing weeds, grasses, and other forage plants, the writer adopted a formal style of squares or parallelograms, five or six feet across, where he grew about three hundred species. What seems nicer than to grow for comparison numerous species of a genus side by side, as for instance species of *Poa*, *Agrostis*, *Polygonum*, *Brassica*, and *Trifolium*? Don't do it, or you will soon learn how much misery and perplexity can be got out of a small piece of ground.

Of weeds, grow those unlike each other in adjoining plats; mix in, as clover between grasses, or place a *Poa*, or *Panicum*, or *Aristida*, a *Bromus*, a *Festuca*, the small kinds among those which are coarser.

The writer has helped half a dozen or more professors who had admired his plats to start a weed garden or a grass garden. In no case was it worth while, for the species were soon in hopeless confusion. Where kept pure and well grown, plats are very interesting, but a few things out of place destroy confidence.

Before seeds begin to scatter, cut off the tops excepting a few for seed and study.

In his weed garden, the writer made a start in growing some parasitic fungi. As *Gymnosporangium macropus* does not grow on red cedar in central Michigan, the writer induced our mutual friend, Dr. Byron D. Halsted, to send him from New Jersey a few young cedars infested with the coveted cedar apples. For two years he made an unsuccessful attempt to infest the young leaves of a red astrachan apple tree, demonstrating the fact that this variety of apple is immune to this pest.

Securing red cedars from New Jersey reminds me of an incident worth mentioning at this time: some years ago Dr. Britton, the honored director of the New York Botanical Garden, visited the wilds of central Michigan and noticed that the red cedars there had bushy tops, unlike the conical tops of those in New Jersey and surrounding country. Beside the cedars received from Dr. Halsted were planted half a dozen cedars from the river bank at Michigan Agricultural College. The two lots of cedars have grown side by side and are now twelve feet high. The tops of all are alike bushy, not appearing as though sheared to a conical shape.

In conclusion, this small garden was much frequented by visitors from far and near. The writer recalls a single comment made by each of two men, B. T. Galloway, long the successful chief of the Bureau of Plant Industry, "I want a garden at Washington like this and larger." The other was Robert Warrington, director of the experimental farm so long famous for the work of Lawes and Gilbert of England, in looking at the plats of grass, Mr. Warrington said: "How pure they are."

The writer had the oversight of this garden for thirty-three years; it took less than three years for his successors to reduce the number of species one half or more.