

## **John Johnston and the First Use of Drainage Tile in Seneca County, NY**

One very important agricultural advancement of 19<sup>th</sup> century America that can be traced directly to Seneca County, New York is the first use of drainage tile in farm fields. It is John Johnston who deserves the credit for this accomplishment.

John Johnston was born in Dumfriesshire, Scotland, in 1791, to a family of sheep farmers. He immigrated to the United States, landing at New York City in April, 1821. The following year he purchased a farm in Fayette, overlooking Seneca Lake, which he called "Viewfields." Later he added several more parcels to the farm, bringing the total size to 320 acres.

Due to dense clay soils and abundant underground springs in the area, Johnston's fields retained a great deal of moisture. The excessive water prevented early spring planting, caused plants to grow shallow root systems, and froze out winter wheat crops. After poor yields from his initial plantings, Johnston recalled his grandfather advising that "Verily, all the airth needs draining," and remembering seeing men firing clay drain tiles in the fields of Scotland. Johnston decided to try the effects of underdraining the fields of his Fayette farm.

The actual origin of tile drainage is obscure. In 200 B.C., Cato described the use of brush, straw, poles, stones, boards and tile to drain fields. Pliny in the first century A.D. suggested the use of roof tiles in drainage. Eventually farmers realized that curved drain tiles were more effective than flat ones and used poles to form horseshoe-shaped tiles. Johnston sent to Scotland for two pattern tiles in 1835, which he took to Benjamin F. Whartenby, a maker of crockery, in Waterloo, NY. Whartenby made 3,000 tiles that Johnston laid down on his farm in 1838.

At first, some of Johnston's neighbors laughed to see him "burying crockery" in the ground, and called his project "Scotch Johnston's Folly." Naysayers grimly predicted failure, suggesting that the drains would be crushed under ground, freeze up, dry out the land, or even poison the soil. Opinions began to shift when the 10-acre plot where he first tried his tiles, previously a swampy bog, produced 50 bushels per acre in the first year, where previously 5 bu/acre had been harvested. The process was so successful that by the time he retired from farming he had 72 miles of tile drains on his 320-acre farm. Whartenby continued making tiles, producing 840,000 in 1849, and Waterloo was home to ten drain tile factories by 1871.

Johnston was not a wealthy man when he began his tiling experiment. He depended on borrowed capital to get started, and then repaid the loans with the money from his harvests. In this way he was able eventually to fully underdrain his farm of 300 acres by 1852, with over 60 miles of tile laid. Johnston stated that his success was due to "D, C and D"—"dung, credit, and drainage." On the other hand, Johnston's son-in-law Robert Swan, the owner of Rose Hill Farm, was the son of a wealthy man. Swan's means enabled him to follow his father-in-law's example immediately on coming to Rose Hill in 1850. In two years, he was able to have laid the "first consecutive and ideal system of farm drainage in the country," with over 72,500 tiles. Because of drain tile, Liberty Hyde Bailey of Cornell wrote that "Johnston farm and Rose Hill are together perhaps the most important spot in American agriculture."

The mid-19<sup>th</sup> century reports on drainage for the New York State Agricultural Society (NYSAS) centered on Seneca County. Seneca County became well-known to farmers across the country as a testament to the benefits of agricultural drainage, largely through the efforts of John Johnston, his neighbor John Delafield (who imported a Scraggs Patent Tile machine from England, the first in this country), and Robert Swan.

John Johnston promoted tile drainage at every opportunity, even traveling to advise other farmers on the technology. Johnston boosted tiling through letters and articles published in such

journals as *The Genesee Farmer*, *The American Farmer*, *The Boston Cultivator*, and Horace Greeley's *New York Herald Tribune*. He encouraged farmers who were reluctant to go to the expense of tiling their fields by repeatedly reminding them that, on his own farm, the tile had paid for itself in one to two years through improved crop yields on his drained land. Johnston served as chairman of the NYSAS's drainage committee for several years. Because of his ceaseless advocacy, John Johnston became known as "The Father of Tile Drainage" in the United States.

Johnston died in 1880 at age 90. In 1909, Charles Mellon, who owned the old Johnston farm at that time, reported large grain yields, which he attributed to the Johnston drainage system still in place and working after 50 plus years. As late as 2003, the Kime family—current owners of Johnston's original farm—reported that many of Johnston's tile lines were still working.