

*American Fruit Explorers:***Niels Ebbesen Hansen: A Man with a Vision
for the Unfathomable**MARVIN PRITTS¹**Additional index words:** explorer, fruit, hybridization, winter hardy, Russia, China, Siberia**Abstract**

Niels Ebbesen Hansen was one of the most successful fruit explorers of the late 19th and early 20th centuries. He was well-educated for his time, but valued the practical over the theoretical. “Don’t wave a college diploma over a field of tender plants and expect to make them hardy.” Hansen took eight trips to northern Asia during his career to collect plants that were hardy and resilient under conditions of the High Plains of North America – his adopted home. Some of these plants were new species that he introduced to the Dakotas, whereas many others were used to hybridize with familiar fruits to generate hardier offspring. He also introduced species that were important for agronomists, but he did not develop these because his interests were with fruit improvement. Hansen is credited with the release of 113 types of apples/crabapples (*Malus* spp., some red-fleshed); 72 varieties/hybrids of plums, cherries, apricots and sand cherries (*Prunus* spp.); 35 varieties of grape (*Vitis* spp.), and many selections of raspberry (*Rubus*), currant (*Ribes*) and strawberry (*Fragaria*). Hansen overcame many personal and physical challenges in his quest to transform the High Plains into a major food-producing region, driven by his belief that he should leave the world a better place than he found it.

Niels Ebbesen Hansen (1866 – 1950) was a man of the north. While many fruit explorers of his time went to the subtropics and tropics in search of unfamiliar fruits that would grow in the United States, Hansen went to the north temperate regions of the world in search of hardy fruits that could be crossed with familiar fruits to produce hardier and more resilient offspring for the High Plains. While some of his species introductions were new to the United States, most were known to growers in the traditional fruit-growing regions. Hansen also collected native species of plums, sand cherries, currants, raspberries, gooseberries, grapes, roses and strawberries to use in his breeding program.

Career accomplishments

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of grape (*Vitis* spp.), and many selections of raspberry (*Rubus*), currant (*Ribes*) and strawberry (*Fragaria*). Hansen was particularly excited about red-fleshed apples and his plum-apricot hybrids. At one point his collection of fruit in South Dakota (250,000 unique genotypes) was second only to Luther Burbank’s in size and diversity. He believed that his selections would form the foundation of a large and vibrant fruit industry in the Dakotas, rivaling what could be found further east in milder climates.

Hansen is also credited with introducing hardy alfalfa (*Medicago sativa*), Durum wheat (*Triticum durum*), crested wheat grass (*Agropyron cristatum*), brome grass (*Bromus madritensis*), proso millet (*Panicum miliaceum*) and 32 selections of ornamentals including roses (*Rosa* spp.) and elms (*Ulmus* spp.). He even introduced a line of hardy fat-tail sheep (*Ovis aries*) from Asia. Some consider Hansen to have done the most to transform

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the Upper Midwest into the breadbasket for the nation; however, his true passion was fruit breeding, leaving development of the grain and forage species to others.

Life in the late 1800s was challenging. Collecting trips would take many months by boat, train, horse-drawn carriage and sleigh. The world at the time was rife with revolution, especially in northern Europe and within the soon-to-be Soviet republics where he travelled. Collections had to occur in late fall and winter when seeds and fruits were available but when temperatures were bitterly cold. Language barriers were wide and successful collecting depended on the cooperation of local communities. Life expectancy at the end of the 19th century was 40 years mostly due to the prevalence of disease. Despite these challenges, Hansen persisted in becoming one of the world's foremost fruit explorers.

Life story

Niels was born in 1866 near Ribe, Denmark to humble parents. Andreas, his father, was a painter of frescoes and his mother Bodil worked at home. Their first child died at 9 months of age and the second child was stillborn. Niels was the fifth and last child. Bodil died when Niels was 1.5 years old. Andreas remarried and Niels and his sisters were raised by his step-mother, Katrina. Most of the family immigrated to New York City when Niels was 7 years old. Andreas thought there would be many frescoes to paint in New York. He worked on the Centennial exhibition in Philadelphia in 1886 and then moved to Des Moines to work on the fresco at the Iowa capital. There were not many other opportunities to paint frescoes in Iowa or the rest of the Midwest at the time. Andreas did not speak English well so he resorted to painting the inside of houses for low pay. But Niels adapted to his new home rather quickly and completed 8 grade levels in 5 years.

Unfortunately, Katrina died when Niels was 16. The family had little money so Niels dropped out of high school at grade 10 and began working. However, he paid a tutor to

study Latin and German, and self-studied other high school subjects because he wanted to go to college. Niels had a speech impediment which made learning language even more difficult, but despite this, Niels was a prolific poet.

In 1883 at the age of 17, Hansen was accepted into the Iowa State Agriculture College (ISAC, later Iowa State University) after excelling on the entrance exam. Tuition that year was \$4 a semester. School closed between November and March because they could not keep the building warm where the dormitories were located. Despite the low cost, Hansen had to drop out of college after his first year.

The following year, Bodil's estate was settled and he inherited enough money for another year of college. "Tomorrow I leave again for Ames. Glory Hallelujah!" he exclaimed. Hansen earned extra money by teaching English to recent Danish immigrants.

Hansen graduated near the top of his class with the honor of having the best graduation thesis, "Improvement of Fruits by Cross-breeding" and began work at a nursery. His fluency in Danish, English and German facilitated his sales career because he could talk with many of the immigrant farmers. Now that he had a job, Hansen wrote to his 61-year-old father, "Be of good cheer. It will be my greatest joy to help and support you in your old age. And your remaining years can be happy and carefree."

In 1891 Hansen was hired to work on fruit crops, teach classes and write a handbook on fruit culture at ISAC under the supervision of Professor Budd, his thesis advisor. He believed that doing science was also doing the Lord's work, and wrote many poems about the sanctity of nature.

While there, he fell in love with a student, Emma, 8 years younger than him. She was smart and from a wealthy family. She ignored the usual curriculum for women (domestic studies) and double-majored in chemistry and botany. She later got a Master's degree by the age of 22. Unfortunately for Hansen,

she rebuffed all of his advances. On an invitation to a university function, she wrote, in big letters with exclamation marks, "No! No! No!" Emma was good friends with George Washington Carver who was also a student at ISAC. Hansen tried many times to get Carver to arrange a date with Emma, but to no avail.

In 1894 Hansen took his first trip to northern Europe to learn about fruit production in 10 countries and at 20 experiment stations. In 1895 he completed his M.S. degree with a thesis entitled, "The Crossing and Hybridizing of Native Fruits: A Study of Apples." Upon graduation he was offered a job at both Arizona State College and South Dakota State College (SDSC), but chose the latter so he could pursue his interest in finding hardy strawberries and raspberries and crossing them with commercial varieties. He was first appointed chair of the new horticulture department at SDSC and, later, became head of the experiment station. Along with these duties, he continued to court Emma by mail.

In 1897, President McKinley appointed James Wilson as the Secretary of Agriculture who resolved to address production problems using a scientific approach. One of his first acts was to fund Hansen for an 8-month expedition to Russia, Turkistan and northern China to find hardy plants for the U.S. His attire consisted of "a billy club, dagger, revolver, binoculars, and magnifying glass." In Siberia he found hardy alfalfa and crested wheatgrass, red-fleshed apples, hardy melons, and a host of other plants. But he had to endure a severe blizzard, strep throat, and carbon monoxide poisoning. He nearly died. Hansen returned from Russia with tons of seeds and plants. This overwhelmed the Section of Foreign Seeds and Plant Introductions at the USDA. It especially annoyed David Fairchild, head of that section, who was supposed to catalog the "Russian Deluge." Fairchild eventually resigned from his position and his job was offered to Hansen, but Hansen preferred the prairie to Washington so he declined the offer.

Hansen continued to write to Emma. Many

details of his trips are recorded in letters to her. He even wrote to her parents to convince them to talk with her about him. He proposed to her by letter from Russia. Finally she said "yes," under the condition that her father approve the marriage.

In a letter to Emma's father, Hansen wrote, "As you know, college professors are seldom wealthy men. I have no fortune to offer Emma but she is willing to keep house in the same modest fashion that is customary to members of the faculty." The same week Emma accepted his proposal, Hansen's father died.

After the marriage, Hansen was again offered a position at ISAC to which he responded, "I wish the people at Ames would get over this notion that I am desirous of going there. I am well-situated in South Dakota. My experiments with native hardy fruits are by far the most extensive on this continent. My work is certainly vastly more important than testing onions, cucumbers and tomatoes, a work that every market gardener does better than any experiment station."

Niels and Emma had two children, but she contracted appendicitis in 1904 and died while pregnant with their third child. She was buried in her wedding dress. Coincidentally, Professor Budd died on the same day. These deaths were devastating to Niels. Later, Niels married Emma's sister, mostly so his children would have a mother to help raise them while he was away on collecting trips.

In 1909, Hansen constructed the world's first fruit breeding greenhouse at Brookings. He planted tree fruits in large tubs, stored them underground for winter, then brought them into the greenhouse in spring to synchronize flowering with other species. Thus, for example, he was able to hybridize less hardy Japanese plums with the hardy sandcherry, Japanese plums with native plums, *Vitis vulpina* with the less hardy large grapes (*V. labrusca*) of the eastern United States, *Malus iowensis* with European apple cultivars, and the Asiatic sand pear from Harbin with commercial cultivars. He made selections of the native golden currant (*Ribes odoratum*),

raspberries, and strawberries. Hansen Bush Cherries (*Prunus besseyi*) are still available in some nursery catalogs today.

More collecting trips

Hansen went on six more trips to Russia and China – some of them 30,000 km in length. He suffered stolen luggage, starvation, a cholera epidemic, revolutions, bandits, sea sickness, and push-back from David Fairchild who was now head of plant exploration at USDA. Fairchild accused Niels of collecting seeds from the Agriculture College of Moscow rather than from the field.

When Hansen requested another trip to Russia in 1911 funded by the USDA, Fairchild refused and sent Frank Meyer instead. Meyer was not as good with languages (Hansen spoke seven languages) nor did he have an established rapport with the local communities in the region. In Hansen's opinion, Meyer's mission was not very successful. Professional jealousy was evident between the two men. Meyer was particularly upset by a newspaper account in which he is quoted as praising Hansen. He wrote to Fairchild, "I did not say anything they mentioned here. Pure invention." Hansen had many differences with Fairchild and Meyer, which probably originated from the preference that Secretary of Agriculture Wilson had for Hansen's work, even though he was not a USDA employee. When Secretary Wilson retired, Fairchild wrote to Meyer, "Hansen had the gall to get his friends to write to the new secretary urging him to fund another trip." The new secretary would no longer fund Hansen's trips – but the state of South Dakota did. Meyer wrote to Fairchild, "Great Scott! How is this possible?"

Hansen was also invited to Russia by their government to explore and teach, all expenses paid. There Hansen ". . . was surprised to find that some of my bulletins have been translated into Russian."

Career success

In 1929, Hansen received the Wilder Med-

al awarded by the American Pomological Society. In 1930 to 1934, the Dakotas suffered depression, drought, tornadoes, dust storms, financial collapse, and grasshoppers. But Hansen saw this as an opportunity to select for the most stress-tolerant of plants. A newspaper account of his work stated, "Within a short time South Dakota will be able to grow grapes equal to the New York or Michigan product – grow them on vast acres by the ton, despite blizzards and sub-zero temperatures." Hansen's fruits were widely promoted throughout the region by the booming nursery industry. Gurney's catalogs often featured colored drawings of Hansen's latest releases on their cover. The 1917 catalog stated, "Prof. Hansen is producing almost every year something that is an improvement over anything we have had in the past. He has by his inventions of fruit extended the profitable fruit-growing belt over the wide, barren prairies of the Northwest. He has made it possible for every man, woman and child to produce cheaper than they can buy it, all of the fresh fruit they could use. Are you producing this fruit? If not, you are passing up some of the good things of this life."

Hansen retired in 1937 at the age of 71. Shortly thereafter, South Dakota State University (SDSU) decided to cut most of the funding for fruit research. Hansen continued to search for new plants, but limited his forays to Canada. SDSU discontinued all fruit breeding in 1960 "because of the need to change objectives."

Niels died in October 1950 at the age of 84. "Silent Night" was sung at his funeral. His monument says "To Leave the World a Better Place than I Found It."

In conclusion, Hansen overcame the death of his mother at a young age, death of his step-mother as a teen, relocation to a foreign country as a boy, a speech impediment, dropping out of high school and college, the death of his wife, and early death of his beloved father. In addition, he persevered through bitter cold, a cholera epidemic, strep throat, blizzards, robbers, political upheaval, finan-

cial woes and funding cuts. Despite these adversities, Hansen persisted in his quest and became one of the most impactful fruit explorers the world has ever known.

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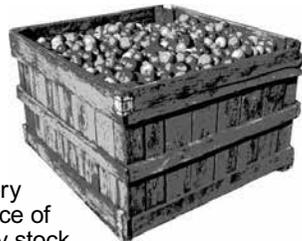
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