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Colfax, Washington

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- Williamson Store at Palouse
- Orville Vogel

Whitman County Historical Society

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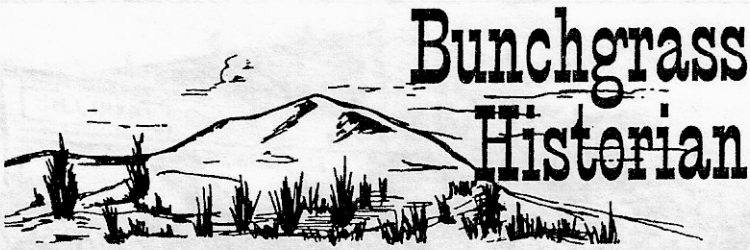

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Frances Marks of Palouse introduces herself in the article on the Williamson Store. Francis is currently involved in several historical projects for the Whitman County Historical Society

Clay Reis, who now lives in Oregon, was a student at Washington State University when he wrote the paper on wheat scientist Orville Vogel. Some will remember Mr. Reis as a member of the WSU Cougar football team.

Cover

Williamson Store, Main Street, Palouse, Washington. About 1925

From the Editor:

The first article in this issue of *Bunchgrass Historian* combines a historical account with excerpts from an oral history. The story is a bit broader than its main focus, the store in Palouse, and reviews the account of the chain of Williamson Stores, which were centered in Moscow, Idaho.

The article on Orville Vogel, the developer of modern strains of wheat, picks up a topic once before carried by *Bunchgrass Historian.* An earlier article appeared many years ago, also reviewing the story of Mr. Vogel. The present article is much longer and adds more detail to the account. In fact, the length of the article is such that it needs to be continued in the next issue.

Palouse Reminiscenses of Williamson's Dept. Store

Frances E. Marks

Returning to the Palouse Country in 1992 put me in the position of the old "Rip Van Winkle" scenario of a twenty year awakening. The town was deteriorating and it was not the thriving town that I once left especially the Williamson Dept. Store on Main Street.

During the early 1930s and 40s the store stayed open on Saturday night till 9:00. Beautiful and fashionable dresses hung on mannequins, men's wool Pendleton shirts and classic shoes beckoned the men customers; children's school and dress clothes were displayed and furniture settings presented an attractive display. Bolts of yardage, groceries, patterns and the bookkeeping department were together all in this one large department store, a place for one-stop shopping.

Accounts were often held with farmers until the harvest pay check came in after a year of charging. One year it was almost $800 and dad asked mom if all the purchases were necessary.

I'll not forget whirling the stools around and around where the patterns and yardage were. One could sit and browse comfortably. Mirth says my sister, Pat Kuehner Prince fell into the pickle barrel once. Maybe I was suppose to be watching her?

I often think about all the clothes, shoes, furniture, gifts and food I bought myself at the store after I had married in 1945. The store remained a visiting place and discussing children, crops, and one's neighbors. While in Palouse High School at 35 cents an hour, counting ration stamps, I earned a little money during World War II.

Mabel Robinson, a relative of Frank Williamson, clothing buyer part owner, gave each year to my mother, Vera Kuehner a boxful of discarded clothing. It

Palouse Main Street about 1915, Williamson Building in Center

was our "Christmas Box,. I loved the old velvet dresses that showed up and my mother would sew many outfits from these materials.

My first marriage was to Morton Swanson and we lived on a ranch between Palouse and Colfax. In 1958 we built a new home and Frank Williamson and I poured over many catalogs and his inventory. We tried to find just the right purchase for this grand new home. How fortunate I was when all I had to do was drive seven miles to Palouse and do all my shopping. Sometimes Frank would come out and measure certain areas for accuracy He was my interior designer. The store supplied all the needs for our ne home:

davenports rugs, tiles, curtains, dinning table lamps, custom made black leather davenport that still exists, and appliances. When the house was completed we held our monthly Couples Bridge Club. Mirth and Frank were members. The rest room upstairs near where the clothes were pressed and other things happening was in use when I drove seven miles to town, my daughter, Sally's first stop. Our town still needs a public rest room on Main Street.

I remember one Saturday night my mother had bought quite a few school clothes for me and put them in our car. We went to the show that evening and when we returned the new clothes had been stolen from our unlocked car. We were devastated and our pocketbook too.

As I write this the Williamson building has been condemned from the Feb. 9th, 1996 flood. Doug Willcox owns it and there are only a few months left before it will have to be knocked down, a hazard as it sits Perhaps a "green area" will

appear and a place to recall the "good old days". Park benches, trees, historical markers, vintage lighting and a water fountain could stand as a monument to the Williamson family. Plans are in the making for revitalization of Palouse.

———— ❀ ————

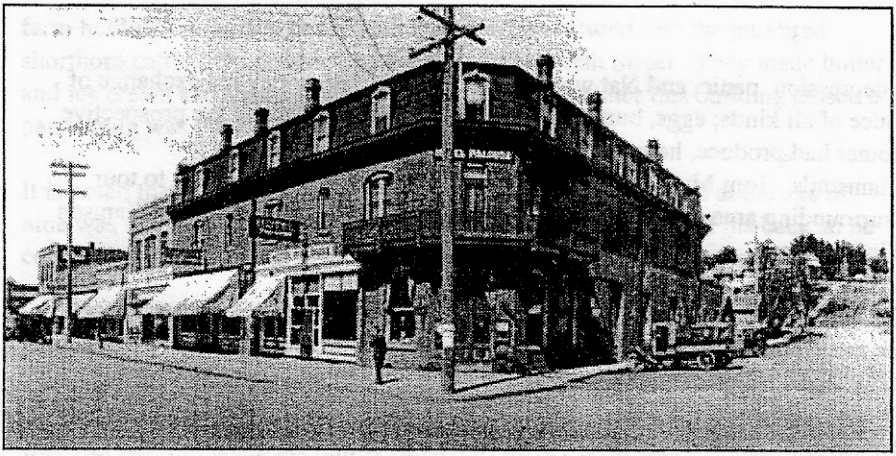
The Williamson Department Stores sourced long ago when Nathaniel Williamson was born June 10, 1872 in County Monaghan, Ireland near Dundalk. He was the youngest of five sisters and four brothers. His family were Protestant living in predominately a Catholic area. ~ did not have much schooling, but according to the history retrieved, he gained worldly knowledge from his own observations and abilities to adapt himself.

Nat left on a cattle boat for America by way of Toronto, Canada. An older brother, John and family lived near Wen Sound in Canada, his family contact. John had a son, Jimmy, a nephew of Frank, who in about 1912 went to work at Williamson's Department Stores in Moscow. He was trouble shooter and reliable helper. Palousers remember Jimmy Williamson, who was a determined man to sell you a hatrack even if you did not need it I thought.

The Alaska gold rush brought Nat to the West Coast. Anything with wheels brought people, but Nat was side-tracked. He found clerk wages astronomical (at least to him) and gave up his search for gold. He went to work for McDougal-Southwick, a mercantile business in 1898, Since he was Irish he advanced rapidly, made friends easily and acquired a reputation among wholesale salesmen and merchants as a coming merchant in his own right. He met an officer of the Ely Walker Company of St. Louis on one of his trips. Through him Nat was able to get his start in his own store. Three stores were available, one in Missoula, Montana one in Walla Walla, Washington, and one in Moscow, Idaho. Nat chose Moscow because of its challenge: a struggling, but aggressive town, a young university, a county seat, and a group of solid citizens in both town and countryside.

In 1903 he purchased the stock of the "Boston Store", at Fifth and Main, Moscow, a small store. He named it the "Boston Store" and opened the business in 1904. As an advertising genius his customers came from Genesee, Kendrick Julietta, Troy, Deary, Bovill, Colton, Uniontown, Pullman, Palouse, Potlatch, and Harvard. "Our Store and Yours", is how he advertised. Great crowds attended the January White Sales at that time.

The small store grew and finally it became too small, though it encompassed the whole block from Fifth to Fourth on Main Street, except for the Shield's build-



Another Palouse Landmark - St. Elmo Hotel, Williamson Building at the Right

ing. Nat leased the Motter-Wheeler building, originally built by Gov. William J. McConnell, which was on the corner of First and Main with three stories. Nat occupied all three floors; furniture on top, ladies wear and art goods, miscellaneous on the second and men's wear, dry goods and shoes on the first. Later he leased part of the building on the south and installed a restaurant on the upper floor and hardware and groceries on the first floor. All was connected by an archway. Families had lunch or dinner sometimes with Nat after they had driven a team from the nearby towns to shop.

Soon he installed the electric sign "Williamson's". You could see it shinning from the top of the Viola grade (Moscow Mountain) . An Otis elevator for passengers was installed in the basement to the third floor. Nat had the largest stock this side of Boise, Idaho. An 85 foot tree reached from the center well floor at Christmas time. A contest was held each Christmas and the winner received a prize for guessing the footage, and at one time he brought in a Scotch bagpipe and drum corps consisting of four to five men in kilts. He paraded them up and down Moscow's Main Street. Returning to the third floor of the store they gave a concert while people shopped and listened.

The years from 1904 to 1910 meant competition among Moscow merchants. Williamson's, David's, Creighton's, Oberg's and Carsow's gave Nat a rough time for business, sometimes bitter enemies, but later they all became good friends with high regard for each other.

The depression, panic, and Nat was using his own script money for exchange of produce of all kinds; eggs, butter, hay, horses, cows, and pigs. If the prospective customer had produce, he would promise the highest price in town at Williamson's. Tom Myklebust, at one time was sent out on horseback to tour the surrounding area spreading goodwill of the wonderful things Nat Williamson had in his stores.

"Williamson Arrested!", the local paper said. Nat had dared to lower prices on some merchandise to the extreme. Consequently, he had blocked the sidewalk next to David's Department Store. This caused some trouble.

Nat Williamson established a branch store in Palouse in about 1907 on the corner of Bridge and Main Streets. A horse was the best way to get back and forth. After closing the Moscow store on Saturday night he would ride to Palouse on horseback. Tom Myklebust was the manager and on Sunday Nat would check the merchandise and lay out the work for him.

Dr. Gritman told and interesting story to Frank Williamson. Frank said his father, Nat wanted to bet Dr. Gritman a new hat on a local election race. Dr. Gritman said he couldn't possible lose and made the bet. Dr. Gritman won the hat but, "It was the most expensive hat I ever won". Nat sold the doctor a fur coat, a new suit of clothes, shoes, and a set of lap robes for the car. "That hat cost me close to $1,000."

In the early days between 1906 and 1913, Nat established branch stores in Winchester, Gifford, Bovill, and Heppner, Oregon. Eventually he sold them and the Heppner business moved to the Moscow store.

According to Frank's records, in 1921 Nat established his own store with Jimmy Williamson manager, his nephew. This incorporated with Nat Williamson, James Williamson, Mabel Robinson, and Frank Williamson soon.

Nat began buying land around the Moscow and Pullman area at about the time he terminated his business in 1920 in Moscow. The building remained vacant until it was remodeled into the Thatuna Apartments in 1928. A number of local business people had received their early education from Nat. A few are: J. F. Steward and the "Fashion Shop"; Ray Carter and the "Parisian". Two earlier men Nat brought to Moscow were the Myklebust Brothers, K. T. and Tom.

Nat continued on with his life, contributions, and fortune. He was instrumental in bringing in the first green peas shipping them from Minnesota. From his downtown office on Second Street across from the "Star Mirror" he directed his

farm holdings acquiring more land and then he ventured into the purebred shorthorn cattle. He established a creamery on Sixth Street They made butter and ice cream and shipped as far as Spokane Years later this building closed a natatorium was built by Nat.

It is noted that Nat's younger son was a mechanical wizard and at the age of nine was driving a Chalmer's touring car with a suitcase behind his back so he could reach the pedals. He drove for his father, Nat, and after school for business.

Frank made a few comments about his life that he wrote in a booklet. Frank was one year old when his family moved to Moscow. It was here he attended all of his schooling graduating from the University of Idaho in 1926. Frank wrote the following: "The roaring twenties were all what they were cracked up to be."

After graduation Frank went into the store at Orofino and then married Mirth MacArthur in February 1928. In the fall the Orofino store was merged with the Troy store. Frank, Mirth and the two children, John and Patricia moved to Kellogg for the summer and in 1933 moved to Palouse where they were in business until 1970.

Her first twelve years of schooling at Ewartsville Catholic School, now St. Mary's in Moscow. She received her college degree from the University of Idaho in Home Economics. She began her teaching at Elk River, Sandpoint, Moscow, and Blackfoot, Idaho. She ended her eight years of teaching in Longview, Wash. She married Sigrid d' Eassum, a writer. Mr. Eassum wrote for the Boise newspaper, "The Statesman" and was the author of six books. The books were mostly of Idaho, one being "Idaho The Fruitful State" He also worked for the I of I Extension Service as a publishing director and for the Fish and Game Dept. They have no children.

Growing up, Mary remembers her father as a great believer in everyone working. "He would give them a job even if he had to send them out to the house and mother. Often it was to trim the hedge, but soon the hedge had been trimmed enough."

"Merchandising was my father's game and he did love the land too. In World War 1 he made good prices for himself in all his stores and his land."

"Nat was well known for his training of men going into business for themselves. Tom Myklebust at one time was the manager for the Williamson's Dept. Store in Palouse. Later he began his own stores in Moscow and several other places. Three of the Myklebust's worked for Nat, all successful business men."

"My father went to Ireland to purchase goods and often returned with gifts such as a jade shamrock necklace for me. He bought lovely pieces of China of that era." On April 19, 1912, Mary's parents had passage reserved on the Titanic, but sailing had been delayed so they took another ship the Baltic, thus, probably saving their lives from the terrible Titanic disaster. Nat thought it bad luck to change ships at that time."

Mary remembers stopping at the Palouse Oasis in her teens after visiting one of Nat's farms near Garfield called "Fairview." She said her first hamberger was bought there. She also visited Mabel Pobinson and Pearl Swenson who lived in the Getus house in Palouse.

"My father was a gifted and an aggressive Irish merchant. Humor also was one of his fine traits. He had black curly hair and a mustache. He was most generous, but very strict.

If Mary was out and about and didn't get home till 11:00 or so he would scolded her. Her mother said, "I think you have forgotten what it is like to be out late. He replied that this is what worried him as he did remember."

"My father had dinner at 7:00 and came home for lunch at 3:00. My Irish mother was a homemaker and often played with us children. I can remember when my father built a cafe next to the department store. My mother said, "you can now feed your tramps there." At one time Nat sold his wife's sewing machine when she was expecting a baby. Many things were sewn at home during this era.

"Father was a genius at advertising and he hated to miss a sale."

My interview closed though it could have been extended much longer. Mary is a charming, receptive, alert, petite and well-groomed lady from the Williamson Store's past. She is 88 years old. She reminds me of Frank.

Orville Vogel

by
Clayton Reis

Part 1

Introduction

Dr. Orville Vogel was born in 1907 in Pilger, Nebraska, where he was raised on a grain and livestock farm. Because of a broken family, Vogel took over operations of the family farm at age thirteen. This gave Vogel first hand experience as a farmer.[1] This assisted his career subsequently because it enabled him to understand the farmers' needs throughout his career. He enrolled at the University of Nebraska in Lincoln in 1925, where he considered the idea of getting a degree in engineering or in agronomy. A professor later convinced him to pursue agronomy, and he received his undergraduate degree in 1929. After his B.S. degree, Vogel enrolled in an agronomy graduate program, and he earned a master's degree at Nebraska in 1931.

In 1931, Vogel came to Washington State College in Pullman, Washington, where he began working as an United States Department of Agriculture Agent for Cereal Crops and Diseases. He worked under his mentor, Dr. Ed Gaines, a Cereal Grain Researcher.

Over the next fifteen years, Vogel advanced his rating in the United States Department of Agriculture [USDA] from Assistant Agronomist, to Associate Agronomist, to Agronomist. It was during this time period, while doing research for Ed Gaines on the shatter resistance of wheats, that Vogel received his Ph.D in 1939.

From 1949 to 1955, Vogel was coordinator of Cooperative Wheat Improvement for the Western States which advised the public and private sectors on wheat production. Vogel retained his title as research agronomist with the USDA, and

he held a courtesy appointment at Washington State University as Associate in the Department of Agronomy, from 1960 to his retirement in January 1973.

Vogel's Impact on the Pacific Northwest

Dr. Orville Vogel had a significant impact on the Pacific Northwest, and he was instrumental in bringing wealth and wheat production prestige to the Pacific Northwest. Vogel was a key figure in revolutionizing techniques for agronomic scientists who were dedicated to developing improved crops for farmers. His incredible success made him a renowned scientist, world-wide. Because of his leadership, the Experiment Station at Washington State University has come to be considered one of the most prestigious wheat breeding experiment stations in the world. People came from all parts of the globe to visit Vogel and observe his work

From the moment Vogel took the job at Washington State University, he actively and methodically worked to improve worldwide wheat production. Vogel kept meticulous correspondence with hundreds of farmers and experimental stations cross the country. For the price of a letter, Vogel shipped seeds and ideas to anyone who wrote to him and asked for them.[2]

Wheat farming is a fickle business and farmers deal with many aspects of Mother Nature affecting the crop. The job of an agronomist is to develop wheats that give wheat farmers an advantage over Mother Nature to make the most of production potential. The key problem confronting agronomists is that there are so many different diseases that can affect wheat, that no one wheat breed will ever be immune to all diseases.

Wheat is susceptible to many diseases such as molds, rusts, stripes, and other fungal diseases. All regions of the United States must deal with different diseases that are rampant in that area. Snow mold, which causes damage to wheat on unfrozen soil under continuous snow, has long been a big enemy to wheat farmers in the Pacific Northwest. The biggest problem for wheat producers in the Pacific Northwest is smut, a disease that destroys the wheat kernel and contaminates the grains, thereby lowering the quality of the grains. In 1949, fourteen percent of all freight cars with Palouse wheat shipments were considered "smutty." The disease continued to spread, and by 1952, twenty-eight percent of all wheat shipped from this area was designated as smutty.[3] Moreover, sometimes the wheat kernels turn into "smut spores", which are highly flammable and very dangerous for the harvester, because they can explode and cause fires in grain elevators and combines.

Orville Vogel, about 1970.

Vogel knew that he and his counterparts would never find a selection of wheat resistant to all current diseases. The problem for the agronomic scientist is to try to alleviate that problem by developing many varieties of wheats with different resistance. When a new strain of smut or other disease appeared on the Palouse, agronomist hoped to developed a variety of wheat that would resist it

The problem became complex because as the scientist achieved success with a new variety of wheat, Mother Nature presented the scientist with a new problem, a mutated race of the disease that could attack the plant. Often when scientists developed a wheat variety that was resistant to a disease such as smut, the new variety frequently had a negative side such as low yield characteristics, or poor milling or baking quality. For example, in 1924, Ed Gaines, Vogel's mentor, developed a smut resistant strain of wheat that he named 'Ridit." Initially, the prospects for success looked good, but when the farmers used the variety it turned out to be low yielding. Also, within a brief period of time, Mother Nature adapted and Ridit fell victim to a new form of smut that left the crop useless on the market.[4] These negative side effects left farmers reluctant to try new wheat varieties.

In 1943, Vogel obtained his first wheat variety for the Palouse. The new wheat variety was called Oxford, and it had limited success. Vogel continued his relentless effort to improve wheat and came out with three new varieties for the market: Marfed in 1947; Brevor in 1949; and Omar in 1955.

Vogel developed Brevor when he was working on breeding wheats for resistance to the Bunt disease. Vogel used his early experience to come to an important

conclusion that the so-called major genes in wheat were the ones that were vulnerable to disease. Vogel expanded on this idea and realized that if h could develop a wheat that was only slightly affected by Bunt, that wheat would be far less susceptible to attacks by the Bunt fungus. Brevor, a specific variety, was developed by using this idea, and Vogel produced it by selecting partially smutted plants which gave Brevor both specific and non-specific forms of resistance. New races of smut could mildly attack Brevor, but the disease was largely held in check. This new method made Vogel a pioneer in ~ the importance of biological control of pathogens."[5] By using both forms of resistance together with chemical seed treatment, Vogel and his co-workers practically eliminated the threat of Bunt in the Northwest, where at one time it threatened the entire wheat industry.

Vogel continued to experience modest success, but problems with wheat continued to appear so that by the mid-1950's Washington State research scientists' popularity hit a low with farmers. Once one "hits bottom", there is no place to go but up, and in 1961, with the release of a new wheat variety called Gaines, Vogel's career skyrocketed and area wheat yields did the same.

Like many great scientific breakthroughs, Vogel was looking for something else when he stumbled onto the incredibly high yielding semi dwarf wheat that he called Gaines. Originally, Vogel was searching for a wheat that farmers could plant earlier in the fall for greater ground cover to control soil erosion and yet would not grow to rank and "lodge", or fall over.

Vogel's work on Gaines began in the early fifties. Ed Gaines (Associate Professor of Farm Crops at Washington State College for whom Vogel named his breakthrough variety after) wanted Vogel to breed winter wheats that were better adapted to early fall planting. Gaines and Vogel worried that the longer a wheat field was left uncovered, or barren of wheat plants in the winter, the more the soil could be eroded by rain and winter snow. Vogel originally tried using dwarf wheats because he believed that they could be planted earlier, thereby providing earlier winter ground cover. This idea went against the norm, and Vogel 'went out on a limb" pursuing it. As his supervisor, Ed Gaines, disagreed with Vogel that dwarf wheats were the answer, but Vogel stubbornly clung to his convictions that eventually paid off.

Vogel's discovery of the dwarf variety of wheat forms an interesting story. Japanese scientists developed the first semi dwarf, Norin 10, in 1917, by crossing a dwarf red wheat, called Daruma, with an American variety called Fultz. The Japanese, however, failed to perfect the new semi dwarf wheat In 1946, at the Morioka Experiment Station in northern Japan, C. S. Salomon, a USDA

scientist on loan to the Occupational Army as an Agriculture Advisor, noticed the strange dwarf crop. The plants were extremely short—barely ankle high—yet the stems were strong, and the kernels bore a striking resemblance to the wheats grown in the U.S. Salomon collected some of the seeds of the dwarf wheat and sent them back to the USDA's quarantine nursery at Yuma, Arizona.[6]

The story might have ended there, but two years later Vogel visitd the nursery in Arizona and found the reward for his eighteen-year search. It was the first semi dwarf wheat he had seen with a strong kernel. He brought back some of the seeds and planted them at the Research Center in Pullman, Washington, in March of 1949. The wheat selection that had caught his eye was a semi dwarf called Norin 10. It was now time for Vogel's brilliance to bloom because he needed a variety with high yield, disease resistance, and non-lodging characteristics for the Pacific Northwest.

Crossing Norin 10 with Pacific Northwest wheats created some major obstacles. Progenies of early genetic crosses were susceptible to numerous diseases that plagued the Pacific Northwest wheat industry. They also showed signs of sterility. Vogel originally experimented with routine selection and cross breeding, two common methods of trying to correct Mother Nature through genetic adaptation, but these procedures failed to alleviate the problem because Vogel could not pinpoint the exact gene that was the problem. Vogel needed to develop a more complex procedure that would isolate the problem gene, so that he could genetically remove them. The new procedure that he devised was called "Parent Breeding," and it required intense selection in large populations of wheats under diverse environments to isolate desired fertile types.[7] In laymen's[11] terms, it was a comprehensive testing system of examining a large amount of highly variable wheat hybrids and testing and manipulating them to better understand each of their genetic oddities, in hopes of identifying and isolating each hybrids' genetic strengths.

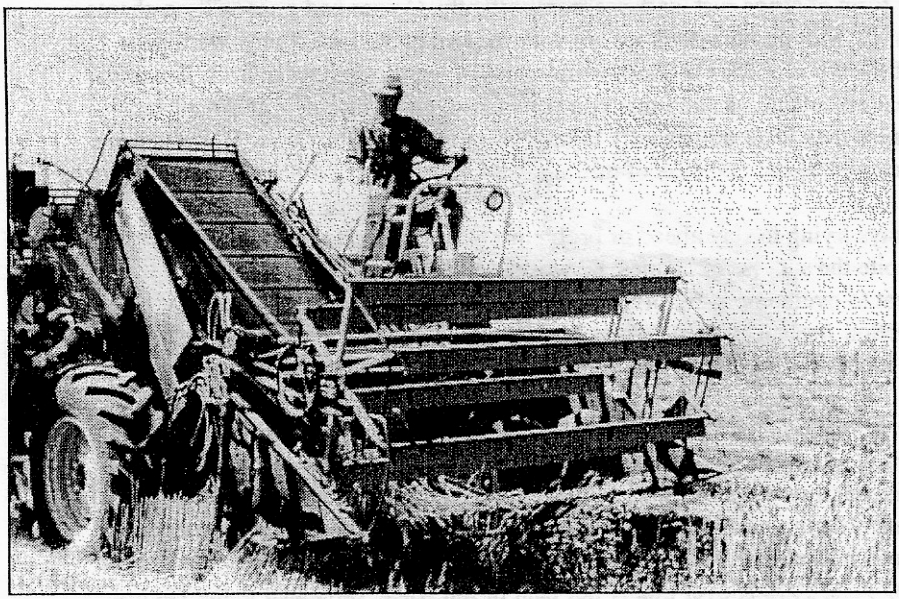
A popular system of plant breeding widely regarded before Vogel's revolutionary method of making selections from large populations of segregated hybrids was the "Back Cross Method." A breeder, using this method, would concentrate on the addition of one gene characteristic or improvement at a time, instead of combining the many characteristics like Vogel did. Vogel's new method was controversial and it had some detractors. However, Vogel became famous for telling his detractors at regional agronomy meetings in Pullman and Moscow that "Henry Ford had back crossed on the Model T for twenty years and all it got him was another black Model T [11].

On a second cycle of crossing, using his new procedure, Vogel managed to eliminate the undesirable traits, and he counteracted the sterility so that desired traits such as resistance to leaf rust, stripe rust, flag, smut, and bunt disease could be transferable into the Gaines varieties.

After fifteen years of research, Vogel finally found the selection that he could plant earlier in winter, thereby avoiding soil erosion. Gaines was a combination of three wheats. The "mother" was a Brevor-Norin 10 x Orfed cross and the "father" was Burt, another wheat developed by Vogel[9] Gaines was a breakthrough because it represented a discovery of a new combination of genetic traits that boosted the plant's level of efficiency regarding water, fertility, and disease resistance. It was also far superior to its "parents" because its traits were fixed in the hybrid, and they were inheritable. Through tireless effort, Vogel overame the semi dwarfs' weakness by finding only the best traits from thousands of selections.

Gaines' tremendous impact on the Pacific Northwest was not limited to just early planting that avoided soil erosion That became a secondary factor. More importantly, Gaines came at an opportune moment, because his discovery miraculously saved farmers from a serious outbreak of strip rust. Gaines became available when its predecessor, Omar, was being totally destroyed by stripe rust. When Vogel was developing Gaines, he had crossed Gaines with other selections that had traits of low incidence of stripe rust. This planning, caused Gaines tc have strong resistance to the disease. This form of field resistance did not offer complete control over the disease, but it substantially lessened losses from the disease.[10] In contrast to Omar's yields that were as low as fifteen to twenty bushels because of the rust, Gaines, in experimental plots, yielded eighty to a hundred bundles per acre.

The USDA and Experimental Stations of the Pacific Northwest began rigorous testing procedure on Gaines in 1955 and 1956. Most wheat varieties took between twelve to fifteen years of testing before they were allowed on the market. However, because of the problems with Omar and the notoriously bad year of 1959, where Stripe rust losses were devastating, the USDA and cooperating Pacific Northwest Experimental Stations rushed Gaines through the testing procedure. An adequate source of seeds was necessary for its introduction into commercial production. At Washington State University the breeders' seed was increased 10,000 fold in two years, making a half million bushels of seeds available at the time of release. The USDA and Experimental Stations of the Pacific Northwest put the seeds on the market quickly so the epidemic could be terminated.



Experimental Plot Combine, about 1970

The second major impact Gaines had on the Pacific Northwest was that shorter selections of wheats turned out to be incredibly high yielding. Vogel had developed a shorter wheat variety that had incredible yield potential under the Pacific Northwest's weather and soil conditions. For over twenty years, Gaines held the world production record of 209 bushels per acre under irrigation and 156 bushels under dry land conditions.

Wally Huppert of Ellensburg, Washington, used Gaines, and he produced the world record yield for irrigated land in 1965. He described the record-breaking crop harvest as very slow, hard work because his machines could not handle the amount of wheat coming up the conveyor to the separator. Huppert's son declared that the machines could not complete the harvest At first, he thought that something was terribly wrong, but when he reached the field he realized that the high yield was more than the machines could handle at normal harvesting speeds.[11]

No one variety of wheat was perfect, and eventually nature caught up with Gaines. For instance, while Gaines had intense yields, its reaction to diseases was also amplified when a disease began affecting Gaines, the disease spread throughout the rest of the field at an accelerated pace. By 1965, it became necessary to put Nugaines on the market to address some of the epidemic

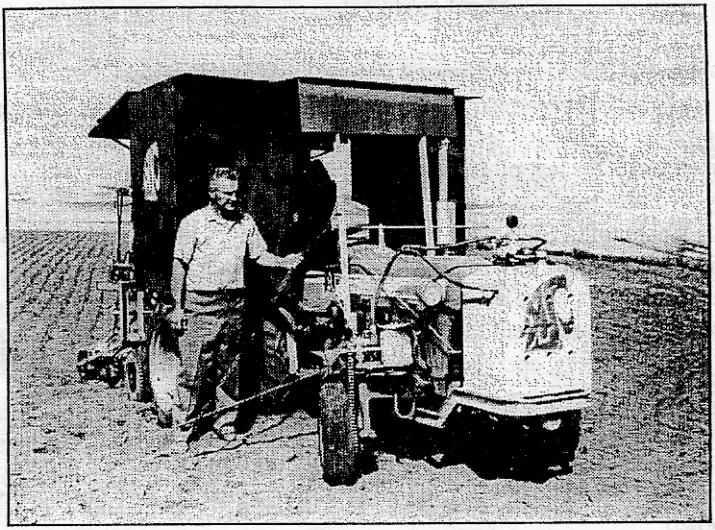
problems that occurred with Gaines. Gaines had proved to be vulnerable to a new form of stripe rust, and, more importantly, Gaines had poor milling characteristics. Milling haracteristics are very important because if they were poor, that is, if the wheat milled at a slower rate, it was less desired by millers. Breakfast cereal manufactures and other companies did not want poor milling wheats because they were more costly to mill. In other words, as far as the mills were concerned, speed and ease of milling were more important than baking qualities.

Always trying to stay ahead of problems, Vogel refused to rest on his laurels. Despite the success of Gaines, he worked hard to develop a new variety of wheat to overcome these problems, which he named Nugaines. The new wheat selection was superior to Gaines because it had better resistance to stripe rust, and its milling qualities were superior to Gaines.[12]

The financial impact of Vogel's improved semi-warf wheats on the Pacific Northwest was astronomical. Between 1965 and 1975, Gaines and Nugaines added nearly a billion dollars in new wealth to the Pacific Northwest through wheat production. By the early 1970s, Washington's per-acre yield rose from sixteen bushels in 1931, to over forty~seven bushels per acre. Throughout the 1960's and 1970's, over ninety per cent of the wheat produced in the Pacific Northwest was either developed by Vogel or other plant breeders using his ideas or material. Vogel's semi dwarf concept for utilizing the full yield potential of a climate was extended to rice, barley, rye and maize. Vogel was credited with giving new incentive for research on ways to expand the food-producing potential of cereals. His work was also a major factor in the "Green Revolution." Most importantly for the Pacific Northwest, farmers often declared that without the greater yields from Gaines, that they would have gone bankrupt

Vogel's impact also extended to areas of the United Sates beyond the Pacific Northwest. Gaines did not prove to be equally adaptable in other areas of the country, but Vogel's research efforts produced a revolution as wheat farmers across the United States no longer feared shorter wheats. Before Gaines, the myth prevailed that a farmer needed tall wheat for large yields, but Vogel dispelled this notion. Although Gaines failed outside the Pacific Northwest, farmers in Indiana, New York, Kansas, and Nebraska continued to look for new ways to shorten their wheat varieties crops, thereby producing bumper crops.[13] Vogel's innovative ideas opened an entirely new area of research and crop production expectations. The ripple effect from Vogel's semi dwarfs resulted in shorter, higher yielding wheats in the Midwest and Great Plains.

Vogel and his co-workers experienced another triumph in the late 1960's when they developed a variety of wheat that had better tolerance against straw-break.



Vogel with planter for test plots

Dr. Vogel was the first American wheat breeder to establish a program for developing resistance to this complex disease. Using a field inoculation technique perfected by a colleague, G. William Bruehi, Vogel rated early and advanced wheat lines over a five year period. These studies led to the release of two new short-straw wheats, Luke and Paha, that were resistant to strawbreaker. Because they were dwarf wheats, they also adapted to earlier planting. Luke and Paha were the first wheat selections developed in the United States that possessed tolerance against this serious soil-borne disease.

Dr. Vogel advanced the success of the Luke vaiety, by exploiting its low level resistance to snow mold. Snow mold is a disease that affects wheat by causing severe damage to wheat in unfrozen soil that is persistently blanketed by snow.[14] In developing Luke, Vogel realized that even though snow mold only slightly damaged Luke, it had a better survival rate than other wheat varieties grown where snow mold was a problem. Its tolerance was particularly useful in areas where moderate snow mold infections were common.[15] Farmers saw the benefits and quickly accepted the Luke variety.

Vogel was also far-sighted. He helped farmers in the Pacific Northwest anticipate environmental issues. His work toward Gaines that began in the 1940's was originally intended to avoid soil erosion. Gaines research represented one of the earliest cereal breeding projects in the Northwest designed to improve the environment by conserving the soil.

Vogel as Inventor

A major problem that had to be addressed before Vogel could succeed in breeding new, improved wheat varieties was the lack of special mechanical equipment for harvesting large numbers of test plots. No dependable market existed for developing machinery for test plots, so many inventions were never pushed. Consequently, test plot machinery was primitive and behind the times. When Vogel came to Washington State College in 1931, he was frustrated by the lack of technological innovation in field plot equipment It took a research scientist endless hours to harvest a simple test plot. The problem could not be solved by employing the type of equipment that farmers used because their machines were too large for the small plots, and their equipment was designed for speedy, large scale harvesting. The large farm machines would have also had to be cleaned after each plot to ensure that there was no seed mixing. Test plot harvesting requires a careful, methodical process, so that accuracy can be assured as well as avoidance of mixing. Frustration can spark invention; in the case of Vogel, this is what happened.

Vogel began using his free time to tinker with different machines, seeking to find ways to improve them and make them more efficient. Vogel spent so much time tinkering with inventions that his wife, Bertha, once commented that "she shared her husband with two mistresses during their years of marriage—wheat and machines".[16] The equipment for planting and harvesting test plots was so slow and primitive Vogel knew change was necessary. Vogel believed that a catastrophe was imminent if technology failed to catch up in the area of scientific plot-testing. If test plot data was not available, scientist would fall behind in developing disease-resistant varieties.[17]

The first test-plot machine that Vogel worked on was the '[1]Kansas Thresher," a crude and inefficient machine constructed of wood and scrap iron. It required three days to set up the machine. Its working capacity was a bundle every five minutes, and it was powered by a three-phase electrical motor.[18] It cracked or damaged anywhere from ten to twenty percent of the wheat it processed, and the machine required cleaning with a hisk broom. Before Vogel had fed the machine its first hundred bundles, he had thought of numerous improvements.

Within a year, Vogel had designed his own thresher. It had twice the number of cylinder teeth, over shot-concave, and it selfcleaned in ten seconds. A single phase electrical engine powered the thresher, and, most importantly, it had the capacity of 150 rod-row bundles an hour. The machine was built at Washington State College for thirty-four dollars. Although the machine was ten times faster

and more reliable than the Kansas Thresher, Vogel was criticized by the USDA for wasting funds!

The new Vogel thresher was far superior to the old one, but it still did not live up to expectations. The new Vogel thresher had one major problem: it was immobile. Vogel had the choice of developing a long extension cord or making the new Vogel thresher mobile. In 1934, Vogel focused on the latter and developed the second Vogel thresher. It became the first thresher that was portable. Vogel's newest thresher was gasoline-powered and trailer-mounted, and it greatly advanced nursery plot research.[19]

From the beginning, Vogel disdained patents and openly shared his ideas with other experiment stations, nation-wide and internationally. He believed that patents would keep his ideas from being used in the field, and he objected to that. For the cost of a stamp and a letter, stations could obtain plans for a Vogel thresher, or planter, thereby greatly speeding up their work.

Merely obtaining copies of his plans, however, did not guarantee success. Vogel was not an orthodox engineer, so people who received his plans frequently had great difficulty building a comparable thresher from his plans. Correspondence from the 1930's and 1940's contain letters from stations asking for thresher plans, and follow-up letters asked Vogel about problems confronted while building the different machines.[20]

Because of this difficulty, a unique relationship developed between Vogel and Bill's Welding in Pullman, Washington. Bill Haxton, a retired farmer, established Bill's Welding, but it had long been owned and operated by Hartman Gearhiser. Gearhiser and Vogel were close friends, and their relationship was of mutual benefit. Vogel visited Bill's Welding frequently, and there he worked on his many ideas. The relationship with Gearhiser was helpful to Vogel and to agriculture, because if Vogel had worked on his inventions through the USDA it would have taken him years to develop his ideas. For Vogel to obtain USDA funds, he would have been required to submit a detailed blue print of his plans and then the USDA would have bid the project out to the lowest bidder. A process such as this was extremely slow, and communications would have been awkward because the USDA frowned on its employees working in areas it had not assigned them. Meanwhile, Vogel continually devised new improvements for the invention before the plans would have been put out for bids. Vogel cut through the red tape because Hartman Gearhiser gave him free run of his machine shop. Consequently, Vogel produced as many inventions as time

permitted. As newideas came to mind, he adapted them to the machine and Gearhiser made many copies of the machines and sold them throughout the world.

As experiment stations around the world experienced problems building a thresher from Vogel's blueprints, stations placed orders for threshers directly with Bill's Welding. Stations affiliated with universities all over the country sent in orders, including requests from Purdue University, Montana State, Florida University, Cornell, Ohio State, and Arizona University. Because welding is seasonal with slack time during the winter months, Bill's Welding produced as many Vogel threshers as they could during the winter months and free time throughout the year. By the end of 1950, Bill's Welding had sold its seventy-fifth Vogel piece of equipment, and by the mid1970's it had sold its seven-hundredth piece of Vogel equipment. Photographs of camels pulling Vogel's mobile threshers arrived from many parts of the Middle East. In the end, Vogel managed to design the desperately needed equipment at a much faster pace, and Bill's Welding prospered from building and selling the Vogel-inspired ma-chines.[21]

To help speed up production in 1947, Bill's Welding and Vogel concentrated twelve years of testing and improvements into one Vogel Thresher model, and for the first time manufactured it for commercial sale. Ml parts were unified and built for quick assembly, and it was a great success. Many of these machines were still in use at research stations around the world well into the mid-1970's.

———*To be continued in next issue.*———

ENDNOTES

1 Information about Vogel before he arrived at Washington State Universitycame from this letter in support of his nomination for the Browning Award. Letter from Vogel to Mr. Phillips H. Payson, [background information on Vogel's Browning Award], cage 524, Box 8, File 253. Manuscript, Archives and Special collections[MASC] Washington State University, Pullman.

2 Correspondence from Vogel to farmers of the region. Files 14 through 80,1931 to 1967, cage 524, Box 1, MASC, Washington State University, Pullman.

3 Keith Roy Williams, "Hills of Gold: A History of Wheat Production Technologies in the Palouse Region of Washington and Idaho." Unpublished dissertation, Washington State University: 1991. Provides historical background on wheat production before, during, and after Vogel's retirement in 1973.

4 IBID. pp 176-177.

5 Narrative statement about Vogel's effect on the Pacific Northwest and the World in support of the Browning Award. Cage 524, Box 11, File 251, MASC, Washington State University, Pullman.

6 In this article, the authors explain how Vogel's work on semi dwarf breeds contributed to the agricultural revolution of tile 1970's. Ralph D. Wennblom and Glenn Lorang, "Shorter Wheats for Everybody." Farm journal, July 1969, pp.16, 27-28. Cage 524, Box 8, File 260, MASC, Washington State University, Pullman.

7 'Nomination for the National Science Award," Cage 524, Box 7, File 254, MASC, Washington State University, Pullman.

8 Dr. Rod Bertramson was the Chair of the Agronomy Department at Washington State University from 1949 to 1947. Dr. Rod Bertramson to the Author [oral interview], February 16, 1995, Pullman, WA.

9 Wennblom and Lorang, "Shorter Wheats for verybody," pp.16, 27-28, Cage 524, Box 8, File 260, MASC, Washington State University, Pullman.

10 Narrative statement about Vogel's impact on the Pacillc Northwest and the World; in support of his Browing Award nomination. Cage 524, Box 11, File 251, MASC, Washington State University, Pullman.

11 Article on Wally Huppert. Cage 524, Box 9, File 262, MASC, Washington State University, Pullman.

12 Washington Experimental Station pamphlet urging farmers to use Nugaines. September 6, 1966, Cage 524, Box 4, File 225, MASC, Washington State University, Pullman.

13 Wennblom and Lorang, "Shorter Wheats for Everybody," pp.16, 27-28, Cage 524, Box 8, File 260, MASC, Washington State University, Pullman.

14 Keith Roy Williams, "Hills of Gold: A History of Wheat Production Technologies in the Palouse Region of Washington and Idaho." Unpublisheddissertation, Washington State University: 1991.

15 Narrative statement about Vogel's impact on the Pacific Northwest and the World; in support of his Browing Award nomination. Cage 524, Box 11, File 251, MASC, Washington State University, Pullman.

16 This article explains how Vogel was inspired to invent numerous machines. It also discusses Vogel's relationship with Gearhiser of Bill's Welding. Wheat Life, *"The* Right Tool for the Job... Evolution of a Plot Harvester," March 1974, page 3, Cage 524, Box 9, File 267, MASC, Washington State University, Pullman.

17 IBID. page 2.

18 IBID.

19 IBID.

20 Correspondence from Vogel to farmers of the region. Piles 14 through 80, 1931 to 1967, Cage *524,* Box 1, MASC, Washington State University, Pullman.

21 Bertramson to the author, oral interview, July 20, 1994, Pullman, Washington.