

## **A.C. Hildreth: Initiating USDA Agricultural Research in Cheyenne**

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Editorial note: This article celebrates 80 years of USDA agricultural research at the High Plains Grasslands Research Station west of Cheyenne.

The wind-swept prairies of Wyoming's High Plains seem an unlikely place for a young man interested in blueberries and cranberries and carrying a 1926 diploma documenting his doctorate in Horticulture. The events that brought this West Virginian to Wyoming include the 19 March 1928 passage of a Congressional bill creating the Central Plains Research Station—shortly to be renamed the Cheyenne Horticultural Field Station. Only 3 months after the bill's passage, a 199-year lease had been executed (2,139 acres from the City at \$1 per year) and Robert Wilson, the Station's first superintendent (1928 to 1930), was directing building construction west of town and north of the railroad and ranch road paralleling Crow Creek. Herbert Hoover was elected President in November, and by January 1929, Wilson was directing carpenters as they installed the interior trim in the headquarters building and the Superintendent's residence. A budget shortfall ended construction at the end of January and further work waited until Congress passed, on 4 March 1929, a Deficiency Appropriation Bill for \$25,000 with the funds being immediately available for the Station. The decision was then made to build another staff house; plus, storage cellar, headhouse (a building attached to the greenhouses), dairy barn addition to the main barn, and garages behind all residences and the headquarters building. (\$25,000 went a long way in Cheyenne in 1929!) This construction was initiated and continued through the end of Wilson's tenure.

Eight months after the October, 1929 Stock Market crash, 36-year-old Aubrey Claire Hildreth resigned his position at the University of Maine Agricultural Station and left the blueberries and cranberries of Orono, Maine, to travel with his wife, Marie, and sons John (age 8) and Robert (age 3) to Cheyenne to assume the duties of Station Superintendent, Cheyenne Horticultural Field Station. They left Maine, according to John, on the 29<sup>th</sup> or 30<sup>th</sup> of June and by early July, he and Robert were playing on the large, leather-upholstered chairs in the lobby of the Plains Hotel where the family stayed before moving into the Superintendents residence at the Station. Robert Wilson's mission was to build the station; Dr. Hildreth's mission was to build the USDA research program.

Hildreth was born 20 December 1893, on a farm near Mannington, Marion County, West Virginia. His formal elementary education was at the one-room schoolhouse near the family farm, but much of the boy's education was at home where most evenings his father could be found reading to his children or teaching them arithmetic and otherwise aiding their scholarship. Hildreth attended secondary school 18 miles away in Fairmont. Later, with the support of his parents and sister, he obtained a degree in Horticulture from West Virginia University. During World War I he served in the field artillery and in January 1919, Lieutenant Hildreth was honorably discharged. That fall he began graduate work at the University of Minnesota. In 1921, he and family neighbor Marie nee Copenhaver, married, and then journeyed 2500 miles west to Pullman, Washington, where Hildreth continued graduate work at Washington State University with a research project on blueberries and cranberries at one Washington Agricultural

Experiment Station and a project on dry-land plantings at another. In 1923, he returned to the University of Minnesota for his doctorate, having obtained in Washington the dry-land horticultural experience that would guide his USDA work in Cheyenne.

Dr. Hildreth wasted no time implementing the Cheyenne USDA research program. By 1932 he was reporting that 866 fruit trees had been planted in a 1931 dry-land test for hardy tree-fruit varieties and that 70 percent were still alive in 1932. This survival rate appears to have surprised him since he specifically noted in the 1932 annual report that the plantings "...included many varieties not (thought) adapted to prairie conditions..." In other words, losses were expected and death defined material not adapted to the Cheyenne climate. He concluded, "All dead fruit plants were replaced this spring, for further trial."

A sulphinated oil developed in Minnesota for preventing rabbit injury to plants was used in the 1931-32 tree fruit and windbreak experiments and Hildreth wrote, "If this preparation continues to prove effective it will be one of the most important contributions made to tree planting on the plains."

Besides tree fruits, Dr. Hildreth also worked with currants, gooseberries, raspberries, and strawberries. He recorded high death losses among the existing varieties of raspberries and strawberries and in doing so identified a need for High Plains-adapted materials for these species—a need that was eventually addressed by a special breeding program carried out under the direction of the Station's, Gene Howard in the mid 1960s and resulting in the release of the ever bearing *Fort Laramie* strawberry and the raspberries *Trailblazer*, *Pathfinder* and *Plainsman*.

By the end of 1933, Hildreth recorded nearly 6,000 accessions or entries that had been added to the station plant collections and studies.

The establishment of windbreaks was a priority research area. Besides rabbits, young trees had to survive desiccating winds that sucked water out of the plants faster than shallow root systems could replace it. Conifers were particularly susceptible. To reduce seedling mortality, Hildreth and J. L. Emerson sprayed young pine trees with a multitude of coatings ranging from corn oil to a beeswax emulsion. The 1933 volume of the journal, *Science*, carried their report that a brew of linseed oil, soap, sulfur, and water could be sprayed on pine seedlings without killing them, and that it did reduced seedling water loss 32%.

Climate effects on plants were an important part of USDA research in the first decade of Station operation and the work was summarized in a report published in the 1941 Yearbook of Agriculture under the title, *Effects of Climate Factors on Growing Plants*. It is a research focus that continues today in the form of the Station's **Prairie Heating And CO<sup>2</sup> Enrichment (PHACE)** experiment that was highlighted this past September with a symposium held at Little America and a field tour of the experiment.

Dr. Hildreth's tenure at the Station included 4 special assignments. In 1935 he oversaw the design, selection, and installation of plantings in the parks and along the streets of Boulder City, Nevada; a city constructed for the families of workers who built Hoover Dam (then Boulder Dam). From 1942 to 1946 he was Director of the USDA's war effort to make the shrub guayule

(why-oooh—lee) a practical alternative source for natural rubber. From 1946 to 1955 he directed research at the USDA Mandan, North Dakota and Woodward, Oklahoma research stations in addition to the Cheyenne program. In 1955, Dr. Hildreth was selected for a 2-year assignment to Afghanistan to advise on the creation of an agricultural experiment station in that country and to develop improved plant materials for the country's different regions.

Dr. Hildreth retired from USDA-ARS in 1959 to become the Director of the newly opened Denver Botanical Gardens. He died in 1975 after being recognized by 16 awards and citations including the 3 most prestigious awards in horticulture—The Arthur Hoyt Scott Garden & Horticultural Medal, The National Council of State Garden Clubs Silver Medal, and The Liberty Hyde Bailey Medal (the 12<sup>th</sup> recipient in the 60 years the award had existed). His success was partly a result of his focus on important problems. Walter T. Federer, who was raised on a ranch north of Cheyenne, worked at the Station as a young man, attended Colorado State University, and became world famous as Professor of Biological Statistics at Cornell University, wrote in his book, *Statistics and Society—Data Collection and Interpretation*, that Dr. Hildreth taught that in analytic research, the framework of definitions and axioms, as well as the conclusions to be drawn, must be explicitly and rigorously stated if there is to be any hope of effecting a solution and drawing a conclusion. No short, ambiguous hypotheses statements for him or Dr. Federer!

Dr. Hildreth's primary life work of initiating and maintaining problem-solving USDA agricultural research at Cheyenne is a priceless heritage that continues to benefit the citizens of the Rocky Mountain region, and the nation. In 1974, the Station was renamed a 3<sup>rd</sup> time to reflect a change in research emphasis and a focus on problems in rangeland ecology and management. USDA agricultural research continues to address important concerns and issues and today, Station scientists are at the forefront in solving problems related to reclamation of lands disturbed by mining and energy extraction, rangeland monitoring, profitably interfacing grazing management with conservation concerns, invasive species, and global climate change. The products of USDA-ARS research at the High Plains Grassland Research Station continue in the problem-solving tradition of Dr. A. C. Hildreth.

Fig. 1. Dr. A.C. Hildreth (date unknown).

Fig. 2. View from the headquarters building looking toward the bunkhouse with the headhouse and greenhouses beyond (1933).



