

Shower power: Early cloud modification

In times of severe drought, with the stakes in the state's agricultural economy so high, there have been times when the people of South Dakota have been willing to put their faith in men who claimed they could force rain from the sky. That is what brought a Kansas firm, the "Inter State Artificial Rain Company" to the Aberdeen area in 1892. One of its directors, L. Morris, set up shop in an old creamery building on the edge of Doland, from which he sold his rain-making services. According to Clark Spence in *The Rainmakers* (1980), "The exact terms of his agreement are not evident; but likely several counties were involved and had in mind purchasing the Inter State formula and rights for their area, contingent on Morris's success."

Morris did not have a monopoly on the rainmaking business. He was in bitter competition with another rainmaker named "Captain" Hauser. Both Morris and Hauser claimed to be better than the other at drought busting. In the end, neither man could prove his case because little rain fell in northeast South Dakota. Often these pioneer rainmakers were unable to collect what they believed they were due because farmers failed to pay up on their pledges. In 1983, Inter State contended local farmer owed it \$2,000 dollars for services rendered. These disputes frequently ended up in court, where judges faced the same question that hangs over cloud seeding operations today: Was the rain caused by weather modification – or were the skies going to produce precipitation anyway?

Today the American Meteorological Society defines cloud seeding as "the addition of agents that will alter the phase and size distribution of cloud particles, with the intent of influencing precipitation." Most often the agent used has been dry ice or silver iodide.

Credit for the discovery of the dry ice method goes to a pair of General Electric scientists, Nobel price winner Irving Langmuir and his collaborator, Vincent Schaefer. Their discussions of cloud physics paid off on July 12, 1946, when Schaefer discovered that dry ice put into a box containing supercooled water droplets formed thousands of tiny snowflakes. The following year, aircraft icing investigator Bernard Vonnegut discovered silver iodide could also be used as a cloud seeding substance. His discovery occurred when he noticed the configurations of atoms in that chemical were similar to the alignment of atoms in an ice crystal.

Strangely enough, there is evidence that a man with similar beliefs about cloud seeding agents was at work in the Black Hills 13 years before Langmuir, Schaefer, and Vonnegut came to their conclusions. In the summer of 1933, Aura Wilkes Haller came to South Dakota. He believed

that the conditions preceding a storm could be created by chemicals introduced into a cloud. Haller put an ad in the Belle Fourche newspaper, proclaiming "Rain for Sale", and signing the ad, "the man who makes the barometer (sic) go down." Haller did not have an airplane, so when conditions were right he would climb the highest hill and make a "spread" of chemicals into the clouds. Published reports from Lead, deadwood, Hermosa, and Rapid City said that when Haller spread, rain followed. Donations for his efforts poured in.

Haller's stay in South Dakota ended shortly after the people of Buffalo paid him \$45 to create rain. A storm followed - but to the surprise of everyone, it turned into a June snowstorm, drifting roads shut and causing problems for all. When his flow of donations ran dry, Haller left. He spent time making rain in North Dakota, Montana, Wyoming, and Missouri before retiring in Iowa. Haller is not South Dakota's only amateur cloud seeder. In June, 1952 three Clark farmers were in a local barber shop talking about the drought that was destroying their crops. Someone asking in a joking manner why they couldn't spread some dry ice into the clouds to make it rain. One of the farmers gave it more serious though. Chet Neal collected \$75 from neighbors and sent two friends, farmer/pilots Dick Hendry and Dennis Hofer, to Minneapolis to buy 400 pounds of dry ice.

They flew back, cut the ice into cubes, and called the Weather Bureau to find out where the cumulus clouds were. Flying a tiny Cessna 170 to the extreme height of 11,500 feet, they shoot the dry ice cubes out the window. A few hours later, it rained hard in a 16 mile wide path near where the men had flown. Area farmers tended to believe Hendry and Hofer's flight did bring the long-sought rain. A farmer from Bryant event even rewarded them with a check for \$75. But the Sioux Falls Argus Leader reported, "Weather bureau officials in Huron are ready to debate the issue if anyone says these two pilots did cause the rain. They say the plane did not go high enough."