WHY THE ROCKY MOUNTAIN LABORATORIES WERE BUILT IN HAMILTON, MONTANA

by Gary Hettrick

Although the construction of the first building of The Rocky Mountain Labs was completed in 1928, RML evolved as a result of research on Rocky Mountain spotted fever that began around 1900, in the Bitterroot Valley of Western Montana. Early settlers of the valley were plagued with a deadly disease of unknown origin that seemed to be concentrated on the west side of the Bitterroot River. It was known locally as “black measles” because of its severe dark rash, and folk wisdom of the day suggested that infection occurred from drinking the melted snow water that gushed out of the west side canyons during spring run off. Fatal in nearly 4 out of 5 adult cases, local residents appealed to the state governor for help.

Montana had been granted statehood in 1889, and in 1901, the Montana State Board of Health was created. Its first priority was to bring health scientists to the Bitterroot Valley to investigate the cause, treatment and prevention of spotted fever. During the next three decades a memorable cast of...
characters was engaged in a drama that provided an interesting chapter in the annals of medical history.

Among the first was Dr. Howard Ricketts, a young pathologist from the University of Chicago, who in 1906, showed that the disease was transmitted by the bite of the Rocky Mountain wood tick (Dermacentor andersoni). Returning each summer to continue his work, by 1909, he had isolated the bacterial organism that was responsible for spotted fever, and that organism was later named Rickettsia rickettsii in his honor.

A state budget shortage made it questionable whether Montana could fund Ricketts’ continuing research during the summer of 1910. Because of the uncertainty, he accepted funding to work on a typhus outbreak in Mexico City. Shortly before his work there was concluded, Ricketts himself contracted typhus and died soon after.

Clarence Birdseye was another interesting character to play a role in spotted fever research in the Bitterroot Valley. As part of an effort to understand the life cycle of the wood tick, Birdseye, a college student working for the U.S. Biological Survey, spent the spring and early summer of 1910, shooting and trapping wild game and rodents to collect ticks. Reportedly, he bagged 717 small animals and collected nearly 4,500 ticks. After his work in Montana, Birdseye went to Labrador where he developed the concept of frozen foods and later established the company that bears his name.

In the years that followed, a number of state and federally funded researchers continued their investigations of spotted fever. The Montana State Board of Entomology under Robert Cooley developed a tick eradication program. Dipping vats were placed at several locations throughout the valley and ranchers were encouraged (by threat of quarantine) to drive their herds to the nearest station so that the cattle could be run through the vats. However, preparing an arsenic solution strong enough to be effective, but not so...
strong as to burn the hides and udders of cattle was accomplished by trial and error. This situation bolstered the resentment among local ranchers who already harbored a healthy distrust of government-imposed programs. In addition, two young brothers who had been helping at a dipping station on their family ranch both contracted the infection and died. In June of 1913, matters came to a head when the vat located near Florence was destroyed by dynamite and one outside of Hamilton was damaged with sledgehammers.

Despite local hostility, work on spotted fever continued on several fronts. Within a few years Drs. Roscoe Spencer and Ralph Parker produced the first effective vaccine against the disease by emulsifying infected tick tissue in which the rickettsiae had been inactivated.

The early facilities in which spotted fever research was conducted were makeshift at best. Ricketts worked in tents set up in the yard of the Northern Pacific Hospital north of the valley in Missoula. Others worked out of cabins and farmhouses, and Parker for a time conducted his studies in a woodshed. Finally, in 1921, Parker found an abandoned schoolhouse on the west side of the valley and arranged to have it rented by the U.S. Public Health Service. The “Schoolhouse Lab,” as it was known, was the facility where Spencer and Parker ground up tick tissue to produce their vaccine.

Progress had been made toward controlling spotted fever, but much more awaited. In 1926, the Board of Entomology asked the state legislature to provide enough money to build a modern entomological laboratory. In the spring of 1927, the legislature appropriated $60,000 for the new building and a site in the town of Hamilton was chosen.

By this time, local sentiment toward medical investigators had softened considerably, but pockets of fear and distrust remained. Each spring newspapers reported new cases of the illness. While the annual
number of deaths from spotted fever had fallen significantly from the record high of 17 in 1901, every year more victims succumbed to the infection. In addition, during the previous 16 years, 5 laboratory workers had become infected and perished.

When news hit the valley that a new laboratory would be built in Hamilton, a group of citizens immediately formed a coalition in opposition and it became clear that the facility would not be built without a fight. Unlike previous workstations, this site lay east of the river that bisects the valley. Since infection only occurred on the west side, residents worried that ticks might escape the facility and pose a danger to the town. To stop construction, homeowners in the neighborhood of the proposed site filed a lawsuit. At trial, plaintiffs argued that the location was particularly dangerous since it was only a block away from the high school. And, homeowners feared that property values in the area would plummet. Ultimately, the judge decided that construction could go forward, but in an effort to alleviate town fears, a small moat was built around the perimeter of the facility to be filled with water. Ticks, supposedly, could not swim the moat.

The building was completed in early 1928. It provided space for the state administered control programs and rented space to the Public Health Service for Dr. Parker and his colleagues to continue research and vaccine production. By 1930, the laboratory employed four professionals and 22 support staff. That same year Parker was appointed scientific director, a role he continued in for the next 19 years. In February of 1932, the federal government purchased the facility from the
state of Montana for $68,757 and several of the Board of Entomology employees were transferred to the Public Health Service.

In 1937, RML became part of the National Institute of Health. During World War II, the laboratory joined in the war effort by producing vaccines to protect soldiers against spotted fever, typhus, and yellow fever. After the war, work at the lab returned to its primary mission of basic scientific research of infectious diseases. In 1948, the National Institute of Health was reorganized, and RML became part of what is now called the National Institute of Allergy and Infectious Diseases (NIAID).

Today, scientists at RML investigate a wide variety of infectious diseases. Supported by state-of-the-art Genomics and Electron Microscopy units, current research includes the study of Mad Cow and Chronic Wasting Disease, Chlamydia, Q-fever, Tularemia, Salmonella, Staph infections, Lyme Disease, Relapsing Fever, and Plague. A recently constructed “Integrated Research Facility” with high-containment laboratories, will allow scientists to use advanced techniques in their quest to protect people from the ever-emerging diseases of nature.

The Rocky Mountain Laboratories lay on a 33 acre campus. Over 25 buildings provide offices, shops, research labs, and animal facilities for the study of allergy and infectious diseases.