
Stinkheads and Stinky Tails: The History of Botulism among Native Alaskans

Kristina Eaton, MS II

Editor's Note: the following History of Medicine paper was awarded the Outstanding Student Paper in 2008. It delineates a little known chapter in American medicine. The references are not included, but are available from *Greasewood Tablettes*.

Fermented fish heads ("stinkheads") and fermented beaver tails ("stinky tails"), among other traditional Alaska Native foods, have been associated with over two hundred outbreaks of botulism since the early 1900s. These delicacies are typically prepared in the aftermath of the summer hunting and fishing season, when food is in abundant supply, and are eaten throughout the year. Many stories of tribal deaths have been described that resembled botulism, but a 1947 Alaska outbreak in the village of Kotzebue was the first documented case of the disease in the state, linked to the consumption of fermented beluga whale flipper. In the years

following that outbreak, epidemiologists have documented the incidence and fatalities resulting from botulinum poisoning in Alaska, noting that while the death rates have fallen since 1970, the incidence has risen substantially, thus sparking a public health initiative to educate Native Alaskans and local health care providers about the early recognition of disease symptoms and preventative measures.

The first case of botulism was recorded in 1793 in Wildbad, Germany, following the consumption of locally produced blood sausage. Of the thirteen people who came down with symptoms, six died. The illness became known as "botulism" after "botulus," the Latin word for sausage. Over the next one hundred years, seven types of botulism were discovered, types A-G. The principal types involved in human diseases are A, B, and E, while type C causes disease in chickens, and type D causes

disease in cattle.

Nearly all of the botulism cases in Alaska have been traced back to type E toxin. The fermentation techniques used to preserve salmon heads, whale blubber, seal flesh, and fish eggs are conducive to the germination of the spore forming obligate anaerobic bacterium, *Clostridium botulinum* type E. No outbreaks among Alaska Natives have been linked to home-canned food.

Botulinum toxin acts at cholinergic neuromuscular junctions by blocking the release of acetylcholine from presynaptic nerves, thus affecting both autonomic and voluntary motor activities. The three major systems affected are gastrointestinal/urinary, neurologic, and muscular. Clinical signs and symptoms from botulinum toxins A, B, and E are similar, often characterized by nausea or vomiting, dysphagia, diplopia, dilated pupils, and dry throat. However, patients with illness from type E toxin tend to

have a milder clinical course and less frequently require intubation therapy for respiratory distress than those affected by type A or B toxin (thirty-nine percent with type E, versus fifty-two percent with type B and sixty-seven percent with type A).

Alaska has the highest rate of botulism in the United States, with 124 confirmed outbreaks since 1950, involving a total of 251 people. The annual incidence among Alaska Natives increased from 3.5 cases per 100,000 people in the 1950s, to 12.6 cases per 100,000 in the mid-1980s. Most of these cases were documented

on the western and southeastern coasts of Alaska in adults aged 24-69. As of 2005 the incidence had declined to 4.9 cases per 100,000 people. All of these figures surpass the incidence of botulism in Washington State, which has an annual incidence of 0.43 cases per 100,000 people, the highest rate in the United States other than Alaska. Infant botulism, resulting from spore ingestion rather than toxin ingestion, has not been reported among Alaska Natives.

Despite the introduction of western consumer goods to

rural Alaskan villages over the course of the past century, most villages keep only one small grocery store stocked, and it tends to be heavy on processed, nonperishable foods rather than fresh meat and produce. Fermented foods have remained in the diet, particularly among the elderly who are accustomed to the flavor and textures of the food. However, the preparation and storage of stinkheads and other fermented food has undergone significant change.

-to be continued in next issue-

History Making news

The annual History of Medicine dinner was November 23, 2009,

with a record attendance of 115. Guy Rocha entertained the audience with his insight into Nevada's history. See photos of the event.



*Back: Kristin Sohn, Mark Williams, Jamie Stokke, Anthony Quinn
Front: Jeanette Williams, Joshua Fitzgerald, JR Miguel, and Soyoun Lee*



Kristin Sohn, Mama, and Guy Rocha

The Birthplace of Nevada Medicine: Carson City, by Pugh and Sohn was released on December 7, 2009, at the Sierra Surgery Center in Carson City, which hosted the event with wine and appetizers. KOLO talk-show host Bill Manders broadcasted from the signing. On December 21 Borders Bookstore in Carson City was the site of a second book signing. Doctors Rex Baggett, Bill O'Shaughnessy, Stu Stoloff, Jim Colgan, Colin Soong, Del Snider, Mike Fischer, Dick Newbold, and Mrs. Bill King and Mrs. Carol Pitts attended the signing.

Philip John Gillette (1920-2010)

By Bob Daugherty, Dean Emeritus

Phil Gillette died this January 4. He had many titles and duties over his forty years of dedication to the School of Medicine. He was the first financial officer when the school was created in 1969, but none of Phil's titles could adequately describe his dedication and commitment to the School nor describe his valuable advice to many of us during our time with the school. He was tireless and always available when called upon. Indeed, I was surprised to note that he had officially retired in 1987 after I had been Dean for six years. During the subsequent years before my retirement in 1999 I don't think Phil missed a day of working for the school. His knowledge of the history and mission of the school was critical in reminding us on a day-to-day basis of our priorities. To say that Phil Gillette will be missed does not begin to describe the void left by his death.

Below are comments from former colleagues and his children, who give us a reminder of the caring nice person many of us had the opportunity to know and work with. We all have lost a piece of our soul with his death.

Tom Kozel, Former Chair of Microbiology

My memory about Phil from the early days was the graciousness of him and his wife Geneva in welcoming new faculty to the medical school. The faculty was small at that time, and we were in a precarious situation. There was a tremendous need for everyone to hang together, and Phil and Geneva provided much of the glue to make that happen. As the newest and youngest faculty in 1971, I, along with my wife, Pat, appreciated the warmth with which we were brought into the Reno community.

Mike Reed, Former Dean of the School of Business

My recollections of Phil begin with recalling the way he would come to the office to talk about health issues. He was an incredibly cheerful and graceful man who was dogged in his determination to build a relationship between the School of Medicine and the College of Business. I recall also his way with students while he taught in the college. I recall Phil's gentle nature and smile—always the smile. I recall the way he would prod me to get something accomplished. And while I can't recall particulars, what I do know is that he would smile across the table, verbalize the idea, and remark that the initiative was something that would be of substantial benefit, involve little work and be quickly attained. I also recall being amazed at how such a slight person could be, and remain, so vibrant. Phil exuded a positive energy every time I saw him, especially when he and John

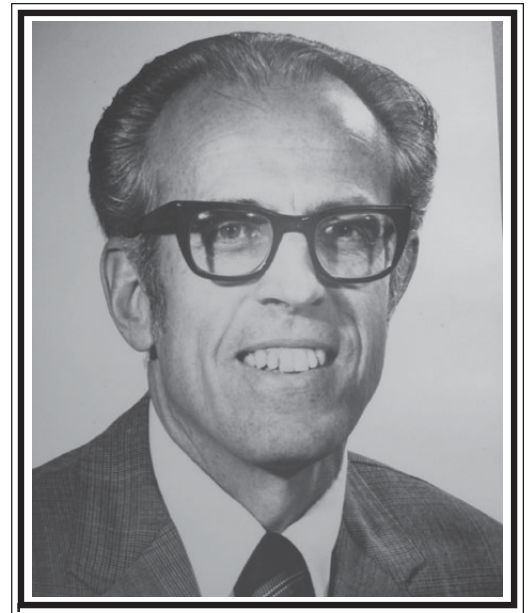
Bancroft would approach me. Their presence together scared me in a good way because I knew I was about to get an important lesson I would realize and appreciate at a later date.

George Hess, Former Chair of Family and Community Medicine

The thing I remember most about Phil was that he always seemed to have a smile and a positive word no matter how grim the situation. He loved teaching and sharing his knowledge, while he actively taught in the schools of Business and Medicine. He coordinated the Practice Management Course for our residency and made it invaluable to the residents with his many contacts and guest speakers. He never seemed to hesitate to volunteer if a job needed to be done. This was true at our church, in the community, and, as well, at the University. Lastly, as a green Department Chairman, I found Phil extremely helpful both as an advisor and as a friend.

Sam Parks, Former Chair of the School of Medicine Faculty Committee

Even though Phil was retired, he functioned as the secretary of the committee during my years as chairman. He was invaluable because of his knowledge and history with the School. He never missed a meeting and was responsible for disseminating the minutes to the school's faculty. In spite of his declining health he was always cheerful and ready to help with any task. The School will miss Phil.



Philip John Gillette (1920 -2010)

Jerry May, Former Associate Dean of Student Affairs

Phil was always a delightful positive man who loved the School of Medicine. He was always raising his hand to help the school in any way. We were both from the State of Washington and we would reminisce about old times. Phil was also avid golfer and we would bring each other up-to-date on national tournaments and our game. He and I knew early on that we would need to keep our "day job" as we would not be professional golfers. He kept up on the progress of the School of Medicine, and I am not aware of anyone who was more dedicated to see the school succeed. I wish I had one more chance to say to Phil: Thank You!

Denise and Rick, Phil's Daughter and Son

Our dad not only had passion for his work but also for so many other things. He had such great love for his family and especially our mom, Geneva, during their nearly sixty years together. He devoted most of his extra time to

several charities and volunteered his services to many organizations. He loved food, sports (in particular football), investing in the stock market, and was very interested in business and politics. He loved to travel, and wherever he went he truly appreciated the beauty of that area. His favorite places were the states of Washington and Hawaii. One of our fondest memories is when our family took a month to travel throughout the United States seeing museums, national monuments, and several other sites in about twenty-five states - very memorable! If all of us could even live half as much as he did, how lucky we would all be. Wish we could have just one more of our two hour phone conversations - Dad, we miss you so much!

In Memoriam

William John Diamond, MD (1948-2009)

John Diamond was born in South Africa and came to the US in 1976 where he pursued a career in pathology. In 1981 Dr. Diamond was hired by the Reno pathologists because of his expertise in blood banking. He remained in the practice of pathology for eight years before he entered the practice of alternative and general medicine. He died of cancer on December 6, 2009.

Andrea G. Pelter (1929-2010)

Andi Pelter died this January 12 from a long-standing heart ailment. One could write a book about her various achievements and involvement in the Reno and University communities. In addition to her support of the School of Medicine and its History of Medicine program she was on the initial University of Nevada Foundation Board and served for twenty-five years. The

University recognized her contributions by awarding her with the President's Medal, the Distinguished Nevadan Award, the Service Award, and an Honorary Doctorate Degree.

Andi was a third generation Nevadan. She followed in her father's footsteps by heading up Reno Iron Works. In 2004 Reno Iron Works celebrated 100 years since its founding by her father. Andi had been the president and owner of the Reno Iron Works for thirty-five years. The firm's UNR engineering scholarship program has been in existence for over seventy-five years.

Andi was preceded in death by her husband, Dr. Bill Pelter, who died in 2006 after over fifty years of marriage. Bill began practicing anesthesiology in Reno in 1972. One cannot say enough about the civic accomplishments of Andi. The family has recommended that memorial contributions be made to the University of Nevada School of Medicine, School of Engineering, or School of Nursing.