# ANTHROPOLOGY ON THE ROCKS: PORTRAITS OF THE GWICH'IN BY AMERICAN FIELD GEOLOGISTS, 1898–1927

**Craig Mishler**
Independent Researcher, 3910 McMahon Avenue, Anchorage, Alaska 99516; vadzaih@gmail.com

**ABSTRACT**

The fieldwork of early American geologists is of considerable interest to Alaska anthropologists today because it contains important ethnographic data and ethnohistory on the Gwich'in and other northern Dene groups, as well as non-Dene peoples. My primary focus here is on their direct encounters with the Gwich'in in northeastern Alaska, but their work takes on added importance in that they greatly influenced skilled cultural anthropologists such as Cornelius Osgood, Robert McKennan, and Frederica de Laguna, who first arrived in Alaska during the late 1920s and early 1930s. It is telling, nevertheless, that the data-rich field notes and photographic contributions of early field geologists such as Frank Schrader, Gerald Fitzgerald, John Mertie, Jr., and others have largely gone unnoticed.

Prompted by the gold rush in the last few years of the nineteenth century and the first three decades of the twentieth century, Alaska's largely unmapped Interior region began to receive regular visits from a handful of federal government field geologists. The fieldwork of these early American geologists is relatively unknown outside of the geological community but is known more indirectly as providing a host of primary sources for Donald Orth's *Dictionary of Alaska Place Names* (1971). Their collective work takes on added importance in that they preceded and professionally influenced skilled anthropologists such as Cornelius Osgood (1936) and Robert McKennan (1965), who first arrived in the Interior and worked with the Gwich'in during the early 1930s. Frederica de Laguna was also part of their social circle.

Geologists and anthropologists have a lot in common, even if the objects of their study are radically different. Practitioners of both sciences traditionally spend large amounts of time traveling outdoors and camping in remote rural areas, have a common interest in stratigraphy, and require the recording of systematic detailed observations. These observations are recorded in field notes, sketch maps, and photographs that are analyzed and interpreted later on in reports and monographs. Before there can be any classification or theory, scientists in both disciplines must build up a database made from description. Fieldwork is at the core of such description.

Perhaps for these reasons, the Alaska Archaeological Survey, with whom I was employed during the early 1980s, was for several years nested within the Alaska Division of Geological and Geophysical Surveys (Mishler 1986). And not to be forgotten is the distinguished linguist Edward Sapir, who studied Gwich'in and other northern Dene languages from 1910 to 1925 as chief ethnologist of the Division of Anthropology in the Geological Survey of Canada. Sapir made the first sound recordings of the Gwich'in language from the young scholar John Fredson (see Mishler 1982). Sapir's recordings, made on wax cylinders and now digitized by the Library of Congress, reside at the Archives of Traditional Music at Indiana University.

The importance of field geologists in ethnographic work among the Gwich'in is demonstrated by the fact that they were used as consultants by the anthropologists who followed in their footsteps. Robert McKennan, for example, corresponded with John Mertie, Jr., Gerald Fitzgerald, and Philip Smith and was personally briefed by

Fitzgerald in Washington, DC, before he left for Alaska to begin his work among the Gwich'in in the summer of 1933 (McKennan 1965:9; Mishler and Simeone 2006:xvi). McKennan (1933) was full of questions before he went to the field, and the letters he received back were especially influential while he was planning his solo expedition to the Chandalar and Yukon rivers. Smith and Fitzgerald (1933) gave him advice on which area he should visit, suggesting Arctic Village rather than Chandalar Lake because he would in turn find there "the most primitive of the upper Yukon natives." They also recommended he get there from Fairbanks using an airplane on floats. Mertie (1933) then gave him very specific advice about weather conditions, camping gear and clothing, food, river navigation, language, potential key respondents, mosquitoes and head lice, and more.

Field geologists were also the friendly traveling companions of other early Alaska anthropologists, and there are at least two photographs in the United States Geological Survey (USGS) archives that attest to their camaraderie (see Figs. 1 and 2).

Through personal correspondence, de Laguna once informed me that in the summer of 1935 she took a young University of Michigan geologist named A. J. Eardley with her to Prince William Sound on the *Yukon* voyage and spent a long afternoon with Mertie and Gerald Fitzgerald, who told her of their exciting 1927 visit to Arctic Village. Another geologist, Stephen Capps, gave her some photographs of petroglyphs from Cape Alitak on Kodiak Island and from Auke Bay near Juneau, which she later used in her publications. After they arrived in Anchorage, Mertie invited her to dinner and took her to a local radio station. "I believe all of the geologists on shipboard offered welcome advice and suggestions which improved our trip," she wrote. "I enjoyed being with them and admired their work" (Frederica de Laguna, pers. comm., 11 August 1994).

***Figure 1. Left to right: John Mertie, Jr., Stephen Capps, Fred Moffit, Gerald Fitzgerald, and Frederica de Laguna on board the* SS Yukon*, June 2, 1935. Alaska Science Conference 15. USGS photo library, Denver.***

*Figure 2. Left to right: John Mertie, Jr., Harriett Osgood, E.J. Fitzgerald, and Cornelius Osgood. June 8, 1937. Mertie 2385. Photo by John Mertie, Jr., USGS photo library, Denver.*

Although the primary objectives of the geologists' field trips were to identify mineral deposits and make topographic maps of the Alaska Territory, most survey teams carried large-format cameras and were privileged to observe Alaska Native people at a key point in their early contact history. No official guidelines apparently governed the content of their photography, so visual ethnography was not something they were either trained or asked to do. Following their own personal interests, some geologists took the initiative to document the lives and culture of Alaska Natives, but there were many others who did not.

Certainly, it is the complex interface between human and natural landscapes that attracts us to the study of anthropology in Alaska today. It is a common truth that Alaska Natives are part of the land and an economic truth that they subsist largely off of it. However, we will probably never know why some field geologists working in Alaska showed a strong interest in Alaska's indigenous peoples and left us with a magnificent visual and written record, while others did not photograph the Natives they encountered. Fred Moffit and John Reed, for example, were avid photographers and took hundreds of images, but they have left us with little more than panoramic shots of snow-capped mountain peaks, rock formations, rivers, lakes, and glaciers. At the same time, Moffit did make important written observations of Native groups (see Pratt 1998).

## NOTEWORTHY GEOLOGISTS AMONG THE GWICH'IN

In this essay, I want to discuss selected photos, letters, and field notes of three geologists who spent time in the field with the Gwich'in and assess the importance of their work

to Alaska ethnography and ethnohistory. In 1927, the Neets'it or Neets'aii Gwich'in and the Di'hąįį Gwich'in were two intermarried bands of seminomadic people inhabiting the Brooks Range of northeastern Alaska. They consisted of less than a dozen extended families who subsisted heavily off the Porcupine caribou herd, which migrated seasonally through the area.

When the caribou were not traveling north or south through their territory, Gwich'in families dispersed up and down the *K'aii'eechų'njik* (the East Fork of the Chandalar River) and its tributaries to catch fish and hunt moose and Dall sheep. They also ventured eastward toward Old John Lake, the Koness River, and the upper *Shiinjik* (Sheenjek River). The Gwich'in homeland is quite vast, extending south into the Yukon Flats and across the Canadian border into the northern Yukon and Northwest Territories.

These early scientists who visited the Gwich'in were Frank Schrader, John Mertie, Jr., and Gerald Fitzgerald.[1] Their photos are permanently stored at the USGS Photographic Library at the Denver Federal Center in Denver, Colorado, while their original field notes have been deposited separately in the Field Records Library at the Alaska Regional Office of the USGS on the campus of Alaska Pacific University in Anchorage.[2] In order to evaluate the full significance of these photo collections, I was obliged to visit both repositories and match up the photographs with the field notes. Not surprisingly, it turns out that the geologists' field notes provide valuable contexts for their photos.

#### FRANK SCHRADER

In 1898, Frank Schrader was sent to Alaska and assigned to accompany Captain William Abercrombie in the Copper River basin. Before he came to Alaska, Schrader earned a master of arts degree at Harvard and taught geology at Harvard in 1895–1896. However, Schrader was preceded in the Copper River basin by Charles Willard Hayes (1892), who accompanied Lieutenant Frederick Schwatka down the Chitina and Copper rivers in 1891. Schrader visited the Copper River again in 1900 and 1902 and went on to write reports of Prince William Sound and the Copper River (Schrader 1900b), of Cape Nome with Alfred Brooks (Schrader and Brooks 1900), and of the Wrangell Mountains with Walter Mendenhall (Mendenhall and Schrader 1903a, 1903b). Schrader's specialty was minerals, and he was an expert on antimony, but he established an excellent reputation in Alaska as "the prospector's friend" (Schaller 1945).

When Schrader explored the Copper River basin in 1898, he took photographs of the "Stick Indians" living near Taral, who were undoubtedly Ahtnas, and took some rare photos of three Ahtnas at Mentasta Lake, along with one shot of a sizable band of Upper Tanana Indians from Chisana living at Quartz Creek. Unfortunately, Schrader's field notes for 1898 are almost illegible, but we are fortunate that he also left a detailed topographic map of the Copper River showing the location of Ahtna Indian houses and settlements encountered by the expedition (Schrader 1900b).

It can be argued that Schrader's most important contribution to Alaska ethnography and ethnohistory, nevertheless, comes from his series of photographs and field notes depicting a small band of "Gens de Large" (Chandalar) Gwich'in he met in a remote part of the Brooks Range[3] on Robert Creek the following year, in 1899. Schrader's Gwich'in photos have been published elsewhere (see Burch and Mishler 1995), and one of his fetching Koyukon group photos appeared in his published preliminary report (Schrader 1900a:Plate LXIIIA, facing p. 458). Robert Creek is a small tributary of the Bettles River, and Schrader used it as a portage from the *Teedriinjik* (the North Fork of the Chandalar) to the North Fork of the Koyukuk. Schrader met Robert's band quite unexpectedly while en route from Fort Yukon to view the gold diggings in the Upper Koyukuk. When he came upon Robert's band of 11, they were living in two dome-shaped, caribou skin–covered huts (Fig. 3)—which the Gwich'in call *niinvyaa zhee*—and hunting Dall sheep. Schrader apparently decided to name the band after the oldest male in the group, the only person he photographed individually.

What makes Schrader's photos and accompanying field notes most valuable is that this band was located almost 100 km west of where the Gwich'in are living today, in the very heart of the area Robert McKennan (1965) said was historically occupied by the Dih'ąįį Gwich'in. We may never know whether these people were Dih'ąįį or Neets'it Gwich'in, but we do know these are probably the earliest photos ever taken of any Gwich'in living in the Brooks Range. Schrader was sufficiently impressed by these Indians to name several landmarks after them, including Robert Creek, Phoebe Creek, and Mount Horace (Schrader 1899, 1900a; Schrader and Peters 1904).

***Figure 3. Robert's band, a group of Gens de Large (Chandalar Gwich'in) living in dome-shaped caribou-skin huts on Robert Creek, an upper tributary of the Koyukuk River, in July 1899. Schrader 335. Photo by F. C. Schrader, USGS photo library, Denver.***

Like most other geologists of this era, Schrader had a predilection for using English names rather than Native language names, to the extent that these English place names gradually became official, even though traditional Native place names were most likely available for the asking.[4] While Schrader kept careful field notes about his encounter with this group, they appear again as two Gens de Large River households in the 1900 U.S. census (Bureau of the Census 1900). Neither Schrader's photographs nor his experience of hiring these people to help pack his gear ever appeared in his published report of the expedition. And that explains why McKennan never knew anything about them when he wrote his seminal monograph, *The Chandalar Kutchin* (1965).

**JOHN MERTIE, JR.**

The second geologist who worked among the Gwich'in is John Mertie, Jr. Mertie (Fig. 4) started his distinguished career with the USGS when he was hired as a summer assistant in southeastern Colorado in 1908. He attended Johns Hopkins University in Baltimore, where he received a doctorate in geology in 1911 at the tender age of 23 (Overstreet and Chapman 1982).

When he entered the USGS in a permanent full-time position that same year, Mertie requested assignment to the Alaska Division. He began his Alaska fieldwork under the able leadership of Louis Prindle, who had been working in the Yukon-Tanana region for the previous five years and in Alaska for the previous 10 years. Mertie also served for two seasons under Fred Moffit in the Copper River region and for one additional season with George Martin in the upper Matanuska Valley before being given the authority to start leading his own expeditions in 1915. Alfred Brooks, for whom the Brooks Range is named, was the USGS chief geologist for Alaska. He instituted a policy that any junior geologist had to work as a field assistant to a senior geologist for four full field seasons before being allowed to work independently (Mertie 1978).

Mertie's expertise, like that of Brooks, was in reconnaissance mapping and topography. Mertie had great physical strength and endurance, a quality he inherited from his father, who was a blacksmith. Unlike modern geologists, who get around comfortably in helicopters, Mertie did a lot of his Alaska fieldwork walking overland on foot, riding on horseback, or lining canoes up wild rivers. He began working in the Gwich'in homeland in the

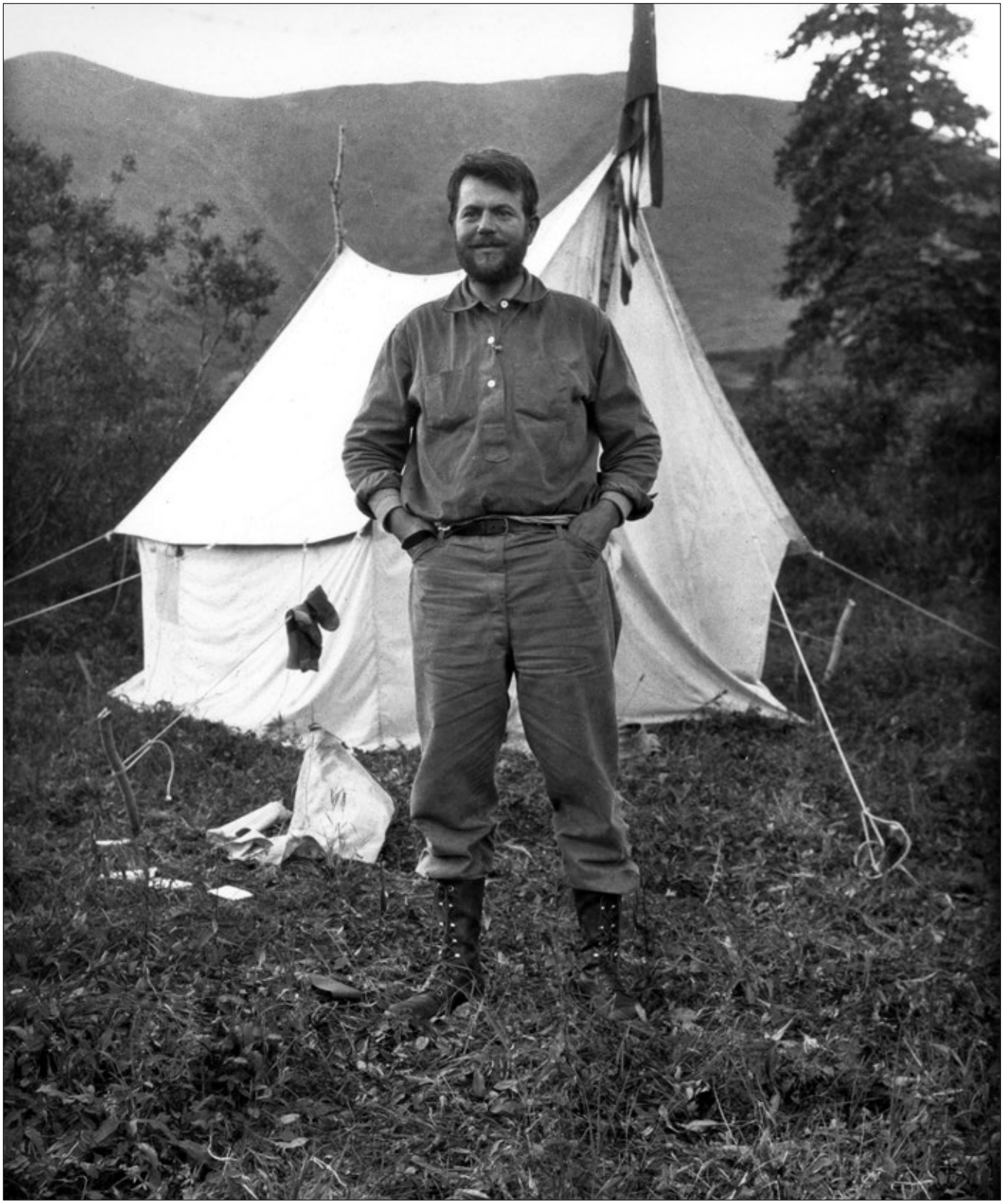

*Figure 4. John Mertie, Jr., August 29, 1915. Mertie 421. Photo by John Mertie, Jr., USGS photo library, Denver.*

early 1920s, producing several technical papers (Mertie 1925, 1928, 1930).

Following Mertie's fieldwork on the lower *Shiinjik* in 1926, a plan was developed to do topographic and geologic mapping in the upper *Shiinjik*, Koness, and Chandalar river drainages in the summer of 1927. Fitzgerald and Fred Clark went ahead by dog team from Fairbanks to Fort Yukon in April of that year, ferrying supplies to Arctic Village that would be needed during the summer. Mertie then followed with C. A. Wheeler, ascending the Chandalar River in two Peterborough canoes. The two parties were united in Arctic Village on July 18. The full narrative of their joint adventures can be found in Mertie (1930).

In the history of Alaska ethnography, however, John Mertie, Jr., will be most remembered for Tuesday, July 19, 1927. On that day he took 11 fetching photographs. Among these are group portraits of seven Gwich'in families living in Arctic Village and then most of these families gathered together in front of the church for a community portrait (Figs. 5–12).[5] Since July 19, 1927, fell on a Tuesday, it is unlikely that the people walked over to the church on their own for a religious service. It makes sense that Mertie implored them all to gather there at a certain hour.

Taking these wonderful family portraits must have occupied him a good part of that day. The photos display absolutely no connection with the science of geology, but today they are a great gift to the people of Arctic Village and Venetie and to others deeply interested in Gwich'in tribal history and family genealogy. In his memoirs, Mertie wrote: "My camera interested them, and they were happy to pose for pictures. I took numerous photographs of family groups, copies of which I sent to them the following winter, later learning how pleased they were to see and receive them" (E. Mertie 1982:119).

While located near the intersection of northern and southern caribou migration routes, Arctic Village was attractive as a Gwich'in settlement site during the early summer months due to the abundant run of whitefish running down the creek called *Vashraii K'ǫǫ* (lit. 'Muddy Banks Creek'). In fact, the Gwich'in name for Arctic Village is the same name as this creek, and the village is strategically located at the confluence of *Vashraii K'ǫǫ* and the *K'aii'eech'ųnjik* (the East Fork of the Chandalar). People gathered at this location to harvest whitefish and hang them up to smoke and dry, a process that takes about five days. The dried whitefish gave them substantial provisions for hunting Dall sheep in the mountains later in the

***Figure 5. Arctic Village community portrait in front of Bishop Rowe Episcopal Chapel, 1927. Mertie 1359. Photo by John Mertie, Jr., USGS photo library, Denver.***

summer and also provided rations for pack dogs. These and various other species of fish were and still are available year-round.

Recent prints of Mertie's family images have been framed and are proudly on display in the John Fredson School in Venetie and in the Sarah Frank Community Hall. For outsiders, they offer a wealth of information about household composition and kin groups, log house construction, trade goods, and clothing styles.

In terms of material culture, we see from the Mertie photos that each Arctic Village family had its own log house and that each house was structurally unique. Because of that, it would be hard to characterize this vernacular architecture as Gwich'in in style. The surprising uniqueness of each house probably stems from a variety of Native and non-Native influences, such as cabins built by gold prospectors and fur trappers or those built by Gwich'in families in Fort Yukon. The structural uniqueness of each house is also likely the result of their being built by different builders at different times since the village was founded. One thing conspicuously missing from the photos are outhouses, but this is to be expected since they would normally be located behind or off to the side of the houses.

Since the area around Arctic Village is vegetated largely by small black spruce unsuitable for house construction, most if not all of the logs used to build the old village Mertie saw were harvested upriver or downriver, just before the church was completed in 1917. The village itself goes back to 1908, but we don't really know when the first cabins were built. Some of them were certainly there when John Fredson and Dr. Grafton Burke arrived by dog team in the company of their guide, Albert Tritt, in March 1922 (Fredson 1982). Albert Tritt was the ordained Episcopal deacon in Arctic Village who later became the leader of a nativistic revitalization movement. McKennan was so intrigued by Tritt that he composed a special section of his ethnography around him (McKennan 1965:86–89).

The Gwich'in may have made the transition from caribou skin huts to portable canvas wall tents of the kind used by Mertie in 1915 (see Fig. 4) even before they

*Figure 6. Johnny and Sarah Frank family. Left to right: Johnny Frank, Dina Frank, Sarah Frank, Dan Frank, Nathaniel Frank, Joseph Frank, Allah Frank, Hamel Frank, Lucy Ch'igwihch'in (Johnny Frank's mother), and Jessie Natthąįį, 1927. Mertie 1363. Photo by John Mertie, Jr., USGS photo library, Denver.*

***Figure 7. Gilbert Joseph family. Left to right: James Gilbert with his parents, Maggie Divi' and Gilbert Joseph, 1927. Maggie Divi' was Johnny Frank's older sister. Mertie 1365. Photo by John Mertie, Jr., USGS photo library, Denver.***

began building permanent dwellings with logs.[6] Canvas wall tents were in commercial production from at least the time of the American Civil War. And while most people in Mertie's photos appear to be standing in front of their own log houses, it is telling that Johnny and Sarah Frank posed with their family in front of the church. Since they were visiting Arctic Village from their home on the Koness River at the time, it seems highly likely that they were staying in the canvas tents shown behind the church picket fence on the left in Figure 6. In 1933, McKennan found them all staying in a canvas tent in Venetie (Mishler and Simeone 2006:207).

Michael Mason (1924:38, 77), a Scottish explorer, noted that lightweight canvas tents had replaced skin-covered "tipis" throughout the Gwich'in area he visited in the early 1920s, but he felt their log cabins, due to being so poorly ventilated, were responsible for a big surge in tuberculosis and influenza. This continues to be a health issue in rural Alaska even today, where pneumonia is still a big concern, especially in large households with children (Lindsey 2017).

Bypassing the question of whether the buildings Mertie saw in Arctic Village were well ventilated, they all seem to be well crafted, with high-pitch sod-covered pole (Figs. 8 and 9) or sawn lumber roofs (Fig. 10) braced by purlins and ridgepoles. The log corners are in two styles, butt and pass (Figs. 7 and 10) and Scandinavian saddle notched (Figs. 8 and 9), suggesting two distinct stylistic influences. Esias and Sarah Simon's house (Fig. 10) is largely made from whip-sawn squared or flat-on-flat logs, with just three courses of round logs, while Albert and Sarah Tritt's (Fig. 11) is a hybrid that has flat-on-flat logs in front and round logs on the sides.

The Tritt house, the church, and the unidentified house shown in the background of Figure 8 are the only ones with windows in front, but the Gabriel and Alice Peter house in the foreground has a fairly large side window with curtains. The house off in the background of

*Figure 8. Alice and Peter Gabriel family, with unidentified child, 1927. Mertie 1364. Identified by Mertie simply as "Peter and his family." Photo by John Mertie, Jr., USGS photo library, Denver.*

Figure 8 is the only one with an addition or wing attached, yet no family posed in front of it. At this time, glass was undoubtedly a scarce commodity. Windowpanes would have to have been transported in toboggans by dog team over rugged trails, and their fragility along with subzero temperatures would have prevented many of them from arriving intact.

Alice and Peter Gabriel's cabin (Fig. 8) has unpeeled logs and clay or mud chinking, while all the others are chinked with moss or not chinked at all. The gable ends of all the houses are peaked quite high, suggesting that each house had an inside upstairs sleeping loft. Half of the structures (Figs. 5, 8, 10, and 11) have barge boards on the gable ends. The others do not. Stovepipe chimneys are visible for each house in photos where the rooftop is shown, and it is to be assumed that metal woodstoves to go under them were also freighted in by dogsled over winter trails. The Tritt house (Fig. 11) has one stovepipe chimney on top of the roof and a second one outside in front, where the family is standing. The stove for this second pipe is not visible, so perhaps it is vented through the front wall. A wisp of smoke is seen emanating from the pipe.

Peter and Susan John's house (Fig. 12) is unique in having a fenced yard around it, similar to the one surrounding the church, and Titus and Maggie Peter's place (Fig. 9) is unique in having a raised platform cache standing right beside it. The Simon house (Fig. 10), in turn, stands apart from all the others by having its entrance on the side rather than on the gable end. So, other than the fact that all of them are constructed of logs with high gable ends and sod roofs, the houses really do not resemble one another very closely.

There are several items of interest attached or lying adjacent to the houses, including a white enamel bowl or dishpan (Fig. 7), a steel rake (Fig. 9), a steel shovel, a rifle, and a handsaw (Fig. 10), a lever-action rifle, a single-shot rifle, a gill net, some hanging steel traps (Fig. 11), some caribou skin dog packs, and a pair of snowshoes (Fig. 12).

***Figure 9. Titus and Maggie Peter family. Left to right: Peter John (with caribou skin parka), Martha Peter, Jo Ann Peter, Maggie Peter (later remarried as Maggie Gilbert), unknown boy (possibly Linus Peter), and Titus Peter, 1927. Titus Peter was the son of Peter John. Mertie 1368. Photo by John Mertie, Jr., USGS photo library, Denver.***

Individually, these items may not tell us all that much, but collectively they add up to a rather nice spectrum of material culture in use at the time.

Another area of interest is clothing. It is pretty obvious that no one in the community was wearing aboriginal-style Gwich'in clothing, except for Peter John in his caribou skin coat (Fig. 9) and Martha Tritt, who has on a beadwork-embroidered rabbit skin collar, cuffs, and belt (Fig. 11). One rather surprising thing is the number of men wearing suits. We see nearly all of the adult men in them, including Albert Tritt, Peter John, Titus Peter, James Gilbert, and Chief Esias, although Esias may be wearing a heavy wool coat rather than a suit jacket. And Esias alone wears a vest. Even Alice Peter (Fig. 8) has a suit coat on, which she may have borrowed from her husband just to stay warm or for protection from mosquitoes.

Stephen Peter sports a white shirt and a tucked-in necktie (Fig. 12); in place of neckties, some of the men are wearing neck scarves. Gilbert Joseph (Fig. 7) stands apart from his peers in his casual buffalo plaid jacket. Johnny Frank is shown in the community portrait with his trademark tobacco pipe and without a suit coat (Fig. 5). Johnny nevertheless appears in another of Mertie's photos (#1366, not shown here) with a suit coat, and in later years was frequently photographed in a suit. Peter John alone is dressed in button suspenders, while all the other men whose waists are visible have belts with metal buckles.

The variety of headgear is also telling and reveals additional cultural borrowing. The adult men favor tall-crown pointy Stetson hats, while the women and girls all have their heads covered with scarves. Some of the older boys and young men wear flat caps, while the youngest ones have knitted wool caps. All the women and girls are wearing long dresses or blouses with skirts, and many have wool sweaters. Mosquitoes must have been very numerous that year because we see several men wearing head nets,

***Figure 10. Esias and Sarah Simon family, 1927. Sarah (carrying baby), Chief Esias on right, 1927. Others unidentified but names of most children are in the 1930 census for Christian Village. Mertie 1362. Photo by John Mertie, Jr., USGS photo library, Denver.***

including James Gilbert (Fig. 7), Peter John (Figs. 9 and 12), Isaac Tritt (Fig. 11), and David Frank (Fig. 12).

The adult women tend to wear dark-colored dresses or full ankle-length skirts and blouses, while some of Chief Esias's daughters (Fig. 10) favor cotton prints (calico) with sashes. Both men's and women's apparel reflect fashions in vogue elsewhere in the United States during the 1900s–1910s. In other words, they seem a little bit behind the times. The women certainly had not picked up on the shorter and more fitted skirts and pants of urban America in the late 1920s.

Men's footwear reveals an adaptive convergence between Western and aboriginal materials. Long wool socks pulled up to the knees are standard, but over the socks the men have calf-high moose-skin moccasins whose bottoms are covered with low-cut rubbers. Their pants, which may well be knickers, are then tucked into their socks. When I caught up with Johnny Frank in 1972, he was still wearing this style of footwear (see photo in Mishler 2001:15), a combination designed to keep the feet warm and dry and immune to mosquito bites. Gilbert Joseph (Fig. 7), Linus Peter (Fig. 9), and Abel Tritt (Fig. 11) are the only ones who have L.L. Bean duck boots. The women's footwear is more difficult to discern. Peter John (Figs. 9 and 12) and two of Chief Esias's sons (Fig. 10) are attired in *kwaiitryaa ch'ok*, beaded pointed-toe moccasins (Fig. 10), and Linus Peter has on a pair of *dzir*, beaded moose-hide mittens, even though he was photographed in the middle of summer. This would suggest that Mertie, in getting the families to pose, encouraged them all to don their very fanciest and most formal clothes rather than their everyday garb. An alternative interpretation, somewhat harder to argue, is that the villagers did not distinguish between Western-style formal and casual clothes and that they wore their suits and dresses for everyday use. We do not know whether they had more than one kind of attire. To be sure, their winter clothes had to be much different.

What motivated Mertie to make all these portraits is not revealed in his report or Gerald Fitzgerald's diary, but it may be because he believed that he was one

***Figure 11. Albert and Sarah Tritt family. Front row, left to right: George Tritt, Christian Tritt, Abel Tritt, Martha Tritt (James), Sarah Tritt, and Albert Tritt. Back row, left to right: Jessie Natthąįį, Isaac Tritt (with head net), and Paul Tritt, 1927. Mertie 1367. Photo by John Mertie, Jr., USGS photo library, Denver.***

of the first white men to make contact with these people in their homeland. This was far from the case, and it is hard to accept Mertie's characterization of Arctic Village as "a primitive Indian settlement" (E. Mertie 1982:119) when many of the people he photographed were wearing suits and dresses and attending an established Protestant church. In exchange for furs, the people had acquired tea, tobacco, rifles, axes, steel pots, woodstoves, manufactured clothing, and many other trade items from the Hudson's Bay Company post in Fort Yukon. This trade began in the late 1840s and early 1850s. After the purchase of Alaska from Russia in 1867, the Alaska Commercial Company moved into the area, and American-made goods soon became widely available.

The Mertie photos, which show just seven family groups, probably do not reflect the entire Arctic Village community at the time, because some families still lived out on the land, especially during the summer months. Fitzgerald counted 75 people on May 15 and 12 families in residence on May 19, 1927 (see diary below), but individuals and families were coming and going every day. The number still resident may have been diminished when Mertie's group portraits were taken just two months later. In fact, the community portrait (Fig. 5) includes only 38 individuals. Fitzgerald counted "22 exposures" by Mertie on July 19, of which only 11 prints seem to have survived, so it is possible that some were lost or scrapped due to bad exposures, some may have been duplicates, or some households may have simply refused to be photographed.

The demographics of the community are dynamic and not entirely transparent. By March 1930, there were just eight households and 40 residents listed in Arctic Village (Bureau of the Census 1930). Ambrose Williams, Elijah Henry, David Frank, and Chief Christian are four of those Fitzgerald met in Arctic Village and wrote about in his 1927 diary who do not show up in the 1927 Mertie photographs, but they each had families, and all but David Frank were included in the 1930 census for

*Figure 12. Peter and Susan John family. Left to right: Peter John (Dinjii Tsik), Susan John, Madeline Peter, Leah Peter, Stephen Peter (white shirt and tie), David Peter (David Oly), and possibly Moses Sam. On the fence are dog packs made from caribou skin, 1927. Mertie 1369. Photo by John Mertie, Jr., USGS photo library, Denver.*

Christian Village.[7] Johnny and Sarah Frank's family was listed as residing in Arctic Village in 1930 (Bureau of the Census 1930), but by 1935 Johnny had a vision that led them to move downriver to Gold Camp about halfway between Arctic Village and Venetie (Sarah Frank, in Mishler 2001:476–477).

In an image not unlike those taken by Mertie, Robert McKennan snapped a family portrait of Elijah and Mary Henry's family standing in front of their log house in Arctic Village in 1933 (see McKennan 1965:21). Esias Simon and his family were photographed by Mertie in Arctic Village in 1927, but they subsequently appear in the Christian Village census for 1930. This would suggest that the Simons, the Henrys, and the Williamses had houses in both communities and that they did not stay in one place but went back and forth. Yet by the time Robert McKennan flew into Arctic Village on June 27, 1933, there were only nine people around (Mishler and Simeone 2006:168).

In an oral history interview near the end of his life, Mertie said that "many of the natives [at Arctic Village] had never seen a white man. Some of them had gone to Fort Yukon during the winter and seen white men, but most of them lived right there in the village and hadn't had any contact with whites at all" (Mertie 1978). Gathering up the members of each household and orchestrating all of these group photographs was no easy task, and it is one that could not be easily repeated today because people are always coming and going on airplanes, boats, snowmachines, and ATVs. Mertie's systematic depiction of household groups, as opposed to shots of a few likable individuals, characterizes his effort as scientific and ethnographic. We also have to admire his sense of reciprocity in sending copies of the photos back to households in the community. He went out of his way to give something back.

**GERALD FITZGERALD**

The third geologist, one of Mertie's field colleagues, was Gerald Fitzgerald, affectionately known by the Gwich'in as "Fitz."[8] According to his obituary in the *Washington Post* (Anonymous 1981), Fitzgerald was "a specialist on reconnaissance mapping, [who] made 23 expeditions to map Alaska. He later was in charge of topographic surveys in Alaska." Fitz hired two dog teams to take him to Arctic Village in March 1927, a full three months before Mertie arrived with his camera. Chief Esias Simon was his guide. Although Fitz apparently took no photos in Arctic Village, he did keep a daily "Date Book" or diary of his experiences, and this 253-page unpublished diary gives us a tremendous slice of daily life in Arctic Village over a three-month period, during which time he greatly endeared himself to the family of storytellers Johnny and Sarah Frank (see Fitzgerald 1927; Holloway 2014; Mishler 2001:310–312). Many years later, for example, Sarah Frank warmly recalled that Fitzgerald complimented her on her sewing and parenting skills by saying, "There are lots of really rich people, and even though you are poor, your children are not raggedy and their skin doesn't show through their clothing, and I'm proud of you" (see original Gwich'in text and translation in Mishler 2001:450–451).

To give a flavor of what life was like in Arctic Village at this time, I offer some selected excerpts from Fitzgerald's (1927) remarkable diary. Fitzgerald's observations richly document subsistence methods, foodways, weather, health, and social events. There is very little ethnocentric bias in his voice:

> April 22:…Esias [Simon's] wife [Sarah] makes a winter food of the marrow of caribou bones mixed with cooked (sinew meat) or tenderloin chopped up—it is frozen in chunks and looks like some head cheese—It is very good—especially for a lunch on a cold day.
>
> May 7:…Soft fine snow all day. Wet. Hill's covered—Natives catch hundreds of grayling today—hook and spear thru the ice.
>
> May 15 [Sunday]: In village all day—snowing all night—not much furs. Lots of church to-day—over 75 people in village now—counting children. The place needs a school. Summer school would be better May 1st to Aug 15th—Native teacher—Natives have already built a log school house, two stores, a lot of very hard work just to get a school—
>
> May 18: Work on field sheets—a very warm day—water running again—lots of robins. Johnny Frank comes over and tells us stories of Indian war time—strong men—brush men, ect—Raven and the light—We've got to get away from here soon or we will go bugs—nothing to do but eat—Natives do nothing today—Elijah Henry & Gilbert [Joseph] comes in to village with family—
>
> May 19: Powwow with Esias and Gilbert about trip to Salmon [Sheenjek] River—wants to share launch with Fred [Clark] and call it square—very warm to-day—Chief Christian gives a "potlatch" for the village.[9] The village is full now—12 familys of from 5 to 11 each. Fred bakes bread for Esias outfit. Albert [Tritt] finishes his boat—a very neat job—canvass covered about 10 ft long—3 ft beam two men—
>
> May 20:…Albert puts his boat in water—is going to make us a boat—Potlatch dance at Esias house—take out stove and everything—family move into tent. Several bunches of ducks flew over to-day—one bunch 10 geese.
>
> May 24:…Ambrose [William] has a potlatch today—Fred out hunting—I go—Lots of food—Natives cooked—They are just like a bunch of children—Lot of Grayling in creek at Village. Each man potlatching serves two meals dinner and supper to the entire village—Albert [Tritt] will soon have our boat finished. Kids play until after midnight.
>
> May 25: Danced last night until 4:30 oclock this morning—entire village turned out—Albert Tritt & Jim Christian play "phiddle" [fiddle]—Dance Virginia Reel or Rabbit dance—Red River Jig—Duck Dance—Square Dance[10]—Sleep late—cloudy but clears up late in afternoon—water raising in river over 2 ft. to day but snow isn't going very fast—I pull out one of Chief Peter's Bi-cuspid molars—a rough job—Ambrose still has potlatch—Fred and I stay home and have a fine duck dinner—I bathe and wash clothes.
>
> June 2: All these people use their dogs for summer packing—20 or 25 lb per dog—Every lake is alive with fish. Grayling—white fish—pike—trout—
>
> June 9:…I pull out Sarah Frank's teeth—a bad one but she was game—treated Jim's wife, looked at Moses [Sam's] ankle and dressed Lea's [bullet] wound—which is almost healed up—Take a bath and wash cloth[e]s—I don't believe these Natives ever take a bath—they sure don't look it.

July 4: Up early this morning—Fred bakes doughnuts and Johnie [Johnny] Frank & I get ready for games—Start playing at 12 noon a fair day—Everyone joins in the games—We have about $35.00 prize money—Jumps, races—sack races—three legged race etc pillow fight on. Swing bar pole and climbing greased pole. Then at 4:30 a big feed—a real potlatch—afterwards a dance at Esias house—This is a 4th the Natives of Arctic Village will never forget. I get another pair of moose skin moccasins from my pains a gold nugget from Esias.

July 5: Dogs raise hell all night—very snowy today—light N.E. wind—

Women of village throw another Potlatch—at Esias house—a good feed. Afterward they have a dance at Esias house that lasts until midnight—Fred and I dance once or twice. Red River Jigg and a sort of square dance the whole thing seems to be an endurance contest. Afterward they have tea.[11]

July 10—. . . No news—all the Natives are out of food—no fresh meat and not many fish—nothing else—They expect a big caribou run in a few days—Peter [John] and David should return from Ft. Yukon anytime now—Johnnie Frank says he saw a big fire up at first bend above village last night at midnight. Fred goes up creek with fish net.

July 19: Rain early this morning—we pack grub outfit and get ready to shove off. Fred bakes bread and doughnuts—Mr. Mertie takes pictures of the Natives—22 exposures. Mr. Mertie also has a long talk with Peter about law enforcement in the village. Sarah [Frank] sews up our sleeping bags and does Mr. Mertie's laundry—In all we have a very busy day.

August 17: The "Crabb" [Fred Clark] gets us all up at 6 a.m. because he could think of nothing more ornery to do. Esias and his family return to the village in two boats well loaded down with dried and fresh meat—mostly moose—8 moose—12 sheep—We got some fresh meat. Make a deal to buy the biggest skin boat—2 moose skins and 2 caribou skins. Albert and Old John go back to their camps—Old John[12] [at the age of] (95) walked in over the mountain (15 mi.) just to say good bye—

## CLOSING REMARKS

While all these photos and notes provide us with a wealth of data on material culture, they still leave unanswered some social and political questions. One of the major questions that remain concerns the Arctic Village leadership. First, who was the chief of Arctic Village in 1927? In his "Date Book," Fitzgerald refers to Chief Christian, Chief Esias, and Chief Peter and notes that on May 23 the village was planning to hold a meeting to elect a new chief. Unfortunately, he never tells about the outcome of that election.

At any rate we may like to ask, how could there be three chiefs? Judging from the number of potlatches and dances held at Esias Simon's house, it would seem highly likely that he was first chief. Today, Arctic Village and Venetie still annually elect first chiefs and second chiefs, but they also recognize "traditional chiefs," elders who command great respect but have few day-to-day obligations. These are generally lifetime appointments. But did Fitzgerald's "Chief Peter" refer to Peter Gabriel, Titus Peter, David Peter, or Peter John? Peter John, at 60 years of age and the eldest male in Arctic Village behind Old John (Bureau of the Census 1930), may very well have been the community's traditional chief.

The bigger picture is that Schrader met Robert's band of Gens de Large Gwich'in in the central Brooks Range some 28 years before Robert McKennan began his ethnography of the Chandalar Gwich'in, and Fitzgerald and Mertie arrived in Arctic Village a full six years before McKenann. However, anyone reading the official reports of their respective geological expeditions (Mertie 1930; Schrader 1900a) would have no idea about the existence of Schrader's photographs, Mertie's photographs, or Fitzgerald's diary.

Mertie's deep interest in photography and in the people he met in rural Alaska set him apart from the average geologist, perhaps even from the average ethnographer. His exploratory work, like that of Frank Schrader, Alfred Brooks, Walter Mendenhall, and others who worked in remote parts of Alaska's Interior, provided unprecedented scientific coverage of northern Dene cultural history, a history that cannot be understood exclusively from the reports of early missionaries and traders, the only other professionals who wrote about them at all during the early contact period.

When joined with their corresponding field notes, the photographs of American field geologists do much to help shape our perception of what Gwich'in life was like during the late nineteenth and early twentieth centuries. In vivid and stunning fashion, this remote tribal group in Arctic Village emerges full-blown from prehistory. These

are the faces of the ancestors. And while they may look to be already fully acculturated and adapted to Western civilization, such looks are quite deceiving. Arctic Village and Venetie have long been among the last bastions for fluent speakers of the Gwich'in language, and it is in the retention of their language and subsistence lifeways that those pictured by Mertie retained their strong Native identity. We know this through a multitude of modern oral recordings. Furthermore, even though all the heads of families photographed have been identified with English Christian names and surnames, this masks the fact that they also had Gwich'in personal names, many of which we still know.

Perhaps, in getting Arctic Village residents to dress up for their portraits, Mertie gives us a view of them that is overly formal and romanticized. Other contemporary photographers of Alaska Natives, such as Edward Curtis and the Lomen Brothers, did much the same thing, but of course Curtis had underlying commercial and artistic motives. Thankfully, Schrader's and Mertie's visual landscapes were not limited to scenic mountains, rivers, lakes, and glaciers but included the people who inhabited them and their vernacular architecture. These richly textured human landscapes tell us many things we would never know if we depended solely on the writings and photographs of the anthropologists who followed in their footsteps.

## ACKNOWLEDGEMENTS

An earlier version of this paper was presented to the Alaska Anthropological Association Annual Meeting in Anchorage, Alaska, in March 1995. I am much indebted to the services of Jill Schneider, USGS librarian in Anchorage, and Joe McGregor, USGS photo librarian in Denver, for their help in accessing these collections. My good friend the late Hamel Frank of Venetie helped identify the individuals and families shown in the Mertie photos from Arctic Village. Also, Patricia Aubin was kind and generous enough to share with me her father's unpublished diary. Lastly, I thank Ken Pratt and three blind peer reviewers for their insightful comments, questions, and requests on an earlier draft of this manuscript. Without their patience, encouragement, and good will, this essay would not have been possible.

## ENDNOTES

1. There are also a few photos from other Interior Alaska geologists such as those taken by Walter Mendenhall (1898, 1900), Alfred Brooks (1898, 1900), Frank Hess, and Louis Prindle that should prove valuable to Alaska ethnohistory and historical archaeology.
2. One exception here is the field notes of Gerald Fitzgerald, which have been retained by his daughter, Patricia Aubin, of Gaithersburg, Maryland. The digitized photos are in the public domain and may now be easily accessed and searched for at http://libraryphoto.cr.usgs.gov.
3. The Brooks Range was named in honor of Alfred H. Brooks, but it is a mountain range long known to the Gwich'in as *Gwazhal*.
4. The systematic knowledge of Gwich'in mountain, river, and lake place names in the Brooks Range around Arctic Village is fairly well documented by Rick Caulfield (1983), using oral data provided by Gwich'in elders. In recent years, there has been an initiative by Edward Alexander of Fort Yukon to restore Gwich'in river place names to official government status. Alexander's efforts, consisting of proposals brought before the U.S. Board of Geographic Names, have largely been successful.
5. At one time listed as one of Alaska's most endangered historic buildings, this church, the Bishop Rowe Chapel, was restored to its original appearance in 2004–2005, due to the efforts of historic architect Bob Mitchell, human geographer Steven Dinero of Thomas Jefferson University, the National Park Service, and the villagers themselves. It was listed on the National Register of Historic Places as the Old Missionary Church in 1977 and is included in the Alaska Heritage Resource Survey as ARC-056. See https://npgallery.nps.gov/AssetDetail/NRIS/77001578. In 2017, I received an oral report from an Arctic Village resident that the old church has once again fallen into disrepair.
6. In Gerald Fitzgerald's diary excerpts, shown below, it is noteworthy that Chief Esias and his family moved from their log house into a tent, perhaps due to the warm summer weather.
7. Ambrose Williams was mistakenly identified in the 1930 census for Christian Village as "Ambros Frank." Ambrose was nevertheless closely associated with the Franks since he married Johnny and Sarah Frank's

eldest daughter, Lucy. Christian Village, or *Zheh Gwatsal*, now abandoned, is situated on the banks of the Christian River about halfway down the winter trail that once connected Arctic Village and Fort Yukon. It lies approximately 84 km (or 53 mi) south of Arctic Village.

8. Gerald Fitzgerald (1951) later wrote a brief history of geological surveying and mapping in Alaska.
9. The Gwich'in celebrate several kinds of feasts. The Arctic Village "potlatch" Fitzgerald writes about is called *lavasdaa* (< Fr. *la fête*), a traditional event for all village residents that develops whenever there is an abundant harvest of game by members of one household. In his May 24 diary entry, Fitz says, "Each man potlatching serves two meals dinner and supper to the entire village." But *lavasdaa* is carefully distinguished from the invitational memorial potlatch and gift-giving ceremony known as *tr'igwitil*.
10. I and others have written elsewhere about this lively fiddle music and jig and square dance tradition, which continues unabated today in Arctic Village, Venetie, and other Gwich'in communities, including Fairbanks (see Mishler 1993; Stevens 2013).
11. For the Gwich'in, "tea" or *lidii* is often used as a synecdoche referring to a communal meal. The part represents the whole. That seems to be the case in this instance.
12. Old John Vandeegwiizhįį was Sarah Frank's father. He lived for many years at Old John Lake, about 13 miles east of Arctic Village, so that is probably where he walked from to wish the geologists farewell. A 1925 photograph of him wearing a dark wool suit and a clergyman's collar appears in Mishler (2001:309).

## REFERENCES


Anonymous
1981 Gerald Fitzgerald, Mapmaker for the U.S. Geological Survey (obituary). *The Washington Post*, February 27.

Brooks, Alfred H.
1898 Journal of a Trip to Alaska in 1898. Unpublished field notes. U.S. Geological Survey, Technical Data Unit, Anchorage.
1900 A Reconnaissance in the Tanana and White River Basins, Alaska, in 1898. *U.S. Geological Survey Annual Report* 20, Vol. 7 (pp. 425–494).

Burch, Ernest S., and Craig Mishler
1995 The Di'hąįį Gwich'in: Mystery People of Northern Alaska. *Arctic Anthropology* 32(1):147–172.

Bureau of the Census
1900 Twelfth Census of the United States. Northern District, Alaska. Gens de Large River. Household Enumeration Sheet. U.S. Department of Commerce, Washington, DC.
1930 Fifteenth Census of the United States. Fourth Judicial District, Alaska. Arctic Village, Household Enumeration Sheets. U.S. Department of Commerce, Washington, DC.
1940 Sixteenth Census of the United States. Chandalar District, Alaska. Christian Village, Household Enumeration Sheets. U.S. Department of Commerce, Washington, DC.

Caulfield, Rick
1983 *Gwich'in Athabaskan Place Names of the Upper Yukon–Porcupine Region, Alaska: A Preliminary Report*. Technical Paper No. 83 (with regional maps). Alaska Department of Fish and Game, Division of Subsistence, Fairbanks.

Fitzgerald, Gerald
1927 Date Book for 1927. Unpublished field notebook in the possession of Gerald Fitzgerald's daughter, Patricia Aubin, Gaithersburg, MD.
1951 *Surveying and Mapping in Alaska*. U.S. Geological Survey, Circular 101. Washington, DC.

Fredson, John
1982 Vashrąįį K'oo Gwats'ą' Tr'ahaa'òo: A Trip to Arctic Village. In *John Fredson Edward Sapir Háa Googwandak/Stories Told by John Fredson to Edward Sapir*, edited by Jane McGary, pp. 40–49. Alaska Native Language Center, University of Alaska Fairbanks.

Hayes, Charles Willard
1892 An Expedition Through the Yukon District. *National Geographic Magazine* 4:117–162.

Holloway, J. Michael
2014 *Dreaming Bears: A Gwich'in Indian Storyteller, a Southern Doctor, a Wild Corner of Alaska*. Epicenter Press, Kenmore, WA.

Lindsey, Kelsey
2017 Unhealthy Air in Rural Alaska Homes Targeted in Tribal Program. *Alaska Dispatch News*, August 7, pp. A1ff.

Mason, Michael H.
1924 *The Arctic Forests*. Hodder and Stoughton Ltd., London.

McKennan, Robert A.
1933 Letter of April 20 to Dr. J. B. Mertie. Robert McKennan Collection, Baker Library, Dartmouth College, Hanover, NH.
1965 *The Chandalar Kutchin*. Arctic Institute of North America, Montreal.

Mendenhall, Walter C.
1898 Reconnaissances from Resurrection Bay to the Tanana River. Notebook No. 1. Unpublished field notes. U.S. Geological Survey, Technical Data Unit, Anchorage.
1900 A Reconnaissance from Resurrection Bay to the Tanana River, Alaska, in 1898. *U.S. Geological Survey, 20th Annual Report*, Part 7:265–340.

Mendenhall, Walter C., and F. C. Schrader
1903a Copper Deposits of the Wrangell Mountain Region, Alaska. *USGS Bulletin* No. 213:141–148.
1903b The Mineral Resources of the Mount Wrangell District, Alaska. *USGS Professional Paper* No. 15. Washington, DC.

Mertie, Evelyn
1982 *Thirty Summers and a Winter*. Mineral Industry Research Laboratory, School of Mineral Industry, University of Alaska Fairbanks.

Mertie, J. B., Jr.
1925 Geology and Gold Placers of the Chandalar District. *U.S. Geological Survey Bulletin* 773E, pp. 215–263.
1928 Preliminary Report on the Sheenjek River District. *U.S. Geological Survey Bulletin* 797C, pp. 99–123.
1930 The Chandalar Sheenjek District, Alaska. *U.S. Geological Survey Bulletin* 810B, pp. 87–139.
1933 Letters of April 25, May 2, and May 25 to Robert McKennan. Robert McKennan Collection, Baker Library, Dartmouth College, Hanover, NH.
1978 Oral history interview. Interviewed by Dick Tagg, U.S. Geological Survey, Menlo Park, California, April 8. Transcript located in the office of the Chief Geologist, U.S. Geological Survey, Reston, VA.

Mishler, Craig
1982 John Fredson: A Biographical Sketch. In *John Fredson Edward Sapir Hàa Googwandak/Stories Told by John Fredson to Edward Sapir*, edited by Jane McGary, pp. 10–20. Alaska Native Language Center, University of Alaska Fairbanks.
1986 *Born With the River: An Ethnographic History of Alaska's Goodpaster and Big Delta Indians*. Alaska Division of Geological and Geophysical Surveys, Report of Investigations #86-14, Fairbanks.
1993 *The Crooked Stovepipe: Athapaskan Fiddle Music and Square Dancing in Northeast Alaska and Northwest Canada*. University of Illinois Press, Urbana and Chicago.

Mishler, Craig, ed.
2001 *Neerihiinjìk: We Traveled from Place to Place: The Gwich'in Stories of Johnny and Sarah Frank*. Second ed., with compact disc. Alaska Native Language Center, University of Alaska Fairbanks.

Mishler, Craig, and William Simeone, eds.
2006 *Tanana and Chandalar: The Alaskan Field Journals of Robert A. McKennan*. University of Alaska Press, Fairbanks.

Orth, Donald
1971 *Dictionary of Alaska Place Names*. USGS Professional Paper 567. Washington, DC.

Osgood, Cornelius
1936 *Contributions to the Ethnography of the Kutchin*. Yale University Press, New Haven, CT. Reprinted by Human Relations Area Files Press, 1970.

Overstreet, William, and Robert Chapman
1982 Memorial to John Beaver Mertie Jr., 1888–1980. *Geological Society of America Memorials*, Vol. XII:1–8.

Pratt, Kenneth L.
1998 Copper, Trade, and Tradition Among the Lower Ahtna of the Chitina River Basin: The Nicolai Era, 1884–1900. *Arctic Anthropology* 35(2):77–98.

Schaller, Waldemar T.
1945 Memorial of Frank Charles Schrader. *American Mineralogist* 30:148–152.

Schrader, Frank C.
1899 Chandalar and Koyukuk River Expedition field notes. Notebook 106. U.S. Geological Survey, Technical Data Unit, Anchorage.
1900a Preliminary Report on a Reconnaissance along the Chandalar and Koyukuk Rivers, Alaska, in 1899. *U.S. Geological Survey, Annual Report 21,* Part 2, pp. 441–486.
1900b A Reconnaissance of a Part of Prince William Sound and the Copper River District, Alaska, in 1898. *U.S. Geological Survey Annual Report 20*, Part 7, pp. 341–423, with topographic map.

Schrader, F. C., and Brooks, A. H.
1900 Preliminary report on the Cape Nome gold region, Alaska. U.S. Geological Survey. Government Printing Office, Washington, DC.

Schrader, F. C., and W. J. Peters
1904 A Reconnaissance in Northern Alaska across the Rocky Mountains, along Koyukuk, John, Anaktuvuk, and Colville rivers and the Arctic Coast to Cape Lisburne, in 1901, with notes. *U.S. Geological Survey Professional Paper 20*.

Smith, Philip S., and Gerald Fitzgerald
1933 Letter of January 3 to Robert McKennan. Robert McKennan Collection, Baker Library, Dartmouth College, Hanover, NH.

Stevens, Bill
2013 *Ch'adzaa Aghwaa: He Carries the Dance*. Edited by Maryanne Allan, Craig Mishler, and James Kari. Alaska Native Knowledge Network, University of Alaska Fairbanks.