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UK

Journal of Geography

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rjog20>

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Published online: 20 May 2008.

To cite this article: Alfred H. Brooks (1903) An Exploration to Mount Mckinley, America's Highest Mountain, Journal of Geography, 2:9, 441-469, DOI: [10.1080/00221340308985989](https://doi.org/10.1080/00221340308985989)

To link to this article: <http://dx.doi.org/10.1080/00221340308985989>

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The JOURNAL of GEOGRAPHY

VOL. II.

NOVEMBER, 1903

No. 9

AN EXPLORATION TO MOUNT MCKINLEY, AMERICA'S HIGHEST MOUNTAIN

BY ALFRED H. BROOKS

ALASKA'S southern shore-line makes a broad, crescentic sweep embracing that part of the northern Pacific known as the Gulf of Alaska. Of the many indentations which give this coast its jagged outline the largest is Cook Inlet, a deep embayment in the western arm of the crescent, which stretches northward for 150 miles from the headlands marking its entrance. There it receives the turbid waters of the Sushitna River, laden with the silt of glaciers which have their source in the great Alaskan Range lying northwest of the valley. (See Map, Fig. 1.)

This Alaskan Range curves in a rugged mass around the headwaters of the Sushitna, forming the divide between the Cook Inlet drainage on the south and the waters flowing into Bering Sea through the Kuskokwim and Yukon rivers on the north. The southern end of the range lies in an unexplored region to the west of Cook Inlet, but probably does not include any peaks over 7,000 or 8,000 feet high. Towards the north its relief increases, culminating in Mt. McKinley, over 20,000 feet¹ in altitude, and the highest mountain on the North American continent.

Strange as it may seem, though this mountain has been known to white men for upwards of a century,—it is plainly visible from tide-water at Cook Inlet and from many points in the Yukon Basin,—yet until very recent years it did not appear on any map and was barely referred to in literature. When the famous navigator, Captain Cook, in 1778 spent a few weeks exploring the inlet which now bears his name, the clouds hung low, or the mountain would not have escaped his attention. Vancouver, fifteen years later, while extending Cook's surveys

¹The final adjustment of surveys has not yet been made, so that the exact altitudes can not now be given.

FIG. 1. *The Mount McKinley Region, Alaska, showing the Route of the Expedition.
From a sketch made by the author.*

in the Inlet, probably also had no view of it, though he distinctly mentions the range. The Russians, who carried on their fur trade on this coast for over half a century, knew the mountain and called it "Bul-shaia," which, like the native name "Trolika," signified "high mountain"; but Russian literature on Alaska, so far as we know, contains no reference to this important geographical feature. Lieutenant Henry T. Allen, too, who in 1885 made his hazardous exploration of the lower Tanana, saw this peak, but at so great a distance that he was not specially impressed with its altitude.

Thus it was that explorers and traders did not seem to be aware that they had sighted the highest peak on the continent. When, in 1895, scores of prospectors were attracted to Cook Inlet by the discovery of gold, they too saw the mountain, but apparently gave it no thought until the following year, when one of them (a man named Dickey) recognized its importance and upon his return published a description of it and proposed the name Mt. McKinley. Though the mountain had been known to white men for over a century, and though scores of others had been as near it as this prospector, or nearer, he was termed the discoverer of Mt. McKinley. All honor to him for calling attention to it, but let us not make the absurd blunder of crediting him with its discovery.

Two years after the naming of the mountain, George H. Eldridge and Robert Muldrow, of the U. S. Geological Survey, in the course of their exploration of the Sushitna River, located it accurately and determined its altitude at over 20,000 feet. Its height and position were thus known, and something of the character of the southern flank of the range above which it towers. The northern face of the range and the base of the mountain remained to be explored, and this was the task assigned to me as part of the general system of exploratory surveys undertaken by the Geological Survey in Alaska. I was fortunate in having as associates in this enterprise Messrs. D. L. Reaburn and L. M. Prindle, as well as four able and enthusiastic camp men.

On May 27th, 1902, the vessel bearing our party slowly steamed up Cook Inlet. Hardly a ripple stirred the water, and through the hazy atmosphere we could barely discern the outline of the low coast, beyond which, in a bank of clouds, lay the high mountain range which we were to explore. At noon we dropped anchor at Tyonok, a small native settlement on the west shore of the Inlet with one trading post and a white population of half-a-dozen men. (See Fig. 2.)

We were forced to wait until the evening tide floated a large scow

destined to convey our horses to the shore. These, in spite of much struggling and kicking on their part, were then unceremoniously hoisted out of the hold and dropped over the side into the scow. The landing was attended with some excitement, for the horses, restless after their two weeks' confinement, exhibited a strong desire to leave the narrow gangway which reached the beach. One little brute satisfied his curiosity by leaping into the sea, but was promptly hauled out, and on striking the beach, took to his heels. After the entire outfit had been dragged ashore by the infinite labor of all hands, the presence of great numbers of Indians and dogs necessitated a guard, so I stood watch while the others slept. The chilly night air made the employment of

FIG. 2. *Tyonok, Cook's Inlet, Alaska.* (For location, see Map, Fig. 1.)

chasing the Indian or "Siwash" dogs, as they are called, not unacceptable. A relief was called at five, and I turned in and slept as one only can sleep who has been active for twenty-four hours.

The important question was which route should be chosen to the base of the mountains, for the crossing of the swampy and heavily timbered lowland area which intervened presented the most serious difficulties. The agent of the trading company, who was first interrogated, was rather skeptical of the proposed plans; and well he might be, for he had seen more than one exploring expedition start out with high hopes only to return disappointed a few months later. Should we go westward directly toward the mountains, our northeasterly course along the base of the range would be blocked by glaciers; should we take a more northerly course we would become lost in a maze of

swamps and encounter a number of turbulent rivers. Such were the stories told by the white men, and the Indians, who were assembled in solemn conclave, were equally discouraging.

Through the medium of signs, eked out by a few Russian words, I held a long parley with an old Indian chief over a map of his hunting grounds which he drew for me, but when I pointed out my proposed route far beyond the bounds of his knowledge, he gravely shook his head as if to say that I was attempting the impossible. Some of the more experienced traders admitted that we might reach the base of the range during the course of the summer, but when we unfolded our plans for extending our journey to the Tanana and even the Yukon, they smiled knowingly and told us when we could catch the last steamer in the fall, before the ice blocked Cook Inlet.

As a matter of fact, the "zone of influence" of many of the long-established Alaskan trading posts extends hardly a day's journey from the settlement, and many traders of long residence are astonishingly ignorant of the "hinterland." The Indian's knowledge is always confined to the hunting grounds of his tribe, and he is apt to regard the region beyond very much as the old cartographer represented unexplored areas, as the abode of hideous monsters. He magnifies unknown dangers, and this fact, together with his ignorance of the use of horses, makes his advice in regard to routes of little value.

The party paid small heed to the stories of dire failure and disaster which were recounted, for all but two of its members were veterans of three or four years' standing in Alaskan explorations and had made more than one successful trip in the face of similar gloomy prophecies. While some were reconnoitering to choose a route, the packers, Fred and Von, were busy breaking in such of the horses as were unused to packing: an operation which afforded great amusement to the natives, who watched it from afar and promptly took to their heels if one of the bucking brutes threatened to approach them.

Our observations finally prompted us to choose the northwesterly route, as the shortest; other conditions being about equal, or at least equally impossible to foresee. To facilitate the crossing of the large rivers which were known to lie athwart our route to the mountains, a boat was sent ahead in charge of George Eberhardt and Louis Anderson, both experienced in frontier life and, as the event proved, eminently reliable men. We decided not to use Indian guides, in spite of the advice of the Tyonok sages, both because of the Indian's ignorance of horses and for the reason that his insatiable appetite for white men's

stores makes him an undesirable addition to a party when the transportation of supplies is the difficult problem.

The adequate provisioning of a party like ours is the most important feature of the preparation. If the allowance of food is insufficient, the journey has to be curtailed, or risk of starvation encountered. On the other hand, if a greater quantity is taken than is necessary, it may hamper the transportation facilities and result in failure to the expedition. A proper variety of food is also imperative, for on this will depend the health and strength of the party. The accumulated experience of five years of Alaskan travel enabled us to judge the proportions to a nicety. Practically nothing but dried foods were chosen: the staples, flour, bacon, beans, sugar and evaporated fruit were supplemented by farinaceous foods, cheese, evaporated eggs and potatoes, condensed soups, together with tea, coffee and a few pounds of delicacies such as macaroni and jelly. Our ration provided for three pounds of food per man each day, an ample allowance if no canned goods are taken.

The provisions, sufficient to feed seven men for 105 days, were packed in fifty-pound waterproof bags. As for the rest of the equipment, everything was chosen with a view to lightness, the tents weighing only a few pounds and carbines being carried instead of rifles. Sleeping-bags were substituted for blankets because they give a maximum of warmth for a minimum of weight. The entire equipment weighed about 3,500 pounds, of which 1,000 pounds were sent by boat and the rest distributed among the twenty horses.

As all our preparations were now completed and the grass was sufficiently advanced to insure an ample supply of feed for the horses, we set out from Tyonok on June 2d.

At the outset our experience was a hard one. The horses were fresh and some of them objected seriously to the heavy burdens. Again and again they bucked their packs off and stampeded the entire herd. Our baggage was scattered to the four winds of heaven, and the pieces had to be sought for carefully in the long grass which covered the upper part of the beach; the natives, meanwhile, viewing our discomfort with delight, as if it were an exhibition prepared for their special benefit.

Beyond the town, where the route followed the beach between the water on the one side and the steep gravel bluffs on the other, the narrow space gave opportunity to control the fractious horses. (See Fig. 3.)

The pack train was not without a certain picturesqueness. First

came Fred mounted on the lead-horse, and behind him, in single file, followed the other horses, their new white pack-covers glistening in the sun. The other men were on foot scattered along at intervals, with George at the close of the procession, leading his small bay mare with the cook-stove on top of her pack. This stove was in George's eyes the most precious possession of the party, and for three months he never allowed it to be out of his sight. It finally came to grief seven hundred miles inland, when both horse and stove rolled into the river.

At the mouth of the Beluga River, 20 miles from Tyonok, the boat met the party and a day was spent in crossing. The horses were made

FIG. 3. *The route followed the beach beyond Tyonok.*

to swim over at full tide, little relishing the plunge into the cold waters; and they probably would have liked it still less had they known of the score or more of icy rivers that would be traversed during the succeeding journey. Camp was pitched on the north bank while the boat was utilized for a two-days' excursion up the Sushitna River.

Leaving the boat at an Indian town at the head of the delta, four of us made our way to Mt. Sushitna. A steep climb brought us to the summit, and the broad lowland of the Sushitna Valley lay spread before us, the dark greens of its spruce forests contrasting with the lighter greens of the open marshes and the bright gleam of small lakes or winding water courses. Beyond rose a range of highlands, and then, forming the sky-line, snow-covered Alaskan mountains. From our

vantage point the rugged crest line seemed unbroken, and had we not known that it was in fact cleft by passes, we might have despaired of finding a route through such a forbidding mountain mass.

As we gazed, a mass of clouds hanging over what appeared to be the center of the range broke and revealed two majestic peaks, Mt. McKinley and Mt. Foraker, glistening in the slanting rays of the afternoon sun. Far above the crest line they towered, enormous mountains, even at a distance of 120 miles. Four years before, while making an exploration down the Tanana with canoes, I had seen the same peaks, and at about the same distance, but from the opposite direction.

The task before us was to find a route across the swampy lowland, traverse the mountains, and following their northern front, approach from the inland slope as near the base of this culminating peak of the continent as conditions and means would permit: we must map the country and incidentally explore a route which some time could be used by that mountaineer to whom should fall the honor of first setting foot on the summit of Mt. McKinley.

At the Beluga River the course lay inland, and by good fortune an Indian trail lightened the labor of the axemen to a great extent. But it was designed for use in the fall and winter, when the ground was frozen; and its many bogs, which then only served to facilitate traveling, now caused our horses one long struggle to wallow through it with

FIG. 4. *Packing through an Alaskan meadow lowland of tall grass.*

FIG. 5. *Packing a horse, preparatory for a start. "Throwing the diamond hitch."*

their heavy burdens. Almost continuously one or more of the animals became mired, and often the entire strength of the seven members of the party was required to drag them out.

A week after leaving tidewater, we emerged from the lowlands into a belt of foot-hills covered for the most part with tall grass, interspersed with symmetrical spruces and open groves of poplar. The landscape had a park-like appearance not unlike some of the farming regions of the East. (See Fig. 4.) The many familiar wild flowers added to the delusion, and it was hard to realize that we were in one of the unexplored parts of the world, for it seemed as if every rise of ground must bring us to the sight of a farm house with its fields and orchards.

As we climbed higher we left all timber behind us except the omnipresent willow and alder thickets. The horses revelled in an abundance of grass, while the camp larder was improved by the ptarmigan which were shot along our line of march. Another glimpse of Mt. McKinley enabled Reaburn, our topographer, to determine our location accurately.

The daily routine was now well established. All hands were called at five in the morning, and while the packers drove in the horses the others took down the tents. When the horses had been saddled and breakfast had been eaten, we all took a hand in the packing. It was no easy task to lift the two-hundred-pound packs to the backs of the horses and adjust them. Nearly all of the men were now fairly expert at lashing them in place,—“throwing the diamond hitch,” as it is called. (See Fig. 5.) After two hours of hard work spent in this

operation, the march began. In a timbered region two or three axemen preceded the train, but in the open country this was not necessary. Camp was made between three and four, and after an early supper the geologist and topographer usually made an excursion to some neighboring peak or valley.

In this foot-hill region we came in contact with our first bear. Fred, while forging ahead of the party in search of a trail, came upon a she-bear and cub. The old one at once charged. Hemmed in by alder thickets, with an axe as his only weapon, he faced his assailant with what seemed, even to an old hunter like himself, hardly a fighting chance for life. Fortunately, however, the Kodiak grizzly, though arger, is not so ferocious as his Rocky Mountain brother, and Fred made his escape, though the animal approached within a few feet of him.

The good traveling came to an end all too soon, and we plunged into the thick growth of timber covering the floor of the Yentna Valley. When on June 18th we reached the banks of that river, the turbulent, silt-bearing waters, coursing through a score of channels, did not look inviting, and we had grave doubts whether a crossing could be made. It must be attempted, however, as it would save a week's time. Mounted on two of the stronger horses, from which the saddles had been stripped, Fred and I managed to ford some of the streams, though the horses barely kept their footing in the rushing waters which reached their shoulders. There still remained several of the widest channels. The unwilling animals were urged into the first of these and in a moment were swept off their feet by the muddy torrent, which for an instant engulfed both riders and horses and bore them down stream at a terrific rate. By an almost instinctive movement, we threw ourselves from the struggling brutes, seized them by their manes and swam alongside, thus at length guiding them back to the bank. We dragged ourselves out, both we and the horses shivering from our ducking in the icy waters. The plunge was but one of many similar incidents of the journey before us, but it was more significant, in that it showed the impossibility of making a crossing at this point without taking serious risks.

So perforce we headed down stream and spent weary days cutting a trail through the dense growth on the river bank; until on the fourth day a welcome rifle shot told us that we were near the rendezvous with the men and boat. With the aid of these we at last succeeded in crossing the river. As it was, the passage occupied an entire day,

and was not without its dangers to the horses, who had to be towed across behind the boat, in imminent risk of drowning in the eight-mile current, which at times carried them under water. (See Fig. 6.)

After agreeing upon a third rendezvous, the land party continued its trail-chopping and corduroy-building. This was the most disheartening part of the whole journey. The middays were sultry, and the endless chopping, harassed as we were by clouds of mosquitoes, was almost maddening. With our best efforts, we could make barely three miles a day, and though nearly a third of our provisions were consumed, we had completed hardly an eighth of our 800-mile journey. Day after day we toiled on, fighting mosquitoes, dragging horses out of mud-holes, cutting our way through dense growths of alder. Occasionally we would determine our position by compass sights from the top of some tall cottonwood, and then we would lay a new course.

FIG. 6. *Towing horses across the Yentna River. (For location, see Map, Fig. 1.)*

At last, having reason to believe ourselves near the Keechatna, we halted for a day to reconnoitre and rest the tired horses and men.

While exploring the route ahead I missed camp, which was hidden in a broad, wooded flat, and spent a part of the night in the rain, vainly attempting to snatch a few hours' sleep in spite of the myriads of mosquitoes and my supperless plight. When I finally reached camp at six the next morning, we at once got under way. A day's march brought us to the banks of the Keechatna, and a signal smoke guided us to where the boat and men awaited us. My thirty-six hours of almost continuous tramping made my small tent seem very attractive.

The Keechatna was a less turbulent stream than the Yentna, and with the aid of the boat a crossing was effected without difficulty.

We now parted with Eberhardt and Anderson, who returned to Tyonok, taking the last letters we should be able to send out. Thenceforth until we reached the Yukon, about three months later, we were to be entirely cut off from the rest of the world.

The outlook was not encouraging, for we had nearly 700 miles of practically unknown territory to traverse, and the incessant labor of toiling through the swamp, added to the continual annoyance from mosquitoes and horse-flies, was having a serious effect upon the strength of our horses. Night after night we would hear the tinkle of the bell-horse as he led the band of horses, maddened by the insects, back and forth. Though we blanketed them and built large fires as smudges, they seldom got relief for more than two or three hours of the twenty-four. It was terrible to see their suffering and be powerless to help them. They would frequently crowd into camp as if to implore us to relieve them from their misery.

The men, too, were becoming worn out by the mosquito pest, which harassed them continually during the day, though they found relief at night in the mosquito-proof tents. The soft blanket of moss, usually saturated with moisture, which nearly everywhere covers the face of the country, offers a breeding-ground for myriads of the insects. They are ever active, both day and night; on the mountain-tops far above timber as well as in the lowlands. Five years of Alaskan travel have convinced me that there is no hardship so difficult to bear as this insect pest. I have seen horses, fairly maddened by the torment, blindly charge through the forest, oblivious to the trees and branches encountered, until they wore themselves out; then, in utter hopelessness, drop their heads and patiently endure the suffering. I have seen strong men, after days and nights of almost incessant torment, when they were too weary to offer further resistance to their relentless foes, weep with vexation. No part of an Alaskan traveler's outfit is more important than his mosquito-proof headdress and gloves. The former is made to fit closely around the rim of his hat and to his shoulders, for the mosquitoes will find the smallest opening. Unfortunately, the headdress has only too often to be discarded. When pushing through the undergrowth, using a surveying instrument, sighting a rifle or chopping a trail, the traveler is at the mercy of the mosquitoes, which follow him in clouds. While every other hardship of Alaskan travel is often grossly exaggerated, it is hardly possible to do this one justice. Men capable of enduring heat and cold, hunger

and fatigue without murmuring, will become almost savage under the torture. However, the story told me by an old prospector of the days on "Fortymile," when he could wave a pint cup over his head and catch a quart of mosquitoes, did seem somewhat beyond the bounds of probability.

As we could not know but that the party might be forced to retreat along the same line as the advance, we left an emergency cache of provisions at this point: that is, we placed bags of bacon and flour in the branches of a tall spruce, out of the reach of wolves. There they will remain until they decay, for a cache is sacred to an Indian, and he will not molest it even if he be at the point of starvation.

On the 30th of June we started up the Keechatna River, taking turns as axemen in the dense growth of alder and willow which clothed the valley floor. Sometimes our trail lay perilously near the undercut river bank, and again it climbed along the valley wall to avoid precipitous cliffs. The river seemed to have a strange fascination for some of the horses, and more than once they deliberately jumped in. A cry for help one day brought me to the rear of the pack train on a run, and there was Prindle lying full length on a tree trunk which overhung the water, clinging desperately to the halter of a horse which the rushing current threatened to carry down. The loss would have been irretrievable, for his pack contained nearly all the records of the journey. A general alarm was sounded, and the united efforts of seven availed at last to rescue the animal.

On another occasion Medicine, one of our most troublesome horses, deliberately jumped into the river and became mired in a quicksand twenty feet from the bank. The horse following, known as "Grandfather," to whose pack was entrusted the folding-boat, plunged in after Medicine, as if to the rescue. Both were dragged out, but at no small danger of both horses and men being engulfed in the treacherous quicksand.

One day the steep mountain wall closed in and forced us to ford the river. This was not very wide, but its swift current tumbling over huge boulders looked anything but inviting. Climbing on top of a pack, I essayed the first attempt, but my horse lost his footing and rolled us both over in the icy waters. A second trial proving more successful, the other horses followed one by one, with the men lying flat on the tops of the packs. Odell, with characteristic recklessness, had chosen the wildest one, which bucked him off in midstream, giving us a bad scare; but he managed to gain his feet and clamber ashore.

After a week of this sort of thing, we entered the foot-hills of the

range, and the conditions improved. The horses being now thoroughly broken in, and in fact almost devoid of spirit, three men could easily manage them while the others explored the adjacent hills. Grass was plentiful, and as the mosquitoes became less annoying after the timbered region was left behind, most of the horses began to recover strength.

The jaded horses now needed a day's rest, and while they enjoyed the abundant grass, Reaburn and I climbed a neighboring mountain. We found that we were well within a rugged range whose jagged peaks arose on every hand, and whose higher valleys were filled with glacial ice. There were still no indications of the pass we sought, so we again took up our march. (See Fig. 7.)

On July 13th a convenient moose walked into camp, and a shot from Fred's carbine gave us a welcome supply of fresh meat. Poor Wild Bill, who had been playing the part of an invalid for several days, found himself under a load of a hundred pounds, much to his disgust.

Fred, Prindle and I now set out to explore the mountains ahead, each taking a different direction. When we met again in camp after a twenty-four hours' absence, it was Fred who reported discovery of the pass so essential to our further progress.

FIG. 7. *The heart of the Alaskan Range.*

FIG. 8. *Looking toward Rainy Pass, the gap which leads to the Yukon region.*

It was the middle of July when we threaded the narrow gap which led us from waters flowing into the Pacific Ocean to those tributary to Bering Sea. The fair weather we had encountered almost from the beginning now gave place to storms, naturally suggesting the name "Rainy Pass" for the newly-discovered gap. (See Fig. 8.) We were now in high spirits, for we all felt that whatever the summer might bring forth, we had at least located a route through this high mountain barrier.

With this thought to encourage us, we hastened to press on. Choosing as guide a stream which headed on the north side of the divide, we entered a beautiful mountain valley whose steep slopes, clothed in dark green spruce, ended above in abrupt cliffs. Here Fred's ever-ready carbine brought us our first mountain sheep. Farther on the valley opened up into a broader one across whose level floor a mighty river meandered with great, sweeping bends, and we recognized the Kuskokwim, the second river of Alaska in size, which poured its muddy waters into the Bering Sea a thousand miles away. Here we came upon the trail of a previous exploring expedition and hailed the half-obliterated axe-marks with a sense of companionship, several years old though they were.

While the pack train cut its way along the river bank, I climbed a peak which proved to be a part of the valley wall. From this point I could see the broad valley of the Kuskokwim stretching to the north, opening out 30 miles below to a broad lowland whose limits were lost in the distant haze. South of me rose the snowy peaks of the range we had traversed, sweeping around to the northeast in an apparently unbroken crest line, without a suggestion of Rainy Pass. Far to the southwest distant snow peaks belonging to some unknown range completed the picture.

On my way down I kept along the ridge until I caught the glimmer of white tents in the valley 5,000 feet below me, and then, noting the course by my compass, I plunged down the mountain side without further consideration. A cliff proved a temporary obstacle, then another, and finally a succession of steep slopes which were merely intervals between small cliffs. Once started it was impossible to turn back; one minute I was sliding with a mass of loose talus, another cautiously clambering down a cleft in a precipice, bracing myself against either wall to maintain my scant foothold. Once a huge boulder, which I had loosened in my descent, whizzed past and crashed into the timber a thousand feet below. It was with a deep sense of relief that I reached the timber line and registered a silent vow never to attempt anything so foolhardy again.

By the last week in July we reached the lowland which stretches northwestward from the inland front of the Alaskan Range. Our route now left the river, turning to the northwest. As we slowly cut our way through the dense timber of the lower slopes of the valley, another horse gave out; and his load was distributed among the others. Poor brute! Only six weeks before he had been tearing up the beach at Tyonok, scattering his pack to right and left to the terror of the Siwash dogs.

Coming shortly after into an open spruce forest, we were startled by the discovery of a blazed trail, which was plainly not the work of natives. No one accustomed to the frontier can ever mistake the scars of an Alaskan Indian's axe, for he has never learned to cut a clean, sharp blow. No, this chopping had been done by white men, in winter, several years before. We followed the trail for some miles until it turned off out of our course. Who were these lonely travelers of this wild region? Whence had they come and whither did they go? These are questions that may never be answered. That they belonged to that class of Alaskan prospectors who have traversed the territory from the almost tropical jungles of its southern coast to the barren grounds

which skirt the frozen sea on the north seems not unlikely. Often these pioneers make journeys that would put to shame the widely-advertised explorations of many a well-equipped government expedition. Were the results of their efforts commensurate with the toil, danger and suffering involved, geographical science would be much enriched thereby. Unfortunately their ideas of where they have been are often almost as vague as of where they are going. Many a life has been lost on these hazardous journeys, and only too often are bleaching bones the sole record of unproclaimed and unrewarded heroism. These adventurers have no high ideals, often no thought beyond the desire of finding gold; but in the last three decades they have been carrying civilization northward and converted an unknown land into a populated territory which is now yielding millions of gold.

From the forest we now entered a belt of foot-hills, which formed a northern spur of the main range, and once more obtained a clear view of Mt. McKinley, still almost as far distant as when we first saw it from Mt. Sushitna six weeks before. This was no cause for depression, however, for then we were separated from our goal by an apparently impenetrable swamp and a great, snow-covered range; whereas now there seemed no serious obstacles to our achieving our purpose.

Among these foot-hills, averaging a height of three or four thousand feet, dwelt large numbers of mountain sheep; their pure white color, which in this region remains unchanged throughout the year, making them conspicuous objects on the bare rocks or moss-covered slopes. In the course of one morning's roaming over the hills I counted more than one hundred of these mountain dwellers. In fact, the abundance of sheep, bear, moose and caribou found along the north slope of the Alaskan Range rank it as one of the finest hunting grounds in North America.

Our descent from the foot-hills brought us to a gravel-floored plateau which abutted directly upon the base of the range. Its smooth, moss-covered surface afforded such excellent footing and so few obstacles to progress that for days we hardly varied our direction a degree, heading straight for Mt. McKinley. That mountain and its twin peak, Mt. Foraker, now only fifty miles away, seemed to us to rise almost sheer from the gravel plain. We passed many large glaciers which debouched from the mountain valleys upon the plateau and discharged roaring, turbulent, boulder-filled rivers, which were our most serious impediment.

The other members of the party seemed to have no dread of thes

dangerous crossings; but for my part, I crossed every one we sighted a dozen times before we reached it. Late in the day, after the glaciers had felt the full influence of the sun's rays, the streams would often be so high as to be practically impassable, but morning would generally find the water fallen one or two feet. The large rivers were always reconnoitred on a horse stripped to the halter; then, if a crossing proved feasible, each man would mount on the back of his favorite horse and essay the perilous passage, guiding the unmanageable steed as best he could. The feat was ever exciting, with the animal plunging shoulder-high in the muddy, surging water, swaying from side to side and occasionally slipping on some hidden boulder. More than once a horse was carried off his feet, and sometimes rolled quite over. Nor was the ludicrous aspect entirely wanting, for often when the farther bank was reached the horses would make a sudden leap for it and a careless rider would be unceremoniously dumped over the animal's tail into the glacial water.

Since leaving the pass, we had subsisted largely upon moose and mountain sheep. Not a day was spent in hunting, but when the supply of meat ran low an animal was shot near camp or on the march. Not only was game plentiful, but so little did it know of man that it regarded us rather with curiosity than mistrust. During our journey across the piedmont plateau, for days and weeks together we were hardly out of sight of caribou. They had a curious way of approaching, either individually or in bands, to within fifty yards of the moving train; then galloping away to a distance and returning by a series of large circles. Sometimes a lone buck would encircle our camp for hours at a time, one minute standing erect gazing at us with rapt attention, another flying across the smooth sod at a breakneck pace, only to approach again from a different direction. Their curiosity was apparently never satisfied, their wonder ever increasing at the unfamiliar sight of the pack train or tents. Even the sharp crack of the rifle did not frighten them. There was no sport in hunting such innocently tame creatures, and we never molested them except when we needed meat.

These were the happiest days of the summer. Cheered by the thought that every day's march was bringing us visibly nearer to our goal, we lent ourselves readily to the influence of the clear, invigorating air and the inspiration of that majestic peak ever looming before us, the highest mountain of North America, which we were to be the first to explore.

Yet our task was never an easy one; for the very fact that the pack

train was enabled to cover longer distances rendered it all the harder to overtake it after the side excursions which were necessary to fulfil the purpose of the expedition, and it was often dusk of the long Arctic day before the geologists and topographer reached camp.

George alone of the party was low-spirited. His great ambition in life—to cook—had too narrow a scope in this land above the limit of spruce trees, where there were only stunted willow and alder for fuel. His spirits registered inversely to the barometer, rising as we went down toward timber, falling as we climbed above it. Two long journeys in the barren grounds of the north had not freed him from the traditions of the Lake Superior woodsman, and he could never

FIG. 9. *Our camp in the cottonwoods.*

regard anything as fuel that did not require splitting with an axe. Notwithstanding, he cooked wonderful meals, as the following menu copied from my diary will show:

	Pea Soup
	Mountain Sheep à la George
	Rice Potatoes
Mince Pie	Stewed Apricots
	Johnny Cake
Tea	Cocoa

—a meal that no city cook need be ashamed of, yet it was prepared in one of the most inaccessible points on the continent, with only green willow as fuel. George was ever faithful to his task, ready at any time of night or day with a hot meal for those who returned late.

Our camp of August 1st was pitched in a grove of cottonwoods (see Fig. 9), near the foot of a glacier which flowed down from the névé fields of Mt. Foraker. This we called the Herron Glacier, in honor of Captain Joseph S. Herron, our predecessor in the exploration of the upper Kuskokwim basin. A short scramble through the underbrush brought me to the front of the moraine, which stretched like a cyclopean wall across the valley. Climbing to the top, I surveyed the mass spread out before me, very like the preliminary dumping-ground of a railway excavation. It was a striking scene, and an unusual one; for a newly-formed moraine is the exception in land forms. Nature in her sculpturing delights in rounded and symmetrical outlines, and it is only when the forces of erosion have not had time to do their molding that such a crude, unfinished surface is exposed to view. It is, so to speak, the raw material which streams and rains will carve into beautifully rounded topography and then vegetation, Nature's decorative artist, will clothe with greens of various hues.

Two days later we made our nearest camp to Mt. McKinley, in a broad, shallow valley incised in the piedmont plateau and drained by a stream which found its source in the ice-clad slopes of the high mountain. We had reached the base of the peak, and a part of our mission was accomplished, with a margin of six weeks left for its completion. This bade us make haste, for we must still traverse some four hundred miles of unexplored region before we could hope to reach even the outposts of civilization. Notwithstanding all of this, we decided to allow ourselves one day's delay so that we might actually set foot on the slopes of the mountain. The ascent of Mt. McKinley had never been part of our plan, for our mission was exploration and surveying, not mountaineering; but it now seemed very hard to us that we had neither time nor equipment to attempt the mastery of this highest peak of the continent.

The next morning dawned clear and bright. Climbing the bluff above our camp, I overlooked the upper part of the valley, spread before me like a broad amphitheatre, its sides formed by the slopes of the mountain and its spurs. Here and there glistened in the sun the white surfaces of glaciers which found their way down from the peaks above. The great mountain rose 17,000 feet above our camp, apparently almost sheer from the flat valley floor. (See Fig. 10.) Its

FIG. 10. Mount McKinley as seen through the clouds. The camp is in the left center.

dome-shaped summit and upper slopes were white with snow, relieved here and there by black areas which marked cliffs too steep for the snow to lie upon.

A two hours' walk across the valley, through several deep glacial streams, brought me to the very base of the mountain. As I approached the top was soon lost to view; the slopes were steep and I had to scramble as best I could. (See Fig. 11, frontispiece.) Soon all vegetation was left behind me, and my way zigzagged across smooth, bare rocks and talus slopes of broken fragments. My objective point was a shoulder of the mountain about 10,000 feet high, but at three in the afternoon I found my route blocked by a smooth expanse of ice. With the aid of my geologic pick I managed to cut steps in the slippery surface, and thus climbed a hundred feet higher; then the angle of slope became steeper, and as the ridge on which the glacier lay fell off at the sides in sheer cliffs, a slip would have been fatal. (See Fig. 12.) Convinced at length that it would be utterly foolhardy, alone as I was, to attempt to reach the shoulder for which I was headed, at 7,500 feet I turned and cautiously retraced my steps, finding the descent to bare ground more perilous than the ascent.

I had now consumed all the time that could be spared to explore this mountain which had been reached at the expense of so much preparation and hard toil; but at least I must leave a record to mark our highest point. On a prominent cliff near the base of the glacier, which had turned me back, I built a cairn in which I buried a cartridge-shell from my pistol, containing a brief account of the journey together with a roster of the party.

By this time I was forcibly reminded of the fact that I had forgotten to eat my lunch. As I sat resting from my labors, I surveyed a striking scene. Around me were bare rock, ice and snow; not a sign of life,—the silence broken now and then by the roar of an avalanche loosened by the midday sun, tumbling like a waterfall over some cliff to find a resting-place thousands of feet below. I gazed along the precipitous slopes of the mountain and tried to realize again its great altitude, with a thrill of satisfaction at being the first man to approach the summit, which was only nine miles from where I smoked my pipe. No white man had ever before reached the base, and I was far beyond, where the moccasined foot of the roving Indian had never trod. The Alaskan native seldom goes beyond the limit of smooth walking and has a superstitious horror of even approaching glacial ice.

Returning to camp, I found Reaburn had worked all day over his plane-table board sketching the topography of the mountain, which

FIG. 12. *The slopes of Mount McKinley.*

was plainly visible from his station. His map will undoubtedly serve as a guide to him who first reaches the summit. Prindle had spent the day making an excursion into the mountains to the south of my route, and had come back burdened with geological and botanical specimens. Von and Fred had been shoeing some of the horses, while George had cooked a meal worthy of the occasion.

Our immediate goal was the Tanana River. Hoping to reach this by the valley of one of its tributaries, the Cantwell, which we believed to head in the northern part of the Alaskan Range, we continued our course northeastward along the front of the range. The character of the country remained unchanged for a hundred miles, and we pushed forward as rapidly as our surveys and investigations would permit; the long moves of the party often making it difficult for Reaburn and me to reach camp before dark. More than once we were forced to make a lonely bivouac under some spruce tree until the return of daylight enabled us to find camp. These irregularities annoyed George, who liked to see each man get a full meal three times a day. He regarded it as a kind of bad habit which we had fallen into, and, when Reaburn was gone from camp for two nights in succession, remarked, "When a man once takes to the spruce you can't do nothing with him."

On one occasion, after an all-day tramp, I sighted camp from a mountain-top six miles away, its location marked by a cloud of smoke, our usual method of signalling. Crossing valleys, ridges and lowlands, from every high point I could see the column of smoke. Darkness finally overtook me two miles from camp, but I held my course by sighting a star, and thus made my way, breaking a passage through the thick maze of alder, stumbling over fallen logs, wading streams and even plunging through a river whose opposite bank I could discern only in dim outline. Suddenly from the top of a ridge I saw a pillar of fire shoot toward the sky. The boys had heard my pistol-shot and were putting fire into spruce trees. Thus guided by the cloud of smoke during the day and the pillar of fire by night, I finally stumbled into camp, weary, with clothing torn and face and hands scratched by the underbrush encountered in the darkness.

About the middle of August we turned to the south again into the mountains, and shortly reached the forks of the Cantwell, where two former exploring expeditions had been forced to turn back. (See Fig. 13.) On the following day we made what proved to be our last difficult crossing. When I saw the waters surging around the shoulders of the big horse on which I led the way, I had serious fears for the

smaller animals. All crossed in safety, except that Von, who had chosen a wild mount, was tossed off in shallow water, much to his disgust and the amusement of the others.

On its way to the Tanana the Cantwell cuts a deep canyon through a minor range which lies athwart its course. Finding this canyon apparently impassable for horses, we began to fear that we had encountered a check; fortunately, however, a short search was rewarded

FIG. 13. *At the head of the Cantwell River.*

by the discovery of a pass. The numerous old camps and caches showed us that this route had long been in use by the Indians, but we were the first to essay it with horses.

We came out upon the northern side of the range into the narrow valley of a stream; and from the ridge above I obtained a view over the broad lowland beyond. Far across the expanse of spruce timber and open swamp I could see the bright ribbon of water which revealed the position of the Tanana. Meanwhile, the pack train had continued down the valley below me into a rock-walled canyon, through which the stream tumbled over huge boulders. From my point of vantage I could see through the glasses the horses climbing up the valley slopes one by one, like flies crawling up a wall. It seemed impossible that

they could extricate themselves, but twenty years of mountaineering in Montana had taught Fred to take horses where no other man could. That night we camped on the Tanana side of the range, and our mountain climbing was over.

Two days later the signals made to bring me to camp did not have that result, for I was miles away seeking shelter from the driving rain under a spruce tree. The rifle shots did, however, attract a band of Indians and a white prospector. The former were out on a hunting trip from their village on the Tanana. The white man, traveling

FIG. 14. *Turitella on the Tanana.*

alone, except for two large dogs, which he had burdened with packs, was on one of those wild goose chases after gold which are so common in Alaska. We hailed these visitors with joy, for since leaving tide-water three months before we had seen no human beings, and only once had we indication of their existence, by a smoke sighted miles away across the flats of the upper Kuskokwim.

The Indians were hungry, as is usually the case with Alaskan natives, and had to be regaled. They rewarded our hospitality by information of a trail across the swampy lowland to their village on the Tanana. This was of material assistance to us, for by its aid we were enabled to cover the ground rapidly, and three days later emerged from the spruce-clothed flats on the banks of the Tanana, at the native settlement called Turitella. (See Fig. 14.)

I reached the village some distance ahead of the party. Great was the astonishment of the natives at my sudden appearance from the forest. White men had visited them before, but always by water, in large parties and with abundant supplies. Who was the lone stranger

whose baggage consisted solely of his revolver, field glasses and hammer, and where did he come from? One boy knew some English, and, drawing a map in the sand by way of illustration, I explained my route, greatly to their bewilderment. One old man had made the trip to Cook Inlet years ago, but he had gone by the direct route from the head of the Cantwell, and they knew nothing of the roundabout route we had followed.

The village consisted of a score of low structures built of spruce logs, each containing two or more families. The fire was built in the center, and a hole in the roof served in lieu of a chimney. At night the occupants lay on either side of the fire with their feet toward it, warmly covered with caribou skins. Their clothing consisted chiefly of articles procured from the trading post on the Yukon a hundred miles away, imparting an aspect that was ludicrous rather than picturesque. The old chief gravely stalked around peering out from under the visor of a policeman's helmet, which was so large for him that it rested on his ears.

When the horses arrived their delight and somewhat childish terror were laughable. Losing no time, we bargained with the Indians for a boat and began the crossing. After one horse had been towed over, the rest were driven in and swam across to join their mate. Thus, by nightfall we were camped on the north bank.

It was now the first of September and we were still a hundred miles or more from our goal on the Yukon. The Indians implored us not to attempt to make the journey by land, declaring the country impassable for horses. As my interpreter stated the case, "Plenty water. Plenty stick (thick timber). No good! No good!" But we were not to be deterred from completing the exploration we had planned, though we could have shot the horses and easily reached the Yukon by boat. The next morning a delegation of our friends visited our camp to give us a final warning: "No good! No good! By and by come back. May-be-so."

Here we abandoned all except the most necessary part of our outfit, for the early frost was killing the grass and the stock was beginning to show the effects of insufficient nourishment. The light packs were quickly adjusted, and without cutting a trail, to the astonishment of the Indians we let the horses crash their way through the underbrush. For two days we followed a ridge leading to the north along the eastern edge of a broad, timbered flat dotted with innumerable lakes and crossed by many sluggish water courses. This it was that the Indians had said was impassable. Finding that the route around

it threatened to protract our journey a hundred miles or more, we boldly headed straight across it.

It was a route beset with difficulties: now we were chopping our way through a dense tangle of small growth; now building corduroy over swamps and streams; now rafting rivers too wide to bridge. All worked with energy born of the consciousness that our provisions were getting low and it was only a matter of days before our horses would begin to play out. In one week we succeeded in rafting five rivers and built bridges over six more. More than once our temporary bridge gave way and then we had the heart-rending toil of dragging the poor weak animals up on the bank. The traveling was not all of this character, for occasionally there would be a stretch of several miles where we would thread our way through open forests of white birches. The glistening white trunks and yellow autumnal foliage presented a gaiety of color which was in strong contrast to the sombre spruce forest we had been traversing for so many miles. The small lakes were covered with wild fowl congregating for their southward migration.

We finally left the lowland and entered an upland region, where we kept for the most part above timber. The poor horses, even under the lightened loads, began to fail. Overtaking the pack train one day, I found Prindle and George laboring with Rabbit, who refused to take another step. Both were very fond of the little mare—always a pet with the party—and wanted to save her life. We worked with her a while, but it was no use—her heart was broken; and drawing my revolver, I sent a bullet through the brain of the poor beast who had served us so well. After this a horse was shot nearly every day.

Leaving the party one morning, I took a long side trip, expecting to pick up their trail and follow it into camp that night; but they had misunderstood my directions, and at midnight I again sought shelter from the rain under a large spruce. I roasted a ptarmigan, which I had shot, and this together with a few hard-tack constituted my supper and breakfast. The next day I was forced to go back to the old camp to pick up the trail. A dead horse marked the spot; and a search through his pack revealing a bag of rice, I cooked a meal of this with the aid of an abandoned butter-can, and started on the trail. On the mountain side lay another dead horse with some bacon left in his pack, which I took for an emergency. Nightfall found me not yet in camp, and this time I dined and breakfasted on bacon and another ptarmigan which had fallen to my revolver. Late in the afternoon I reached camp, after an absence of two nights and nearly three days, to find Reaburn very anxious and scouts out in various

directions. This camp was on a trail which led from the then newly-discovered gold diggings known as Glenn Creek to Rampart on the Yukon.

The next morning we packed for the last time, abandoning most of the outfit and feeding the last of our flour to the horses to strengthen them for the final march. I took a route across the hills and at nightfall joined the party camped in the town of Rampart. Many were the questions asked us, but few of the questioners, I think, really believed that we had made the journey from Cook Inlet.

Thus ended the longest cross-country exploration ever attempted in Alaska. Our plans had been carried out from start to finish: we had traversed 800 miles of the roughest part of Alaska in 105 days. While cooking our breakfast next morning, a river steamer whistled, the last to make the journey down the Yukon before it was locked in the winter ice. Leaving our breakfast cooking on the fire, we hastily gathered up our more precious belongings, chiefly notes and specimens, and scrambled on board; the boat swung out in midstream, and with a farewell salute to the crowd of Indians and prospectors on the bank we rapidly steamed away, once more headed for civilization and home.

THE PRACTICE SCHOOL COURSE IN GEOGRAPHY IN THE NORMAL SCHOOL, CHARLESTON, ILLINOIS

BY GEORGE D. HUBBARD

(Continued from the *Journal of Geography*, Vol. II, October, page 393.)

NORTH AMERICA.

General.

1. Position, shape, and size.

Latitude, longitude, not closer than degrees.

Direction from other continents and oceans.

Distance from other continents.

General shape, approximate area with islands.

Position with reference to heat belts and wind belts.

Position with reference to the sunshine zones.

Compare with the other continents on these points.

Position with reference to ocean currents.

Gulf stream drift; Kuroshio; Labrador current.