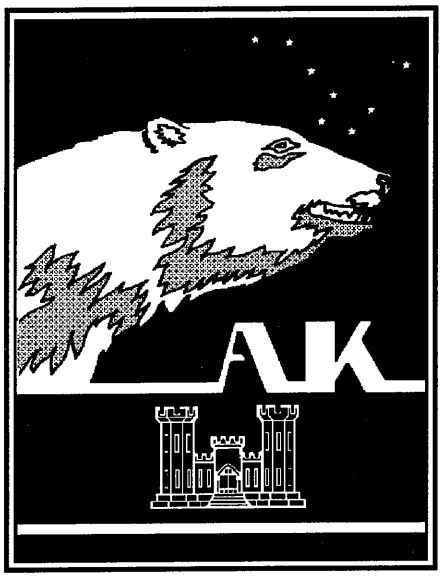


SECTION I

THE EARLY YEARS
1867–1945

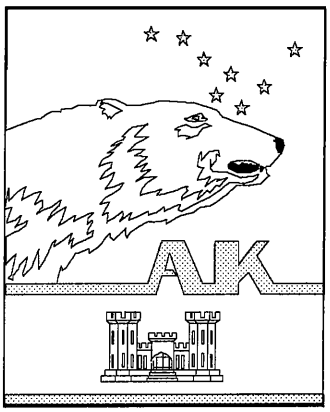
THE DIFFERENT "COUNTRIES" OF ALASKA

In Alaska, the Army Engineers encountered a vast and unfamiliar territory. This is the story of how they responded to the diverse environments of the Far North.

So varied were the geographical areas of Alaska that Hudson Stuck dubbed them "different countries." In 1929, he offered the following observations:

There is no man living who knows the whole of Alaska or who has any right to speak about the whole of Alaska. ... So, when a man from Nome speaks of Alaska he means his part of Alaska, the Seward Peninsula. When a man from Valdez or Cordova speaks of Alaska he means the Prince William Sound country. When a man from Juneau speaks of Alaska he means the southeastern coast. Alaska is not one country but many, with different climates, different resources, different problems, different populations, different interests; and what is true of one part of it is often grotesquely untrue of other parts. This is the reason why so many contradictory things have been written about the country. Not only do these various parts of Alaska differ radically from one another, but they are separated from one another by almost insuperable natural obstacles, so that they are in reality different countries.

... Hudson Stuck, *Ten Thousand Miles With a Dog Sled: A Narrative of Winter Travel in Interior Alaska* (New York: Charles Scribner's Sons, 1929), pp. ix-x.



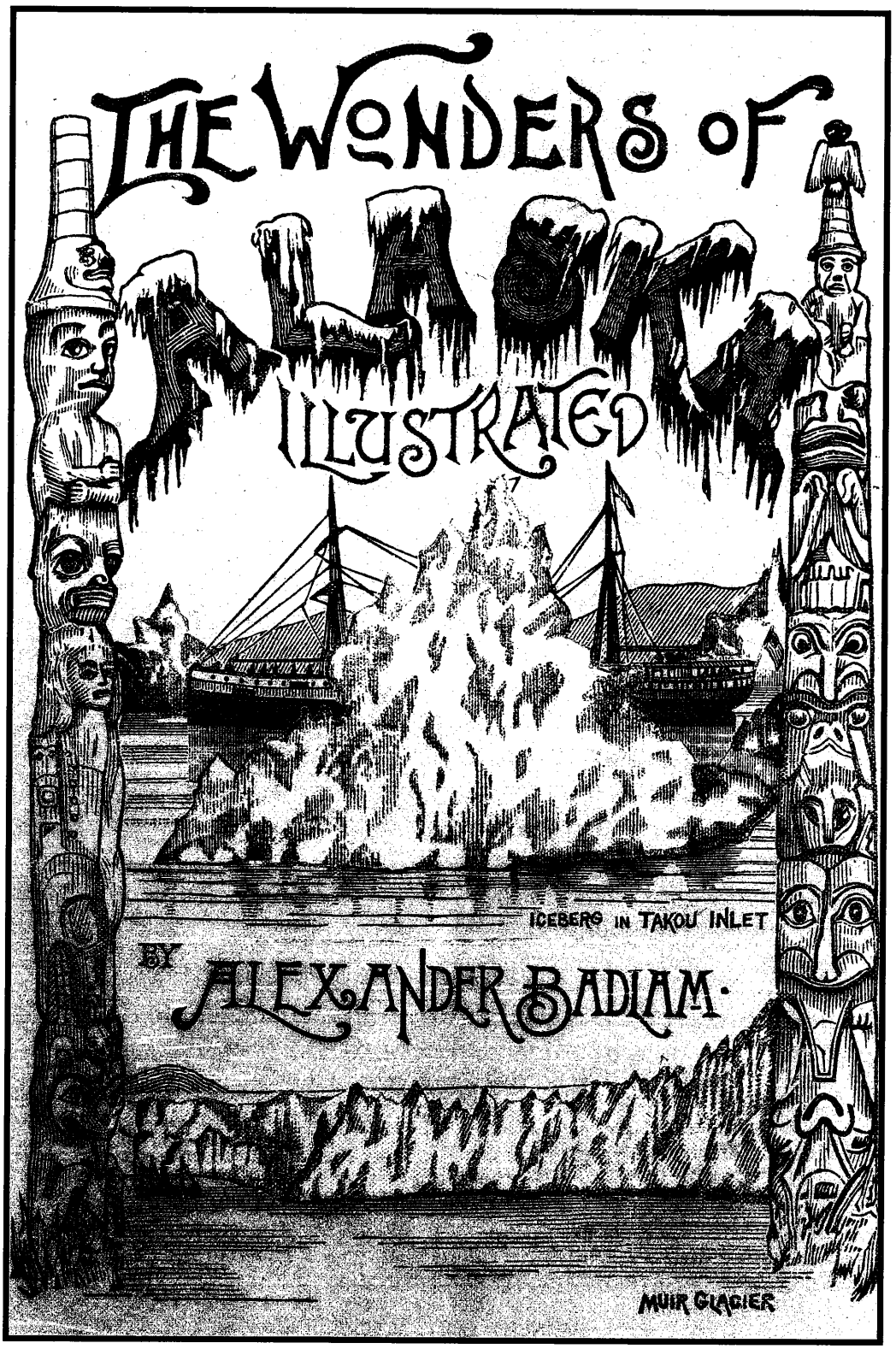
I. PROLOGUE

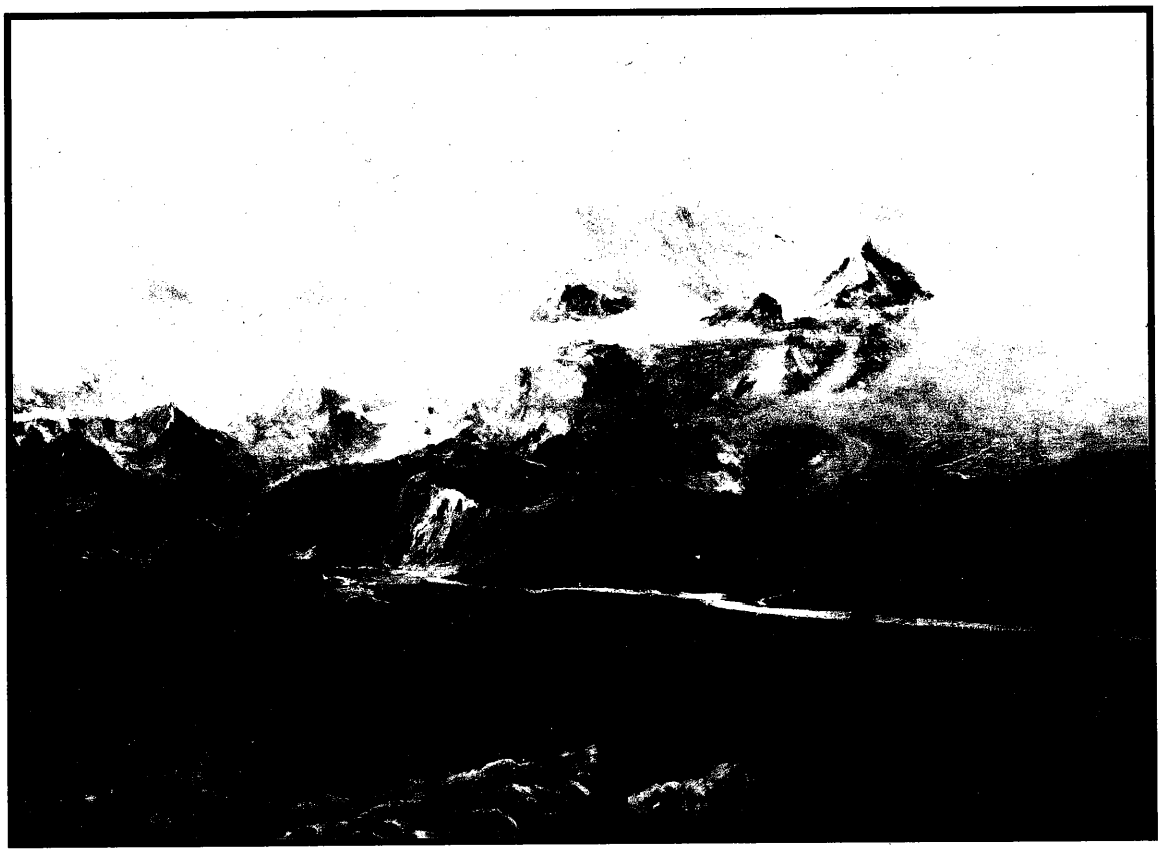
THE GEOGRAPHY OF ALASKA

When the United States purchased Alaska from the Russians in 1867, few Americans regarded the Far North with interest. Many Americans in fact perceived Alaska as a frozen wasteland and its purchase an extravagance. By the late 19th century, the Far North had become known as a storehouse of natural resources, including mineral and oil deposits and a wealth of fish and fur-bearing animals. At that time, its spectacular scenery also began attracting visitors. The naturalist John Muir, for example, traveled to Alaska several times during the late 19th century. "To the lover of pure wildness," he informed his readers, "Alaska is one of the most wonderful countries in the world." Aboard a boat in southeastern Alaska, he observed, "we seemed to float in a true fairyland, each succeeding view seeming more and more beautiful," while "the one we chanced to have before us" appeared "the most surprisingly beautiful of all."[1]

Some visitors found Alaska's scenery to be terrifying, inhospitable, and almost overwhelming. The leader of an expedition to climb Mount St. Elias, for example, was surprised by the landscape of the Far North:

> I expected to see a comparatively low, forested country, stretching away to the north, with lakes and rivers and perhaps some signs of human habitation. What met my astonished gaze was a vast snow-covered region, limitless in expanse, through which hundreds, perhaps thousands, of bare, angular mountain peaks projected. There was not a stream, not a lake, and not a vestige of vegetation of any kind in sight. A more desolate or utterly lifeless land one never beheld. Vast, smooth snow surfaces without crevasses stretched away to limitless distances, broken only by jagged and angular mountain peaks.[2]


THE WONDERS OF
ALASKA
ILLUSTRATED
ICEBERG IN TAKOU INLET
BY
ALEXANDER BADLAM.
MUIR GLACIER

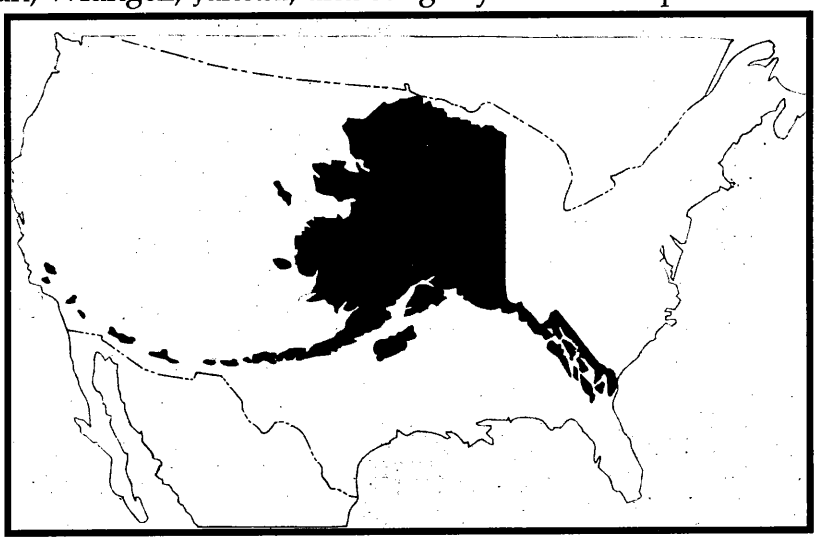


Sydney Laurence's romantic paintings of Mt. McKinley promoted Alaska scenery during the late 19th and early 20th centuries.

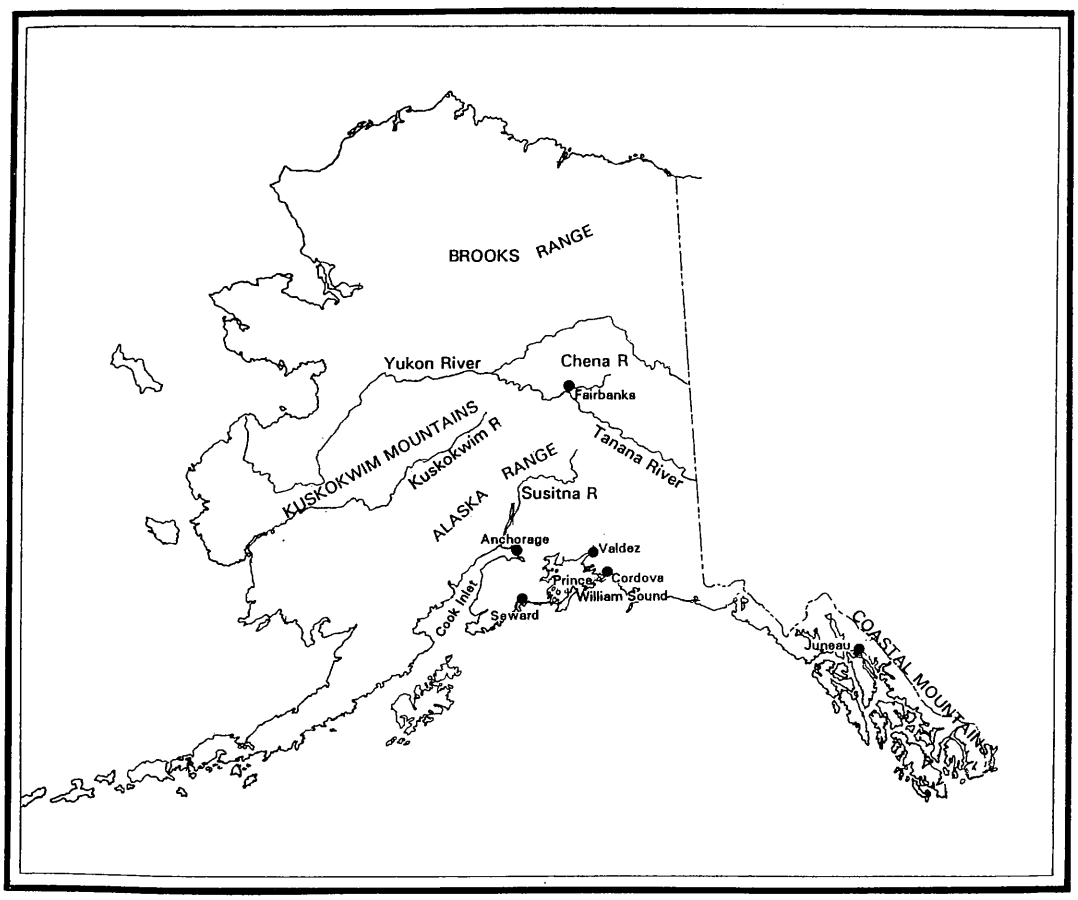
Throughout the 20th century, Alaska represented the nation's "Last Frontier," evoking images of an isolated, pristine wilderness. In 1977, writer John McPhee observed that "the myth of Alaska" includes "a fish on every cast" and "a moose behind every tree." He also described the state as "a place so vast and unpeopled that if anyone could figure out how to steal Italy, Alaska would be a place to hide it."[3]

Many Americans have distinguished Alaska from other frontiers. "In Alaska," one historian explained in 1936, "everything has always been so different. Not only does this land of natural wonders differ from other lands, but its people have always differed from other people."[4] The history of the U.S. Army Corps of Engineers in the Far North is the story of accommodation and adaptation to an imposing natural environment not encountered in other American frontiers.

Alaska is a land of superlatives. Within its vast expanse are the highest mountains in North America, many of the world's glacier fields, and the nation's longest coastline. As the largest state in the country, Alaska encompasses 586,400 square miles, approximately one-fifth the size of the Lower 48.[5] Its geography is considerably varied. The southeastern corner of the state is a maritime region, known as the "panhandle." This narrow, rugged strip of coastland extends 325 miles from Ketchikan to Skagway, along the western edge of British Columbia. Because high mountains separate the panhandle from the interior, the area's residents depend on water and air transportation. The islands create a sheltered waterway, known as the "Inside Passage," for travel between Seattle and the Alaska ports of Ketchikan, Wrangell, Juneau, and Skagway. While the panhandle receives between 150 and 200 inches of rainfall annually, the temperatures remain comparatively mild. The area is characterized by deep inlets, bays, and fjords, and small fishing and lumbering villages are scattered throughout the islands.[6]



South Central Alaska lies west of the panhandle, forming an 800-mile arc. The principal Alaska ports of Valdez, Whittier, Seward, and Anchorage are located on the Gulf of Alaska at Prince William Sound, Resurrection Bay, and Cook Inlet. With the exception of the Port of Anchorage, which is closed by ice for part of the year, these ports supply interior Alaska the year round. The winter temperatures in South Central Alaska are colder than those in the panhandle, and severe storms frequent the area. Anchorage, located inland at the head of Cook Inlet, does not receive as much precipitation as the other Gulf ports, but the winter temperatures at Anchorage are considerably colder than the temperatures at Whittier and Seward.[7]



State of Alaska.

In contrast to the panhandle and South Central Alaska, the west coast of the state has few islands, and its harbors are shallow. No jagged mountains rise at the water's edge to prevent the persistent Bering Sea wind from blowing across the coast's hinterland, a muskeg-covered lowland marked by lakes, ponds, and meandering streams. From October to May, ice blocks the harbors along Alaska's western coast. The northern coastline faces the Arctic Ocean, which remains frozen most of the year. Between the Arctic Coast and the Brooks Range to the south lies the great sloping, windblown Arctic Plain, where the permafrost penetrates to 2000 feet. Unexplored by Europeans or Americans until World War II, the region remains sparsely inhabited, and has become a significant source of petroleum.[8]

Stretching more than 800 miles west from Cold Bay at the tip of the Alaska Peninsula, the Aleutian Islands form another unique geographic area. Extending nearly 1,000 miles to the west of Anchorage, this area is among the most remote in the United States. Blasted by violent storms, these islands are also characterized by abundant rainfall as well as thick fog and mist, which can obscure the land for days at a time. In the mountainous areas, sudden, fierce, shifting windstorms, known as "williwaws," strike like tornados. Although no large trees grow on the Aleutian Islands, low flowers, bushes and grass form a thick mat over much of the land.[9]

The mountain ranges of Alaska intensify the area's isolation. The coastal range in the southeast creates a formidable barrier between the coast and the interior. The Alaska Range, containing half of the world's glaciers, separates the Gulf Coast from the interior and partially shields the shoreline from the severity of the arctic air masses. The Alaska Range also creates a barrier to transportation between the coast and the interior. To the north, the Brooks Range separates interior Alaska from the arctic North Slope, an extensive plain swept by constant wind. The Brooks Range protects central Alaska from some of the wind and extreme cold that flows from the Arctic.

Alaska is also a land of vast rivers. The Yukon and the Kuskokwim, for example, meander through the forests and tundra of central Alaska. The Yukon, which drains the mountains of northern British Columbia and Yukon Territory, provided the main route into the interior before the Alaska Railroad was completed in 1923. It is navigable — albeit with difficulty — throughout its course in Alaska. The Tanana River, one of the Yukon's principal tributaries, is also navigable.[10] From its sources in the Alaska Range, the Kuskokwim River flows across the muskeg-covered lowland of western Alaska, to Kuskokwim Bay on the Bering Sea. It is navigable as far as McGrath from May to October. This area includes thousands of lakes and ponds. No mountain barrier protects the area from the bitter wind and winter storms off the Bering Sea.

Throughout much of Alaska, climatic conditions produce tundra, muskeg, and permafrost, all significant impediments to those charged with the construction of buildings and transportation infrastructure.[11] The tundra consists of treeless plains covered by a dense growth of mosses and lichens over a permanently frozen subsoil. When the surface thaws, water is unable to penetrate the frozen soil below, creating a soft, waterlogged, and unstable surface. Muskeg is a heavy, spongy moss, sometimes fifteen to twenty feet deep, found in bogs

throughout southern Alaska. When the surface of the muskeg is broken, the spongy matter cannot support heavy weight, and is therefore useless as a foundation for buildings, roads, and airfields. Crews must strip away the muskeg from construction areas and replace it with a gravel or sand foundation.[12] Permafrost, permanently frozen soil, extends across the northern third of Alaska and, with the exception of the panhandle, is found in patches throughout the remaining two-thirds of the state. It maintains a temperature of 0 degrees C (32 degrees F) or lower for two years or more, is as hard as concrete, and is frequently interspersed with ice lenses, or deposits of pure ice. If it remains frozen, permafrost forms a strong and stable foundation for construction. However, when permafrost thaws as a result of heat from construction or the removal of the surface cover, it becomes unstable and will not support a foundation.[13]

Alaska's extremely cold and unpredictable weather further hinders construction efforts, creating hazardous and difficult working conditions. The greatest extremes of temperature occur in the interior, where in winter it may drop to -80 degrees F, while in summer it may climb to 90 degrees F. On the western coast, the wind-chill factor produces the equivalent of -100 degrees F. In addition to hazards to personnel, such extreme temperatures increase the difficulty of transporting equipment and protecting machinery from rapid and excessive wear.

In this vast and formidable territory, the Corps was charged first with exploration and development of transportation systems. Later, as Alaska's proximity to both Japan and the Soviet Union became increasingly significant, the engineers constructed military facilities. Owing to its remote location, rugged terrain, and fierce climate, the Far North presented unique challenges to the Corps. Much of the engineers' work in this region reflected the development of innovative responses to these distinctive conditions.

EUROPEAN EXPLORATION OF THE FAR NORTH

When Europeans began exploring the Pacific Northwest Coast, few areas of the world seemed more remote. They knew very little about the region when the Russians launched initial expeditions to the extreme northwestern reaches of the continent in the early 18th century. At that time, Europeans speculated that Asia and North America might be joined at some point in the Far North. Eager to learn more, Catherine I, Empress of Russia, dispatched Captain Vitus Bering to explore the area that is now Alaska. Although Bering and his party died in the

Far North in the early 1740s, he claimed the territory for Russia. Sailing in uncharted waters that would one day bear his name, Bering demonstrated the feasibility of traveling from Asia to North America by water.[14]

As they continued to explore their new territory on the North Pacific Coast, the Russians established a profitable maritime fur trade. Throughout the late 18th and early 19th centuries, they hunted seals and developed the fisheries of the Far North, establishing an economy based on the extraction of natural resources. The Russians founded settlements at Kodiak Island, New Archangel (Sitka), and other coastal sites as far south as California. They also built a trading post at St. Michael, near the mouth of the Yukon River from which they traded with native villagers.

By the late 18th century, Russian fur trading, fishing, and whaling had attracted the attention of other nations, primarily Great Britain and the United States. As rival explorers moved up the Pacific Coast, they charted the shoreline of the vast territory of Alaska. However, only a few explorers, trappers, and traders ventured inland and, until the 1840s, the interior remained a mystery to the outside world. The Hudson's Bay Company, an English enterprise, sent the first non-native explorers into Alaska's deep interior. In the late 1840s, traders from New Caledonia (British Columbia) established a post, which they called Fort Yukon, at the junction of the Porcupine and Yukon rivers. From there, Hudson's Bay Company trappers and traders hunted and explored the area west of Fort Yukon. Eighteen years later, the Western Union Telegraph Company sent an expedition under Charles S. Bulkley to locate a route between Fort Yukon and the Seward Peninsula for a line that would connect the United States with St. Petersburg, Russia. Although Western Union abandoned the project, Bulkley's survey reports provided a glimpse of the resources, geography, and climatic conditions of the Yukon Basin.[15]

By the mid-19th century, Europeans and Americans had learned that the Far North was a sparsely populated region with immense open spaces, massive mountain ranges, and fierce weather. Whalers and fishermen who hunted the Bering Sea and the Gulf of Alaska had revealed the rich marine resources of the coastal areas, and the trappers and traders who had ventured inland returned not only with furs but also with tales of gold and of coal. Beyond this cursory information, Americans knew very little of the area when they purchased it from the Russians in 1867.

The ceremony was brief, the audience was small, and the location remote from the seats of political power. Exchanging a few solemn words, Captain Alexis Pestchouroff transferred dominion over Alaska to Brigadier General Lovell H. Rousseau, chosen by the President to receive the territory from the Russian official. As their flag raised over New Archangel on October 18, 1867, the Americans took possession of the vast, largely uncharted territory. Initiated by Secretary of State William Henry Seward, the purchase of Alaska added an abundance of timber, minerals, furs, and fish to the nation's natural resources.[16]

The price, $7.2 million, seems a bargain today. In 1867, however, it appeared exorbitant to many Americans, who believed that the resources of the Far North remained inaccessible. Skeptical newspaper editors criticized the Alaska purchase, dubbing it "Seward's Folly" and "Seward's Icebox." Horace Greeley, editor of the New York *Daily Tribune*, became a leading opponent in the press. "We may make a treaty with Russia," he sneered, "but we cannot make a treaty with the North Wind or the Snow King." In Greeley's estimation, "ninety-nine hundredths of Russian America" was "absolutely useless." The American public reacted with indifference to the acquisition. For all the potential value of its resources, Alaska appeared too remote and too inhospitable to spark much interest.[17]

In promoting the Alaska purchase to a reluctant Congress, Seward appealed to the concept of manifest destiny, claiming that the United States had a providential responsibility to expand the nation's borders and to extend the benefits of its institutions to other territories. Manifest destiny had become closely associated with the expansionism of the 1840s — a period that included the War with Mexico and the Great Migration to Oregon. This rhetoric, along with the Tsar's desire to be rid of the territory, his support of the Union during the Civil War, and the price, convinced an otherwise skeptical Congress.[18]

Once the American flag had been raised over Sitka, General Jefferson C. Davis assumed overall command of the newly created military district of Alaska. By 1869, approximately 500 soldiers were stationed there, primarily at outposts located at Sitka and Wrangell. The authority of these forces was based on questionable constitutional legitimacy, however, and they consequently exercised only nominal control.[19]

In July of 1868, rather than respond to President Andrew Johnson's suggestion to create a civil government in Alaska, Congress had made Alaska a

customs district of the United States. This meant that one sole customs official with an office in Sitka had jurisdiction to attempt to control the importation of liquors and to prohibit the use of firearms. One commentator has attributed the federal government's lack of attention toward Alaska to its more pressing need to recover from the Civil War during Reconstruction.[20] Another has noted that without the legal jurisdiction of a regular police force, the Army troops could not maintain law and order under frontier conditions. By 1875, the military began withdrawing from Alaska. Two years later, in 1877, the last remaining troops were transferred back to the States to help quell the Nez Perce Indian uprising.[21]

Jurisdiction over Alaskan affairs then passed to the Treasury Department and to the Revenue Cutter Service. But when Sitka residents feared a growing conflict with local Natives, they initially sought help from authorities in British Columbia. The British ship, *Osprey*, arrived in Sitka to protect its residents until the U.S.S. *Jamestown* proceeded to the area to maintain peace. This event inaugurated five years of naval rule of the district.[22]

Legal problems persisted under naval control. Residents of Alaska still could not obtain legal title to land; children could not inherit estates; crimes were punished only when naval officers exerted their authority. This system of nebulous control continued in operation until 1884, when Congress passed Alaska's first Organic Act.[23]

The legislation created a judicial district in Alaska but did not provide for an elected legislature nor did it allow Alaskans to choose a delegate to Congress. Instead, the law determined that the President would appoint a governor, and created a district court with judge and clerk, district attorney, marshall and four commissioners. The law further stipulated that the laws of Oregon — to the extent that they were applicable — would pertain to Alaska. Shortcomings of the legislation included too few officials, difficulties obtaining competent juries, and problems applying the laws of Oregon to Alaska, which remained fundamentally undeveloped and lacked any county organization.[24]

The discovery of gold riveted the nation's attention on Alaska and eventually prompted Congress to recognize that Alaskans needed a more effective civil government. Prospectors near Juneau had made their first major gold strike in 1880, after which they quickly extended their explorations throughout the panhandle and the interior for traces of the precious metal. Their efforts proved fruitful. In 1886, gold seekers located a rich placer field on a tributary of 40-Mile River near the Alaska-Canada border. A gold strike at Birch Creek near the Arctic

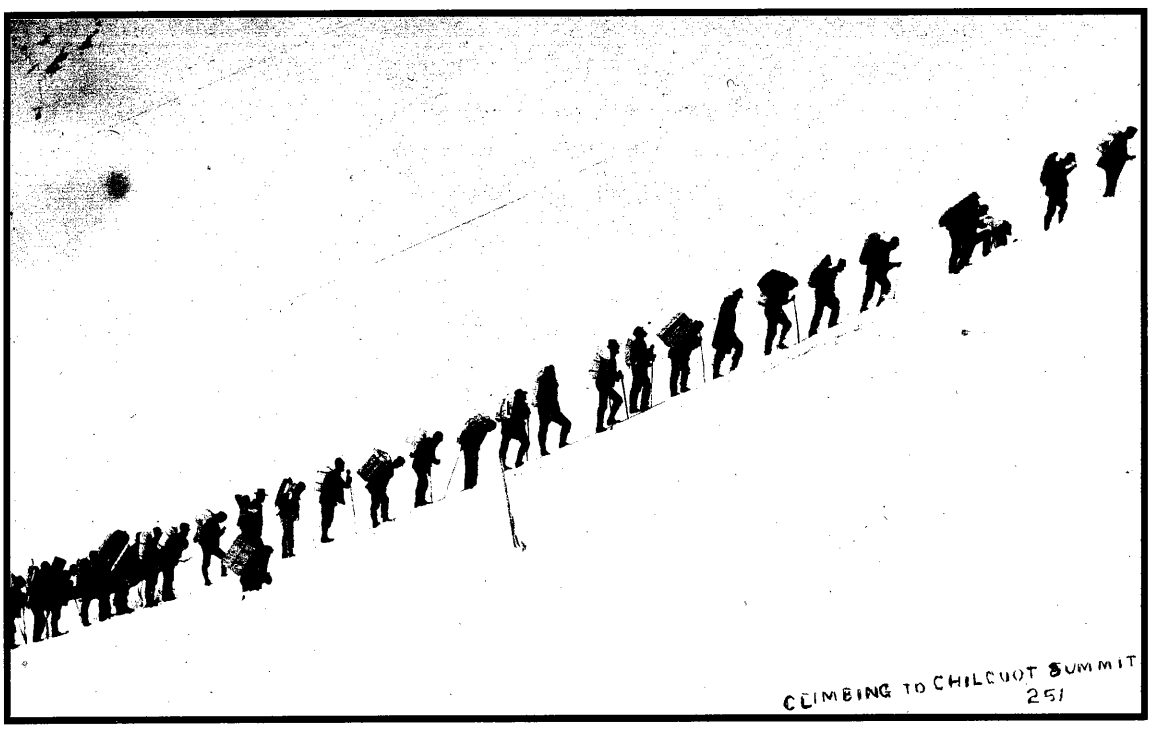
Circle prompted a rush to the upper Yukon River region in 1893, and three years later the discovery of gold near the junction of the Klondike and Yukon rivers incited a stampede.

By the thousands, miners scrambled to the Yukon and Klondike goldfields. Arriving by boat at Lynn Canal, Skagway, Wrangell, and Cook Inlet, they made their way to Chilkoot Pass, where they struggled on foot up the 1,500 steps chopped in the ice, battled wind and snow on the switchback trail over White Pass, fought their way through thick timber and piles of granite along the Stikine River, and toiled through snow across the Alaska Range to the goldfields. When the Bering Sea was free of ice, the gold seekers landed at St. Michael, where they boarded shallow-draft steamers for the tortuous 1,600-mile trip up the Yukon River to Dawson. When gold was discovered on the Seward Peninsula in 1900, miners bypassed St. Michael and landed at Nome.[25] Settlers, merchants, boatmen, tradesmen, and outfitters joined the rush to Alaska. They located their homes and businesses at the ports of embarkation and at the few accessible sites in the interior.

The civil government had proven inadequate to cope with the mining boom of the 1890s. When reports of disorder in the mining camps reached Washington, D. C., the War Department dispatched Lieutenant Wilds P. Richardson and Captain Patrick H. Ray to Alaska to assess conditions in the mining towns. These conditions ranged from violent conflicts over claims to near starvation in some areas for lack of supplies. Richardson and Ray affirmed that the civil government was unable to keep the peace and that many immigrants were poorly prepared for the severe weather conditions. The two men recommended that Army troops again be sent to Alaska to maintain order and to see to the welfare of the people.[26]

In response to these recommendations, the War Department sent troops to Alaska in 1897, and the Army again assumed an important role in governing the Alaska district. To carry out its mission, the Army constructed new posts in the interior and reactivated military posts that had been abandoned. In 1899, Lieutenant Richardson built Fort Egbert at Eagle, and Captain Charles Farnsworth established Fort Gibbon on the Tanana River. In addition, between 1897 and 1900, the Army stationed units at Rampart City, Skagway, Circle City, St. Michael, Haines, Valdez, Nome, and Fort Wrangell.[27]

Miners at Chilkoot Pass



As the gold rush fever waned during the first decade of the 20th century, and the population and economy declined, Alaskans renewed their demands for home rule. Passage of the Transportation and Homestead Acts in 1898, the Criminal Codes Act in 1899 and the Civil Codes Act in 1900 had helped the skeletal civil government improve conditions but Alaskans still desired territorial status and representation in Congress.[28] As the need for military control lessened, support for its continuing influence in civil government dissipated.

In 1912, Congress created the Territory of Alaska, 45 years after its purchase. In addition to the appointed executive and judicial positions that then existed, Alaskans could elect a legislature of 8 senators and 16 representatives. The power of the territorial legislature, however, was limited in some key respects, including a prohibition against passing any laws to regulate game, fish and fur resources. Furthermore, all acts were subject to the approval of Congress. Still, Alaskans had achieved a far greater degree of home rule than they had previously experienced, and their newly gained territorial status cleared the way for eventual statehood.[29]

Although the military was no longer responsible for governing Alaska, it continued to influence the territory's development. Alaskans lacked the financial and technical resources to construct the necessary roads, railroads, and harbor facilities to supply the widely scattered settlements. They depended upon federal support, supplied largely through the Army.

ARMY ENGINEERS IN ALASKA, 1867-1939

Between 1867 and 1939, the Corps explored, surveyed, and investigated a large portion of Alaska, and these efforts helped reveal Alaska's wealth of natural resources, its vistas of striking beauty, and the relentless and destructive power of wind, ice, and water. In addition, the engineers constructed roads and cleared harbors to expedite travel and the shipment of supplies to the territory's scattered settlements. In Alaska, however, the Corps remained a small force in a formidable and vast land. The engineers' projects wielded little impact on the Alaska environment. Alaska's limited population and narrow economic development did not justify investments in large civil projects.

As early as 1869, the War Department, in cooperation with the Treasury Department, had ordered Captain Charles W. Raymond of the Corps to examine the Yukon River from its mouth on the Bering Sea to the Hudson's Bay Company

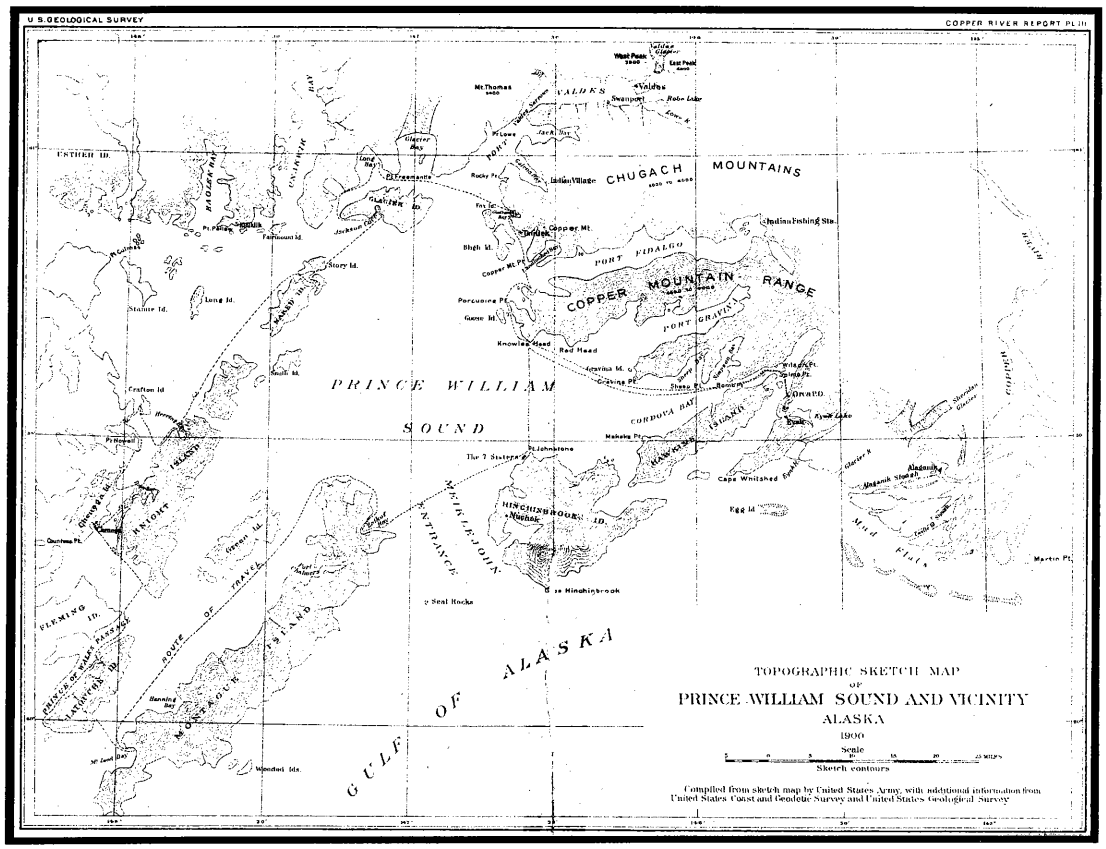
post, Fort Yukon, 1,000 miles upstream. Raymond's orders instructed him to determine the longitude and latitude of Fort Yukon and whether the post lay within British or American territory. In addition, Congress requested that Raymond gather information on the resources of the Yukon area, the number and disposition of the Native Alaskans, and the number and condition of public buildings left by the Russians at St. Michael.[30]

Raymond's expedition was part of a larger pattern of Army exploration in the West that had helped open other frontier regions to development. Engineers — especially topographical engineers — had long assisted westward migration through their cartographic, navigational, and surveying expertise. This pattern continued to foster gradual settlement in Alaska later than in the continental United States, both because Alaska represented the "last frontier" and because terrain and remoteness tended to discourage swift immigration to the Far North.[31]

Captain Charles W. Raymond.

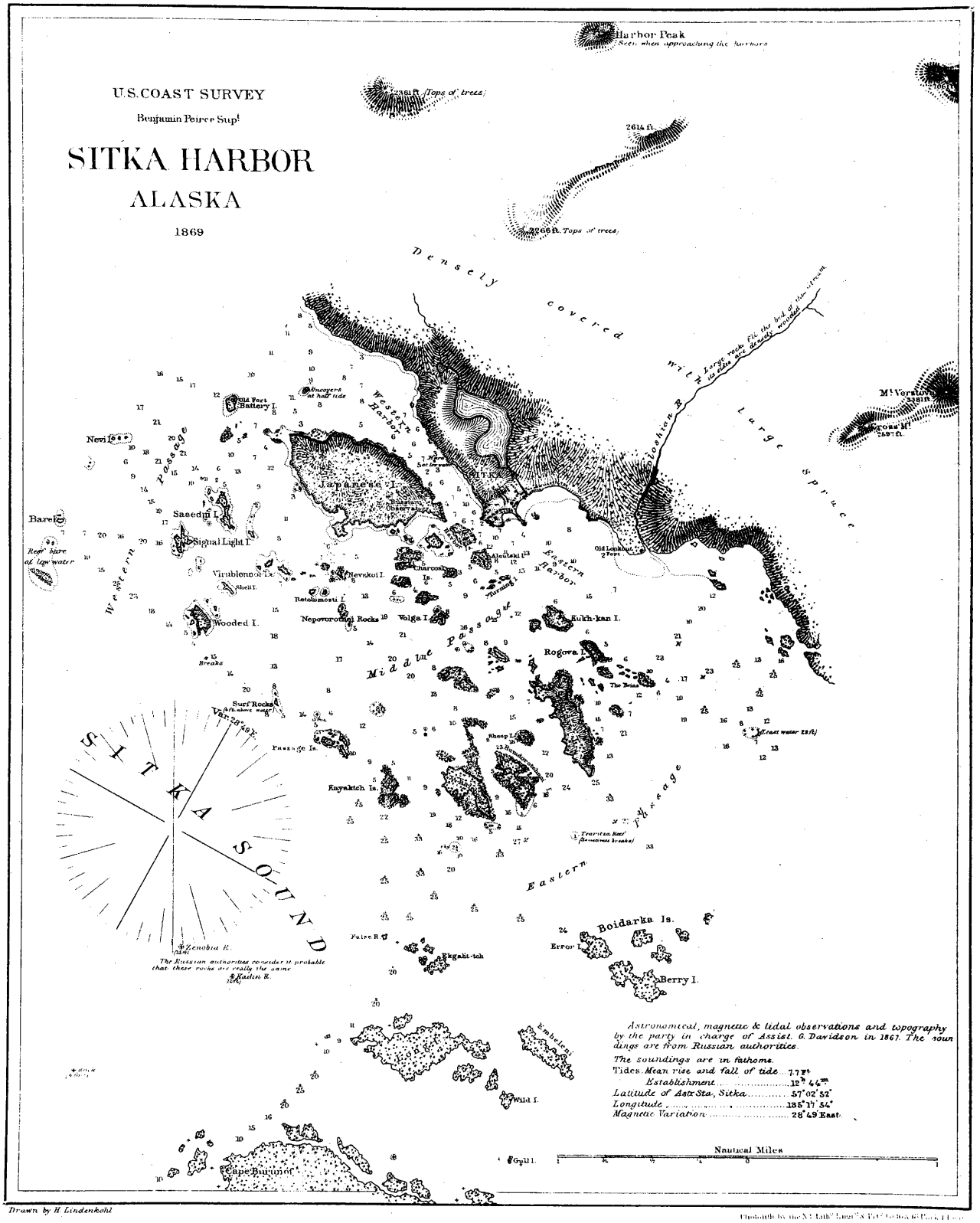
Captain Raymond departed from San Francisco on April 6, 1869 aboard the brig, *Commodore*. On its deck, the *Commodore* carried a 50-foot sternwheeler, the *Yukon*, owned by the Alaska Commercial Company. Accompanied by John J. Major, his civilian assistant, and Private Michael Foley, Raymond boarded the *Yukon* at St. Michael and reached Fort Yukon on July 31, 1869.

When Raymond attempted to determine the longitude and latitude of Fort Yukon, the twilight, which lasted all night, thwarted his efforts. Finally, on August 7, a solar eclipse created conditions that allowed him to make longitudinal calculations establishing that the trading post was 80 miles inside U.S. territory. Using the authority invested in him as a representative of the Treasury Department, Raymond instructed the Hudson's Bay Company traders to vacate their fort and to cease all trading.[32] Raymond and his assistants then built a skiff and, suffering from severe cold, hunger, and exposure, returned down the

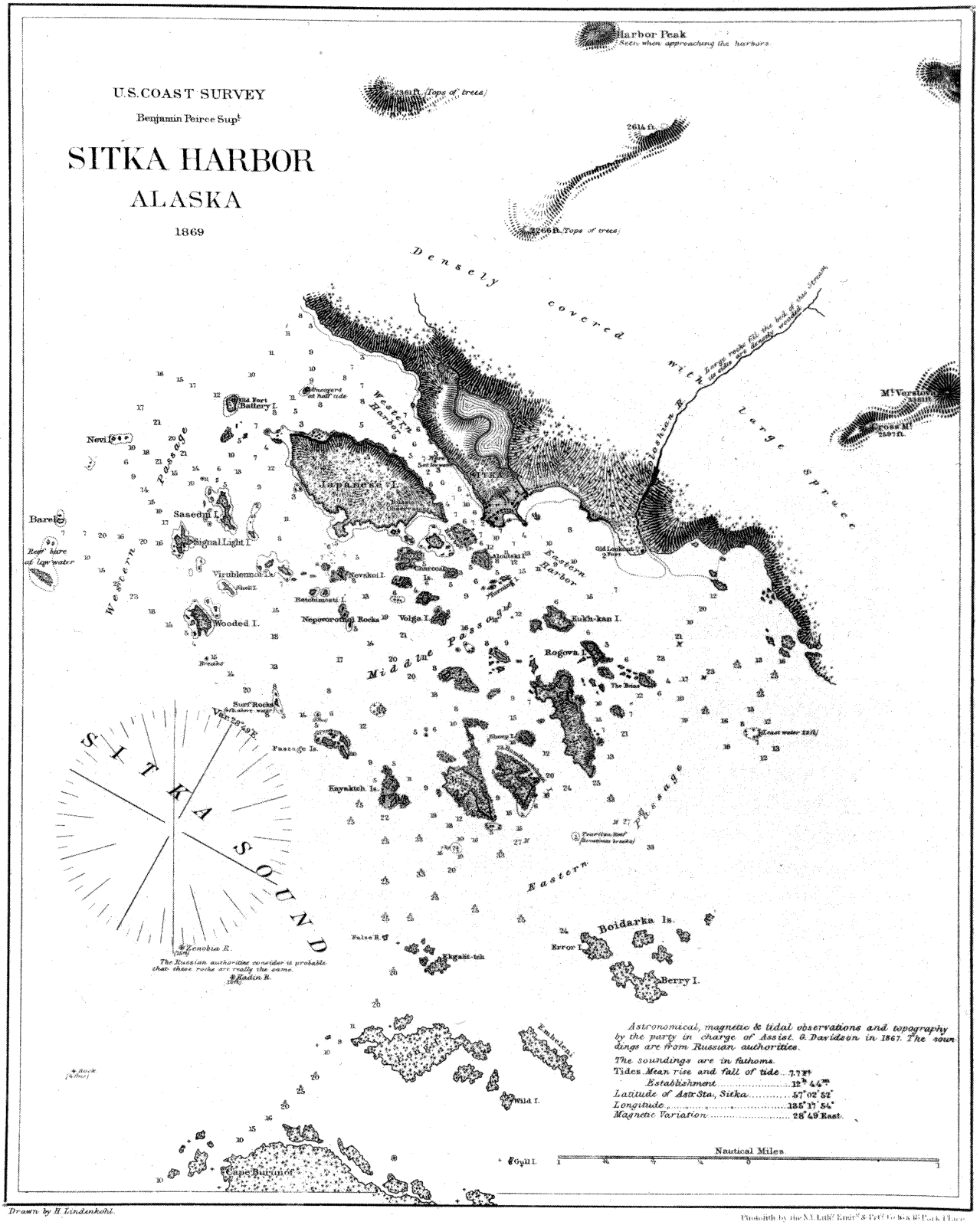


Yukon River to St. Michael. In addition to locating the Alaska boundary and removing the traders to Canada, Raymond gathered a modest amount of information on the area's topography, resources, and Native population. Of greater long-term significance, however, was Raymond's careful exploration and mapping of the meandering Yukon River. His charts of this waterway, the first complete graphics of its mouth to Fort Yukon, became indispensable aids to future explorers. His reports of thick stands of timber and abundant salmon runs that remained inaccessible to markets provided fuel for both critics and supporters of the Alaska purchase. Following this initial exploration, the Army pursued an active program of exploration and construction in Alaska, primarily designed to improve the communication and transportation network to and within the region.[33]

During the late 1890s, the engineers began investigating Alaska's harbors and rivers, and they began surveying roads and trails. In 1896, the Corps conducted a preliminary study of the Portland Canal, a natural waterway that forms the boundary between Alaska and British Columbia at the extreme southern tip of



Drawn by H. Lindenkohl



Drawn by H. Lindenkohl.

Photolith by the N.Y. Lith. Engr. & Ptg. Co. 64 & 66 Park Place

the panhandle. The work, under the direction of Captain David D. Gaillard, included constructing four stone storehouses, which, Gaillard thought, were the first masonry buildings constructed in Alaska. Gaillard marveled at the abundance of salmon in the canal and noted that no other American steamers were using the canal and no whites had settled along its banks.[34] In 1899, Captain William R. Abercrombie surveyed the Trans-Alaska Military Road from Fort Liscum, south of Valdez, to Fort Egbert, near Eagle on the upper Yukon. Captain Wilds Richardson surveyed a trail connecting Fairbanks with the Trans-Alaska Military Road in 1904. The trail was improved, and the first automobile traveled over the road, now known as the Richardson Highway, in 1913.[35]

The Rivers and Harbors Act of June 13, 1902 authorized a preliminary survey of the Wrangell Narrows, a treacherous 21-mile channel on the Inside Passage denounced by North Pacific Division Engineer Colonel William H. Heuer as "a menace to life and property." Yet this route was to become increasingly critical to Alaskan trade.[36] Wrangell Harbor was a year-round port through which 40 tons of gold dust (valued at $16 million) and 1,690 tons of salmon (valued at $139,200) passed in 1902. The enlargement of the Narrows would allow larger ships to stay within the shelter of the islands, protected from the stormy Gulf of Alaska. The Corps completed the survey in 1903, confirming the possibility of widening the passage. Congress, however, failed to appropriate funds for the project until the mid-1920s.[37] The Corps finally completed the Wrangell Narrows Project in 1928.

The Signal Corps, the Army's communications division, conducted further work at St. Michael, establishing a post in 1874. Here they gathered extensive meteorologic data and information on the natural history of the Yukon Delta, Bristol Bay, and the Aleutian Islands. The Signal Corps also constructed trails and roads to maintain communications between the widely scattered posts that the Army had established during the gold-rush period. Army engineers assisted the Signal Corps in planning, surveying, and constructing this system. Commencing work in the Nome-St. Michael area in 1899, the Army eventually extended the telegraph lines for more than 1,500 miles to Fort Egbert, Fort Gibbon, Fairbanks, and Valdez. The system became known as the Washington-Alaska Military Cable & Telegraph System (WAMCATS) in 1904, when the lines were connected to Seattle by a 2,100-mile submarine cable.[38]

The Corps made its most significant contribution to the development of Alaska transportation in the early decades of the century through its association with the Alaska Road Commission (ARC) and the Alaska Engineering Commis-

sion. The War Department established the ARC as a Corps responsibility in 1905, naming Captain Wilds P. Richardson as chairman. Because Richardson had been sent to Alaska in the 1890s to study conditions in the gold camps, and had stayed to survey the important trail between Fairbanks and Valdez, he was familiar with the unique working conditions within Alaska. Under Richardson's direction, the ARC constructed wagon roads, sled trails, and bridges to meet both military and civilian needs. Unlike many federal agencies, the ARC was not closely monitored by the government in Washington, D.C. Its office was located in Juneau, and the Commission acted independently. Construction and maintenance of the 370-mile Richardson Trail between Valdez and Fairbanks became its top priority. The Commission maintained this trail, turning it into a road and then a highway by 1913.[39] When World War I began, Congress reduced funding for ARC, the Commission became inactive, and Alaska's roads deteriorated. When the war was over, Congress appropriated funds to revive the Commission, and ARC developed a well-organized construction and maintenance program.[40]

Between 1915 and 1923, the Corps also worked in close cooperation with the Alaska Engineering Commission in constructing the Alaska Railroad, connecting the port of Seward with Fairbanks. Corps personnel sat on the Commission and Colonel James G. Steese served as its chairman. Corps engineers surveyed the 475-mile route.[41]

Three projects assigned to the Corps expedited the movement of people and supplies to the Yukon and Seward Peninsula gold fields: the improvement of the St. Michael Canal; the dredging of the Apoon Mouth of the Yukon River; and improvements to the port of Nome. Although inaccessible eight months of the year, St. Michael "was a feverishly busy little port in its early days," handling nearly $20 million in gold dust, nuggets, and bullion.[42] In 1905, the engineers commenced improvements on the St. Michael Canal, "a narrow and tortuous saltwater channel between St. Michael Harbor and a point 38 miles northeast of the mouth of the Yukon River." Under the direction of Lieutenant George Pillsbury, Chief Engineer of the newly created ARC, the Corps dredged a passageway between Norton Sound and St. Michael Bay, the terminus for northbound seagoing vessels and the transshipping point for cargo destined for the Yukon Basin.[43] The isolated location of the project considerably complicated the work. Pillsbury managed the project from his office at Skagway, 2,800 miles from St. Michael, and all supplies had to be shipped from Seattle. Furthermore, from October to May, ice closed the Bering Sea, and no ships could reach St. Michael. The 6-and-1/4-mile canal, finally completed in 1911, provided a

protected short cut for river steamers running between St. Michael and the Yukon River.[44]

To further improve shipping from St. Michael to the Yukon Basin, the Corps dredged the mouth of the Yukon River. This waterway carries great quantities of silt that form a broad delta at the river's mouth on the Bering Sea, and numerous unstable river channels cut through the delta. The largest of these, known as the Apoon Mouth, is the main entrance to the Yukon River for small steamers and sailing vessels. Changing and dangerous pillows of silt obstruct the Apoon Mouth, creating hazards for vessels attempting to enter the river. Between 1910 and 1915, the engineers dredged the river's entrance to provide a straight channel seven miles long, six feet deep, and 150 to 200 feet wide through which vessels could safely access the Yukon River. When the Alaska Railroad completed its track from Seward to Fairbanks in 1923, Yukon River traffic nearly ceased, and the Corps terminated its dredging at the Apoon Mouth.[45]

Nome, located across Norton Sound from St. Michael, remained the most northerly port with regularly scheduled freight and passenger service. It served as a trade center for the gold miners and Native peoples of the Seward Peninsula. Nome had a very shallow, unprotected harbor, and all passengers and cargo had to be carried by lighters through heavy surf to the open beach. In 1904, a private company proposed to dredge the mouth of the Snake River, which flows into Nome Harbor, and to build jetties to protect the resulting channel. After a year of preliminary work, however, the company abandoned the project.

In 1915, the Corps examined the port and concluded that it was not economically feasible to improve the harbor. After a second investigation a year later, the Corps reversed its position and agreed to the project. The City of Nome promised to contribute $2,500 annually toward maintenance dredging. The engineers built two jetties at the mouth of the Snake River and began regular dredging of the channel. According to one historian, the project proved to be "one of the Corps' most expensive efforts of its kind," for the engineers remained constantly involved in repairing the jetties and dredging the channel.[46] In addition to the construction projects at St. Michael, Apoon, and Nome, the Corps surveyed navigation improvement sites at Katalla Bay (1907), Kuskokwim Bay (1907), Sergius Narrows (1911), the Tolovana River (1916), Controller Bay (1917), and Wrangell Harbor (1920).

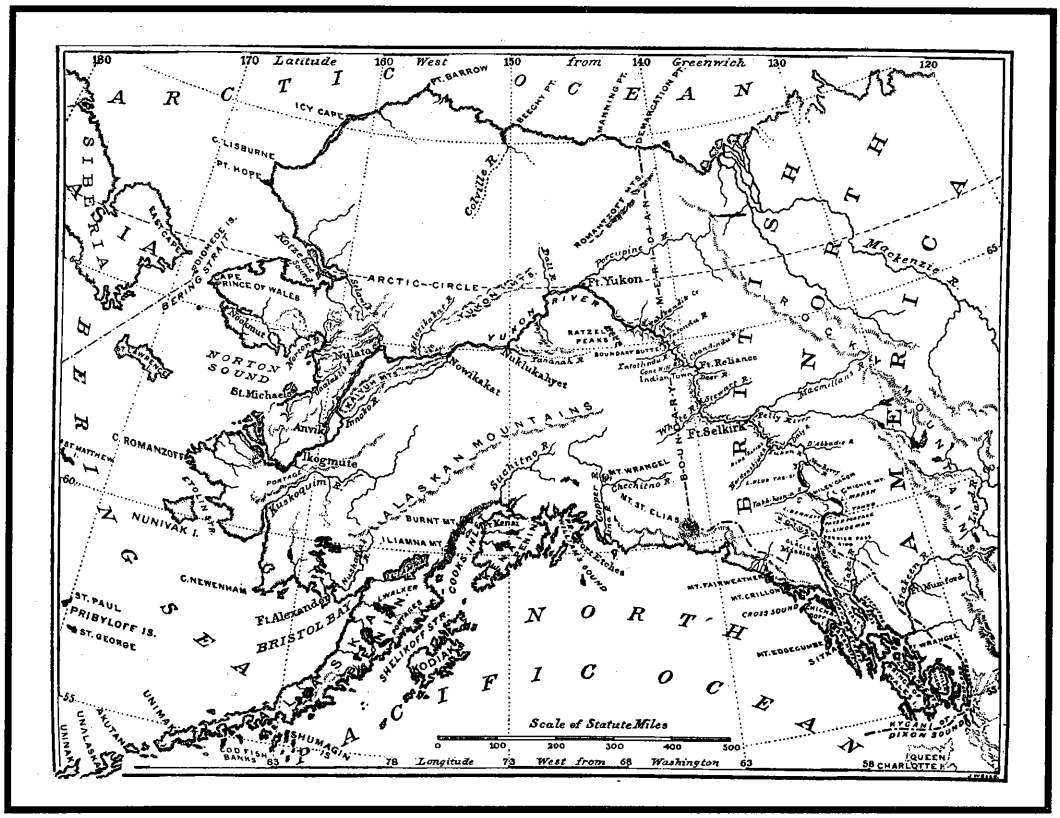
Between 1921 and 1932, Congress authorized thirty examinations and surveys in the Alaska Territory, resulting in Corps construction projects designed to improve the harbors at Wrangell, Port Alexander, Ketchikan, and Seward, and to clear the channel at Wrangell Narrows. These projects involved removing rock, constructing breakwaters, and dredging channels and basins.[47]

Between 1935 and 1940, as part of its expanded public-works program, Congress approved projects at seven of the sites and authorized 20 additional examinations and surveys. On the basis of these additional examinations, Congress authorized improvements at the harbors at Sitka, Cordova, Petersburg, and Kodiak; snagging operations in the Stikine River; and construction of a dike to control the overflow of the Salmon River at Hyder.[48] In addition, the Corps cleared the channel at Iliuliuk in 1940 and, in order to assist fishermen moving between Bristol Bay and Shelikof Strait, removed boulders from the Egegik River.[49]

The Corps also assisted the communities of Fairbanks and Seward through the construction of flood-control projects. The engineers built Moose Creek Butte Dike, a 3-mile, 8-foot-high structure designed to help prevent flooding in Fairbanks. Authorized in 1938, it prevented overflow from the Tanana River from entering the channel of the frequently swollen Chena River, which runs through the city.[50]

In 1945, the Corps completed its first flood control project in Alaska, the Lowell Creek Diversion Tunnel, at Seward. The centerpiece of the flood control project was a tunnel, shaped like a horseshoe, bored through Bear Mountain. The water from Lowell Creek, which had run through the center of Seward and regularly flooded the community, was diverted into the tunnel on the opposite side of the mountain by a 400-foot diversion dam that prevented the water of Lowell Creek from flooding the town.[51]

From 1867 until 1939, Alaska had played only a minor role in the United States' strategic defense plans. The Army had been in Alaska to maintain law and order, to construct roads, trails, and telegraph lines, to improve harbors for commerce, and to assist with flood control. The administration of the Corps in Alaska from the Lower 48 reflected the territory's then secondary military status.



Historical map, ca. 1885.

ORGANIZATION OF THE CORPS IN ALASKA

Although Alaska was geographically separated from the continental states and territories, the small amount of engineering activity there did not warrant the creation of a separate engineers' office for the area. Therefore, when the United States purchased Alaska in 1867, the engineers' office in San Francisco supervised the engineers in Alaska. The San Francisco Office directed the work of the engineers in Alaska until 1871, when the Chief Engineer placed Alaska under the newly established Portland District. The Portland District concentrated on rivers and harbors projects in the Pacific Northwest. In 1896, the Corps divided the Portland District and added a new district office at Seattle, which handled the Alaska work. By 1901, the Corps had established the North Pacific Division, which oversaw the districts in the Pacific Northwest.[52]

As the Alaska population rapidly expanded at the turn of the century, the Alaskans sought a greater role in running their own affairs. In 1905, the War Department responded to those efforts through the establishment of the ARC.

From 1905 to 1909, the ARC handled the rivers and harbors work, as well as road and trail construction in Alaska. The Seattle District then resumed supervision of engineer activities in Alaska. In 1921, the Chief of Engineers established the Juneau District, which was separate from the North Pacific Division, under Major James G. Steese. The Juneau Office became responsible for civil projects in Alaska, and the District Engineer served on the Alaska Road Commission. Major Malcolm Elliot succeeded Steese in 1927, and remained as District Engineer until the Juneau District Office closed in 1932. At that time, the Seattle District again resumed responsibility for Alaska work.[53]

In 1939, the Corps established an Area office in Anchorage. That year, the Seattle District Engineer appointed Lieutenant Alvin C. Welling as Area Engineer for Alaska. Welling supervised the flood control and rivers and harbors work that was then underway in the territory. Welling continued in that position until January, 1941, when he was succeeded by Major Benjamin B. Talley. By that time, the war in Europe and threats of war in the Pacific had forced the War Department to take a new look at Alaska's strategic position.[54]

From 1867 through 1939, the Army's purpose in the Far North was to maintain law and order, to construct roads, trails, and telegraph lines, to improve harbors for commerce, and to provide flood control assistance. In 1939, as Alaska's strategic importance increased, the Corps focused its work on new military projects.