

Army Engineers in the West

By Dr. James W. Dunn

In the first half of the nineteenth century, Army topographical engineers followed explorers and trappers West to survey and map the territory of an expanding nation. The U.S. expansion into lands claimed by Mexico and the Indians eventually led to wars with both parties. By midcentury, the engineers were surveying and mapping the new territory acquired from the war with Mexico. They surveyed the new border with Mexico, mapped routes through former Mexican lands to the Pacific Coast, and surveyed possible routes for a proposed transcontinental railroad. The Indians did not see these pre-Civil War surveys as an infringement on their land rights. There were no settlers with the surveying parties, and contact with the Indians was rare and usually friendly. When the Indians did resist settlers moving to Oregon or miners to the California gold fields, topographical engineers accompanied Army expeditions to protect the wagon trains and keep open the trails through the West. In the post-Civil War years, as the number of wagon trains westward increased, Indian resistance stiffened into periods of total war. For the engineers, it meant that surveying and mapping duties were at times affected by their duties as combat engineers.

Engineers gained experience in balancing these dual missions during the Mexican War. In 1845, in anticipation of hostilities with Mexico, the War Department ordered Colonel Stephen Watts Kearny to lead an expedition from Fort Leavenworth, Kansas, into Sioux lands in the Platte River Valley to ensure the safety of the Oregon Trail. After a successful conference with the Sioux at Fort Laramie, Wyoming, Kearny turned south and returned to Fort Leavenworth through Mexican territory. Lieutenant William Franklin, a topographical engineer on Kearny's staff, mapped parts of Nebraska, Colorado, and Wyoming, as well as Mexican lands.

During the Mexican War, Colonel Kearny used the Fort Leavenworth-based Army of the West to take New Mexico and then assist the Americans in California who had revolted against Mexican rule. Kearny had an engineer detachment of two lieutenants and two civilian assistants with his Army. Commanded by Lieutenant William Emory, the detachment produced good maps of the southwest, to include the Rio Grande Valley.

After the war, the engineers surveyed and mapped the land acquired from Mexico and a new border between the two

countries. In Texas, Lieutenant Colonel Joseph Johnston had four Topographical Corps lieutenants and a Corps of Engineers lieutenant survey fort sites and connecting roads. An 1849 Army expedition into Navaho lands in New Mexico included a topographical engineer lieutenant and two civilian assistants to survey a route to California. In 1854, Captain John N. Macomb of the Topographical Corps began route surveys in New Mexico that ultimately formed the basis for that state's highway and railroad system.

The railroad system in the United States reached the Mississippi River by 1853, and Congress began to consider the possibility of a transcontinental line. With no agreement possible because of partisan politics, Congress told Jefferson Davis, then Secretary of War, to have topographical engineers survey four routes across the United States and recommend the most practical and economically feasible one for a railroad from the Mississippi River to the Pacific Coast. The routes considered were—

- North through St. Paul, Minnesota, to the Puget Sound.
- North central from St. Louis, Missouri, through the Great Salt Lake.
- South central through Albuquerque, New Mexico, to California.
- South along the border to California.

The surveys began in the spring of 1853. The north-central party had trouble in October when Paiute Indians killed Captain John W. Gunnison, a topographical engineer. Artillery Lieutenant Edward G. Beckwith, an 1842 West Point graduate and commander of the escort party, completed the survey along the route which eventually was used to build the Union Pacific and Central Pacific Railroads.

Topographical Engineer Lieutenant Gouverneur K. Warren's work on the railroad surveys aided his effort to map the Trans-Mississippi West territory that included the modern states of Nebraska and North and South Dakota and parts of Wyoming and Montana. In 1855, after the railroad surveys, Warren accompanied Colonel William S. Harney's successful expedition against the Sioux along the Platte River to keep them from raiding the Oregon Trail. In 1856, Warren was back surveying the upper Missouri and Yellowstone Rivers where he had no problem with the Sioux. However, in 1857, when he attempted

to survey the Black Hills, the Sioux stopped him. He reported that the Sioux would resist any attempted movement into the Black Hills.

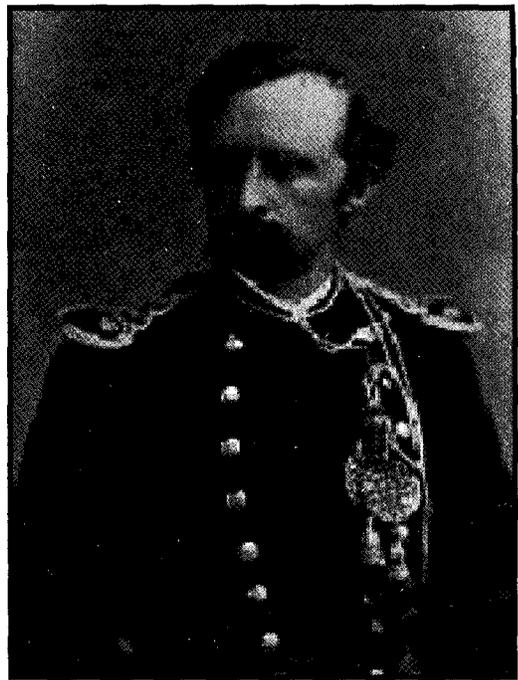
During the Civil War, no surveying expeditions of note occurred in the West, but there were expeditions against the Indians that had repercussions after the war. In a series of campaigns from 1862 to 1864, Minnesota and Iowa militia units pushed the Sioux from Minnesota to the Dakota Territory. In November 1864, a Colorado volunteer unit attacked and destroyed a Cheyenne village at Sand Creek because the Cheyenne resisted the movement of miners and settlers into their lands. In retaliation, the Sioux and the Cheyenne attacked wagon trains along the Oregon-California Trail and the Bozeman Trail that branched off near Fort Laramie and led to the Montana gold fields.

After the Civil War, the Army built Fort Reno to protect the Bozeman Trail. But in the summer of 1866, Red Cloud, a Sioux chief, left a conference at Fort Laramie when he learned that the Army planned to build a chain of forts along the trail. In the ensuing 2-year Red Cloud War, the Sioux successfully resisted movement along the Bozeman Trail. They ambushed and annihilated a cavalry detachment in December 1866, and by 1867, they had closed the trail to all but heavily escorted wagon trains. In the 1868 Fort Laramie Treaty, the U.S. government agreed to abandon the forts and close the trail. The Sioux agreed to a great reservation in South Dakota and use of open land north of the Platte River from the Missouri River west to the Big Horn Mountains.

During the years immediately after the Civil War, the Corps of Engineers, which now included the topographical engineers, placed officers on the staffs of the division and department commanders in the West. Their mission was to prepare maps needed for field operations and to collect topographical information for the Engineer Department in Washington. In the summer of 1867, Lieutenant Rueben W. Pietriken, Chief Engineer, Department of the Platte, surveyed routes from Fort Russell westward to Fort Laramie and onto the Bozeman Trail forts. (Fort Russell was a depot fort used to support the forces involved in the Red Cloud War.)

The first major survey in the post-Civil War period began in 1867 when an expedition sponsored by the Corps of Engineers and led by civilian engineer Clarence King started to survey a 100-mile-wide strip along the 40th parallel line of the Union Pacific-Central Pacific Railroads from the California-Nevada border to eastern Wyoming. The survey, completed in 1872 without significant Indian interference, included a geological analysis report and topographical maps.

The Indians did not oppose King's survey because of a series of cavalry expeditions against the Cheyenne in the late 1860s. In the Medicine Lodge Treaty of 1867, the Comanche and Cheyenne agreed to move onto reservations in the Oklahoma Territory, but they raided into Kansas and Texas in 1868 when government subsistence did not meet their expectations. Major General Philip Sheridan, Commander, Department of Missouri, conducted a winter campaign designed



Lieutenant Colonel George A. Custer

to attack the villages and force the Indians to return to the reservation. Lieutenant Colonel George A. Custer's 7th Cavalry attack at the Washita River in November 1868 and the following winter pursuit did just that. By the fall of 1869, the area between the Platte and Arkansas Rivers was considered clear of hostile Indians. In that area in the early 1870s, Lieutenant Ernest Ruffner, Chief Engineer, Department of Missouri, accompanied the 5th and the 6th Cavalry reconnaissance to survey and map the terrain. As relative calm continued, Ruffner successfully requested a detachment from the Battalion of Engineers so he could expand his surveying and mapping operations.

In another major field survey in 1871, Lieutenant George M. Wheeler, Chief Engineer, Department of California, began the United States Geographical Surveys west of the one-hundredth meridian. The tasks included surveying and mapping the area, locating potential military sites and connecting roads, documenting the climate, and reporting on the geology and vegetation of the area. Brigadier General Andrew Humphreys, Chief of Engineers, wanted to support Lieutenant Colonel George Crook's operations against the Apaches while maintaining the Corps's position in western exploration. Accordingly, he lavished money and personnel, to include 16 engineer lieutenants, on Wheeler's efforts between 1871 and 1879. While Wheeler successfully mapped almost one-fourth of the region west of the one-hundredth meridian, Humphreys' effort failed when Congress appropriated money in 1879 for a new civilian agency—the United States Geological Survey—to study the geographical structure and economic resources of the public domain.

Although Wheeler's efforts were largely uncontested by the Indians, such cannot be said for a series of railroad surveys that began in 1871 in the Yellowstone River Valley. To continue the Northern Pacific Railroad from St. Paul, Minnesota, to

Seattle, Washington, surveying parties, escorted by Army units, entered the Yellowstone River Valley in the fall of 1871 without interference from the Sioux. However, when the surveying parties returned in 1872, Sioux resistance served notice that it opposed a railroad along the Yellowstone. Major John Barlow, Chief Engineer, Division of Missouri, accompanied both expeditions and accumulated enough topographical information to publish a map of the Yellowstone from its mouth on the Missouri to the mouth of the Powder River.

When the surveying parties returned to the Yellowstone in 1873, Custer's 7th Cavalry provided the escort, and Captain William Ludlow, Chief Engineer, Department of Dakota, accompanied the expedition. The Sioux attacked surveying parties on two separate occasions in August, but each time, the cavalry drove off the Sioux. The 7th Cavalry's success at protecting the railroad surveyors did not aid Ludlow as he found the cavalry officers too busy with escort duties to help him; thus, he was not able to collect much topographical information.

While Ludlow experienced mixed results along the Yellowstone, Captain William A. Jones, Chief Engineer, Department of the Platte, had some success in a reconnaissance of the headwaters of the Platte. Seeking to locate a route for a wagon road from the Union Pacific rail line in northwest Wyoming to Fort Ellis in Montana Territory, Jones left Fort Bridger, Wyoming, in June with a 2d Cavalry escort, four civilian topographers, and two civilian scientists. After completing his reconnaissance, Jones recommended a route for the road. The Department Commander and the Chief of Engineers endorsed it; however, Lieutenant General Philip Sheridan, Division Commander, could not fund it.

That lack of money—a result of the financial panic of 1873 which put the country into a recession through the 1870s—had an impact on the Corps of Engineers' effort to expand its mapping of the West. In 1873, the War Department supplied the military departments in the West with instruments to make an itinerary of every reconnaissance to post on a master map in Washington. By the end of 1875, however, little data was on the master map due to a lack of money. Captain William S. Stanton, Chief Engineer, Department of the Platte, reported that a shortage of funds restricted his efforts to conduct local surveys. He did not have enough money to hire civilian assistants and had to rely on the cavalry and infantry units for help. While he had the necessary surveying instruments, he lacked qualified assistants, which prevented him from successfully executing the June 1873 War Department order. Other engineers in the West, except for Wheeler, had similar financial problems.

As the engineers struggled with mapping efforts, military operations against the Indians peaked in the last half of the 1870s. In the southern plains, Comanche and Cheyenne raided the Oklahoma Territory and Texas. In the 1874 Red River War, the Army successfully used a winter campaign to drive the Indians back to the reservation. Lieutenant Ruffner was able to produce surveying results during the campaign. While he did

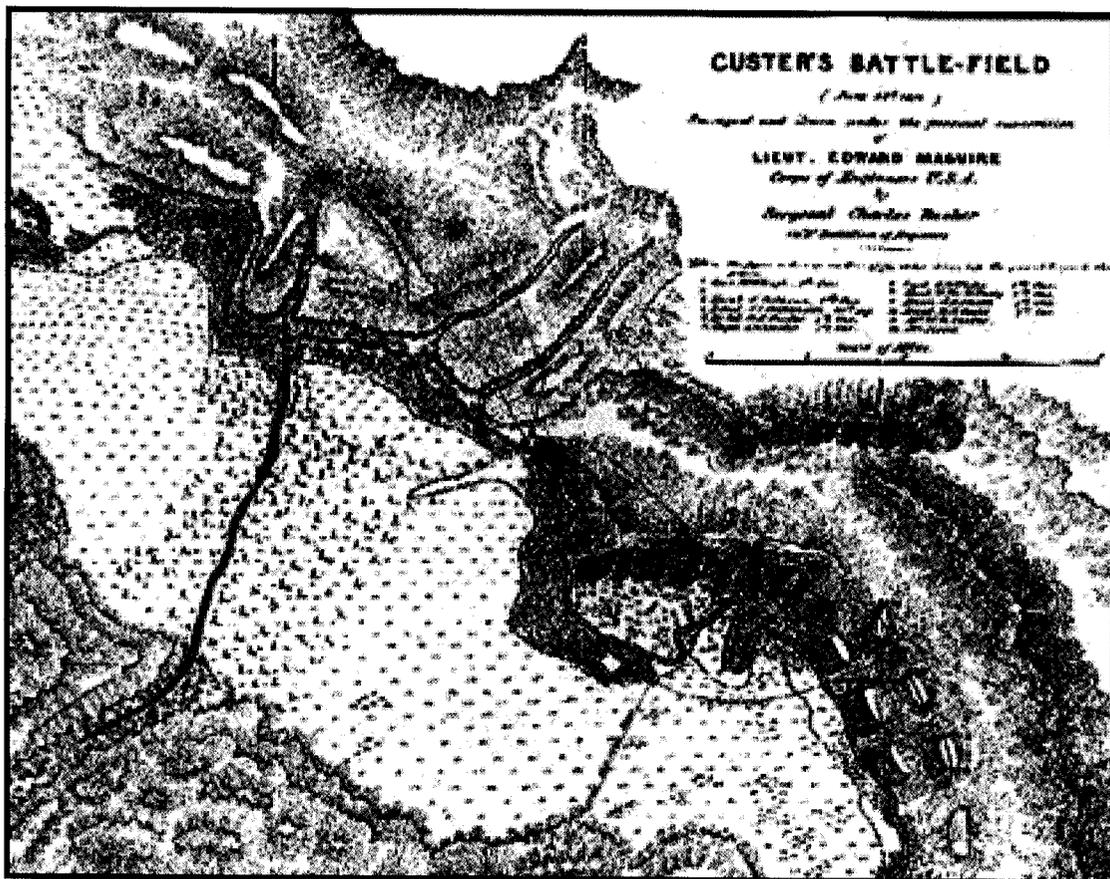
not have money to hire civilian assistants, he did send his detachment from the Battalion of Engineers to the 6th Cavalry's expeditions in New Mexico and Colorado. When the 6th Cavalry became heavily involved in the Red River War, Ruffner shifted his efforts to the 5th Infantry's expeditions in Texas. He also built a road from Santa Fe to Taos, New Mexico, with a congressional appropriation of \$25,000. He surveyed the route in 1873, and civilians built it in 1874.

While Ruffner successfully used a detachment from the Battalion of Engineers, something similar occurred to the north in the Department of Dakota. In July 1874, Custer led a 7th Cavalry expedition into the Black Hills to locate sites for military posts, survey routes through the hills, and conduct geological surveys. Captain Ludlow again accompanied the expedition with a party that included two volunteer civilian assistants and a detachment from the Battalion of Engineers. Throughout the summer, the expedition operated in the Black Hills without interference from the Sioux, and Ludlow, well satisfied with the results, produced maps of the surveyed routes and topographical and geological maps. He reported that he thought the best use of the hills for the next 50 years was as a home for the Sioux. That did not happen because his report also noted small amounts of gold in the Black Hills. When the news of gold reached the East, which was in the middle of a recession caused by the financial panic of 1873, prospectors raced for the hills.

In 1875, while the Grant administration tried unsuccessfully to buy the Black Hills from the Sioux, Captain Ludlow led an expedition into western Montana to survey routes and examine Yellowstone Park. His party included volunteer civilian assistants and a detachment from the Battalion of Engineers. He noted the large number of hunters and souvenir gatherers in the park and recommended that it be put under the War Department for protection.

Meanwhile, the Grant administration, even though it failed to convince the Sioux to sell, decided to allow prospectors into the Black Hills. The Sioux had until February 1876 to vacate the area and go to the reservation. After that date, any Sioux not on the reservation would be considered hostile and an Army problem. Accordingly, General Sheridan planned a winter campaign similar to the one that proved so successful in the southern plains. However, the winters in the Dakotas and Montana were much more severe than in Oklahoma and Texas, so Sheridan delayed his campaign until the spring. His plan had three converging columns from the east, west, and south, trapping the Sioux south of the Yellowstone River near the Bighorn Mountains.

Colonel John Gibbon's Montana column left Fort Ellis on 1 April with six companies of his 7th Infantry, a battalion of the 2d Cavalry, and two Gatling guns. His acting engineer officer, Lieutenant Edward McClernand, 2d Cavalry, had a detachment from the Battalion of Engineers. As the column moved east along the Yellowstone, in late April, McClernand joined a cavalry scout south through the Bighorn and Little Bighorn Valleys. They made no contact with the Sioux, but later in May, Gibbon



did see signs of a village on the Tongue River. He was unable to force an encounter and, in late May, went into camp on the Yellowstone near the mouth of the Rosebud to await the arrival of the Dakota column.

Brigadier General Alfred Terry's Dakota column left Fort Lincoln on 17 May with Custer's 7th Cavalry, an infantry battalion, and two Gatling guns. His engineer officer, Lieutenant Edward Maguire, Department of Dakota, had a detachment from the Battalion of Engineers; several wagons of engineer equipment, to include a portable trestle bridge; and an odometer cart to measure mileage. As the column moved west across central North Dakota, it made only about 10 miles a day, as Maguire, with the help of a 7th Cavalry company of pioneers, used the bridging equipment to cross the numerous streams along the trail. The column reached the Powder River on 7 June without seeing any Sioux, so Terry sent Major Marcus Reno's 7th Cavalry battalion scouting to the south. Maguire assigned Lieutenant James Sturgis, acting engineer officer, to the scouting force.

Brigadier General George Crook's Wyoming column, the last to take the field, left Fort Fetterman on 29 May with two infantry and two cavalry battalions. His engineer officer, Captain William S. Stanton, Department of the Platte, did not have an engineer detachment and had to rely on the infantry and cavalry units to supply him with assistants. Crook reached the headwaters of the Rosebud on 14 June where he learned of the possibility of a large Indian village to the north. He moved toward the village and encountered a large force of Sioux and Cheyenne in the

early morning hours of 17 June. He pushed the Indians toward the Little Bighorn River but was unable to pursue due to his losses and the difficulty of the terrain. When Crook withdrew to refit and await reinforcements, Stanton returned to Fort Fetterman. He felt that the expedition against the Indians was unproductive for engineering work and that he could accomplish more away from an active campaign. He spent the rest of the summer and fall surveying the military posts and connecting routes in the Platte River area.

While Crook was fighting the Battle of the Rosebud, Reno's battalion was about 40 miles to the north following the trail of a large Indian village. Reno heard nothing about Crook's fight, so he told Terry about the signs of a large Indian village to the south. In a meeting with Custer and Gibbon on 21 June, Terry outlined a plan to take advantage of Reno's report. He ordered Custer to move south along the Rosebud while Gibbon moved southwest to the mouth of the Little Bighorn. Custer was to maneuver his regiment to push the Sioux toward Gibbon. Lieutenant George D. Wallace was the acting engineer officer for Custer's force; Maguire and the engineer detachment went with Terry's staff in Gibbon's column.

The 7th Cavalry moved south in the Rosebud Valley on 22 June as Gibbon started west along the Yellowstone. When Custer sighted a large village in the Little Bighorn Valley on 25 June, he planned to wait until the next morning to attack. However, he moved forward immediately when he saw Indian scouts nearby. He divided his force into three battalions and

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sent Captain Frederick W. Benteen's battalion to the left while he followed Reno's battalion toward the village. As Reno attacked across the Little Bighorn, Custer moved right to attack the village. The Sioux stopped Reno and forced him back across the river to a defensive position on the bluffs. They then turned their attention to Custer and annihilated his force before the end of the day. Benteen joined Reno and held out until the Indians began to withdraw on 26 June as Gibbon's column approached.

Terry kept the combined columns in the Little Bighorn area until 28 June to tend to Reno's wounded and bury Custer's dead. Maguire surveyed and mapped the battlefield and burial site during that time. Terry returned to the Yellowstone River Valley where he refitted and received reinforcements through July. He met Crook's column in the Rosebud Valley in early August, and the combined force pursued the Indians through the rest of the summer. The large Indian village broke up as it moved east, and the combined force made no significant contact. In early September, Terry's Dakota column returned to Fort Lincoln and Gibbon's Montana column headed for Fort Ellis. Crook took his column south toward the Black Hills where he attacked and destroyed a small Indian village on 8 September at Slim Buttes. Many of the Indian survivors returned to the reservation in the winter.



Sitting Bull

As the cavalry columns returned to their forts for the winter, Sheridan ordered Colonel Nelson Miles to organize several posts along the Yellowstone and use the 5th and 22d Infantry Regiments to harass and force the Indians onto the reservation. His acting engineer officer was Lieutenant Oscar F. Long, 5th Infantry Regiment. In December, Miles destroyed a Sioux village near Fort Peck, but Sitting Bull and many of his followers fled into Canada. In January 1877, Crazy Horse, leading a band of about 800 Sioux and Cheyenne, attacked Miles' position on the Tongue River. Miles repulsed the attack, pursued the Indians, and destroyed their village. By the spring, Crazy Horse and most of his followers were on the reservation. Finally, in early May, Miles used elements of the 5th and 22d Infantry and the 2d Cavalry to destroy a Sioux village on the Rosebud and force the Indians onto the reservation. Within one year of Custer's defeat, the Sioux and Cheyenne, except for Sitting Bull and his followers in Canada, were on the reservation.

The engineers experienced mixed results during the 1876-77 campaign. Major George Gillespie, Sheridan's Chief Engineer, Division of Missouri, wanted more Battalion of Engineer detachments in the West with at least one for each department. He thought the topographical information collected during active campaigns lacked quality, as the engineers had to go where the action dictated rather than where their surveying interests indicated. Maguire noted the difficulty of collecting topographical data while accompanying an operational expedition due to the inability to move far from the main force. He recommended a larger bridge train for a force the size of the Dakota column, which had more than one hundred wagons. He reported on the types of improvised bridges used, such as sod-covered wagon tongues, chain-and-rope suspension bridges, and wagon and water-keg floating bridges. Where trees were available, he recommended building trestle bridges.

Maguire's map of the Little Bighorn battlefield played an important role in events related to that fight. In July 1877, Lieutenant Colonel Michael Sheridan, brother and aide to General Sheridan, led a party to the battlefield to remove officers' bodies for reburial in the East and to rebury and mark the graves of the rest. He used Maguire's map to locate the original burial sites. In the January 1879 Court of Inquiry—held at the Chicago Headquarters, Division of Missouri—that examined Major Reno's conduct at the Little Bighorn, Maguire used his map to testify on the battle.

For the remainder of the 1870s, the engineers in the West kept as active as congressional appropriations allowed. In the summer of 1877, Ruffner used a 9th Cavalry expedition into New Mexico and Colorado to locate sites for military posts and survey connecting routes. Maguire named acting engineer

lieutenants from the 5th Cavalry and the 7th Cavalry for the fall 1877 campaign against Chief Joseph and the Nez Perce in western Montana. He also sent a detachment from the Battalion of Engineers to survey the site for Fort Keogh at the mouth of the Tongue River on the Yellowstone. He used Quartermaster Department money to examine the Yellowstone's use as a supply route for the military posts in the Montana Territory. In 1878, while Ruffner was building wagon roads connecting the military posts in Colorado, Maguire continued surveying Fort Keogh and the Yellowstone River. In 1879, he added Fort Custer (at the mouth of the Little Bighorn River) and the Little Bighorn battlefield as survey projects for his engineer detachment. He continued to work on the Yellowstone River, using money from the River and Harbor Act of 1878 to hire workers to open channels through three rapids. As he traveled throughout Montana by river steamer, stagecoach, and Army ambulance, Maguire reported to the Chief of Engineers on the quality of the schools in Bozeman and the number of settlers, type and quantity of livestock, and amount of land under cultivation in the Yellowstone Valley.

In the 1880s, a chapter closed on the history of Army engineers in the West. The United States Geological Survey, a civilian agency, now studied the geographical structure and economic resources of the public domain. In 1881, as the government erected a stone monument in the Little Bighorn cemetery, Sitting Bull and his followers surrendered at Fort Buford in the Montana Territory. The Northern Pacific Railroad reached Billings, Montana, in 1882, and the engineers reported a decrease in traffic on the Yellowstone River. By the end of the 1880s, three railroads crossed the continent, and as the number of rail lines increased, the Army reduced the number of small forts in the West. Troops now moved by rail from strategically located forts to trouble spots. As campaign and topographical duties decreased, the engineers turned their attention to border and coastal defense and river and harbor activity. In the twentieth century, these responsibilities, termed Military Programs and Civil Works, became increasingly important as the nation fought through a deep depression and several major wars.

Dr Dunn is a historian in the Office of History, U.S. Army Corps of Engineers, Alexandria, Virginia.

Suggested Reading

Frank N. Schubert, *Vanguard of Expansion: Army Engineers in the Trans-Mississippi West, 1819-1879*. Washington, D.C. Historical Division, Office of Administrative Services, Office of the Chief of Engineers.

Robert M. Utley, *The Lance and the Shield; The Life and Times of Sitting Bull*. New York, Henry Holt, 1993.