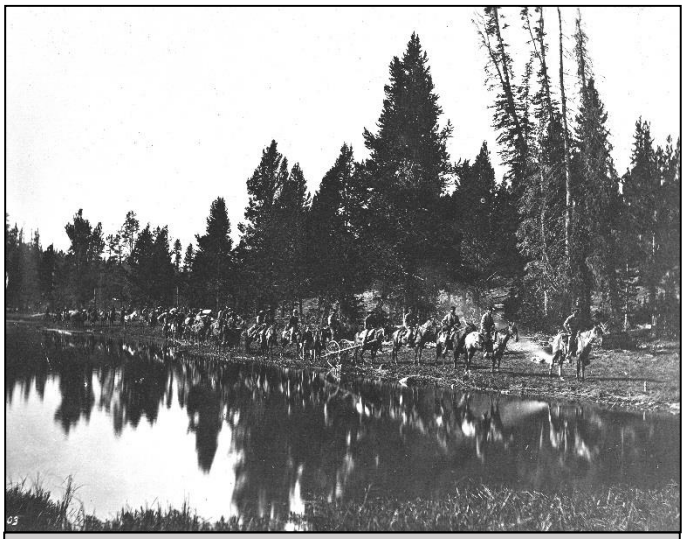
Art and the Hayden Geological Survey of 1871

The Expedition

Beginning with Lewis and Clark's travels through the **Louisiana Purchase** in 1804-1806, exploratory expeditions became one of the primary means by which the Federal Government gathered information about its vast resources. Prior to the Civil War these expeditions were primarily military in nature, focusing on issues such as international land disputes and routes for wagon trains and railroads. After the war, new interest developed in further investigating the characteristics of the land to promote settlement, tourism, commerce, and to exploit natural resources.

By 1871, the time was ripe for an organized scientific survey of the Yellowstone area, one that would collect paleontological, botanical, zoological, and geological specimens, and record temperature and weather patterns. One of the preeminent explorers of the day, American geologist Dr. **Ferdinand V. Hayden,** petitioned Congress to fund a survey to the Yellowstone. An experienced surveyor, Hayden's research trips began in earnest after the Civil War, when he was appointed geologist-in-charge of the U.S. Geological Survey. The goals outlined for Hayden's proposed survey were ambitious: to explore "all the beds, veins and other deposits of ores, coals and clays, marls, peats and other such mineral substances as well as the fossil remains of the various formations," and to compile "ample collections in geology, mineralogy, and paleontology to illustrate notes taken in the field." His team would take soil samples for agricultural planning, estimate mineral yields, and comment on the land's commercial potential. "Graphic illustrations" of landscapes were to be made in order to convey something of the appearance of the region. Hayden's findings were to be submitted in reports to those in Washington, D.C. with a vested interest in such research – the Department of the Interior, the Department of War, and the Smithsonian Institution. These reports would aid in determining land use and would add to the general knowledge of our nation's expanding terrain.



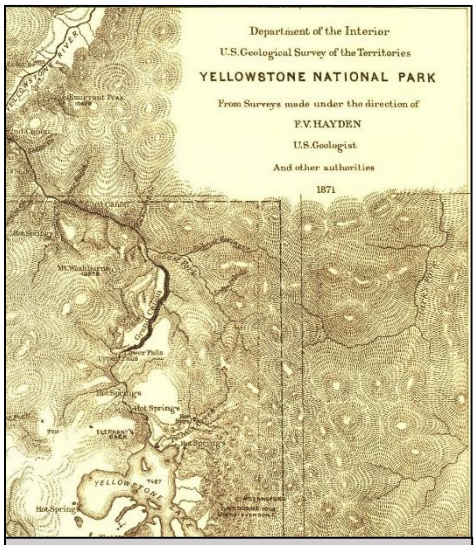
1871 Hayden Survey at Mirror Lake, en route to East Fork of the Yellowstone River, August 24, 1871, William Henry Jackson, United States Geological Survey Photographic Library

Because of the U.S. government's interest in determining the land's usage, it agreed to Hayden's proposal and underwrote his survey – the first federally funded government survey in American history. Of the importance of the surveys, Hayden wrote, "We have beheld, within the past fifteen years, a rapidity of growth and development in the Northwest which is without a parallel in the history of the globe. Never has my faith in the grand future that awaits the entire West been so strong as it is at the

present time, and it is my earnest desire to devote the remainder of the working days of my life to the development of its scientific and material interests, until I see every Territory, which is now organized, a State in the Union."

The survey began on June 1, 1871, departing from base camp in Ogden, Utah. Accompanying Hayden were over thirty team members, including military escorts, botanists, meteorologists, ornithologists, hunters, guides, topographers, cooks, and physicians. By July the team had reached Montana, where artist **Thomas Moran** joined the expedition. Hayden outlined the survey's route in a letter to the Secretary of the Interior before departing base camp:

> *Our route will be along the mail route to Virginia City, and Fort Ellis. We have already made the necessary observations in this valley and propose to connect our work Topographical and Geological with the Pacific Rail Road line. We then propose to examine a belt of country, northward fifty to one hundred miles in width to Fort Ellis, which point we hope to reach about the 10th or 15th of July. The remainder of the season we desire to spend about the sources of those rivers—Yellowstone, Missouri, Green, and Columbia, which have their sources near together in this region.*



Map of Yellowstone Park from the 1871 Hayden Survey (detail), Library of Congress

Hayden's official report on the Yellowstone region explained the importance of further scientific explorations: "We saw many strange and wonderful phenomena, many things which would require volumes for adequate description, and which in future geography will be classed among the wonders of the earth; yet we only followed up the Yellowstone River, passed around two sides of the lake, and down one branch of the Madison to the main stream. We did not explore one-third of the Great Basin. The district will be in easy reach of travel if the Union Pacific Railroad comes by way of the lower Yellowstone Valley. . . . As a country for sight-seers, it is without parallel; as a field for scientific research, it promises great results; in the branches of geology, mineralogy, botany, zoology, and ornithology it is probably the greatest laboratory that nature furnishes on the surface of the globe."

Art of the Surveys

It may surprise us today that the most famous and earliest American expedition westward, that of Lewis and Clark, excluded the services of an artist – an astounding omission by President **Thomas Jefferson** who had overseen preparations for the expedition. Jefferson had instructed the explorers to record anything and everything they encountered. But he could not have foreseen that the surveyors would come across sights that might have been indescribable in writing. As such, **Meriwether Lewis** took it upon himself to make crude drawings in his notebook, but he noted that he wished for a better means

with which to record his experience, specifically referring to the visual medium when facing the Great Falls of the upper Missouri River: "After wrighting [*sic*] this imperfect description I again viewed the falls and was so much disgusted with the imperfect idea which it conveyed of the scene that I determined to draw my pen across it and begin again . . . I wished . . . that I might be enabled to give to the enlightened world some just idea of this truly magnificent and sublimely grand object."

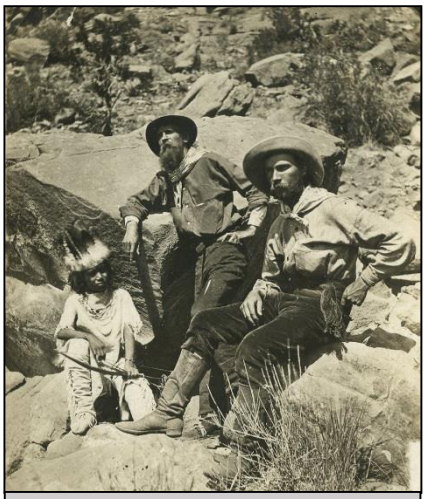
After Lewis and Clark's landmark journey, very few major expeditions went without some form of visual documentation. After the Civil War, almost every government funded expedition included both an artist and a photographer. Photography produced an image of undeniable fidelity to its subject, but traditional artists remained a vital part of the expeditionary teams. Sketches, drawings, and paintings were able to convey one crucial detail that photography at the time could not – color. The watercolors and oil paintings produced out of these surveys were exceptionally useful for survey leaders in lobbying Congress and proving the claims about the West's dramatic chromatic variations. Expeditionary illustrations amplified the findings of geologists, topographers, and geographers. They were also exhibited independently as landscape art, augmented popular magazines and travel guidebooks, and were sold to the public in **chromolithographic reproduction**. The artistic renderings of the expeditions were also advantageous to commercial enterprises such as publishing houses and real estate developers, which capitalized on the expedition results for their own benefit. Financiers were eager to extend the **Northern Pacific Railroad**, the northern-most transcontinental railroad, to the Pacific. Artistic images enhanced their efforts to gain support. Additionally, the railway companies had an interest in locating their rail routes close to potential coal sources for locomotive fuel. Hayden's survey results would inform them of these sources. The relationship with railway companies were not one-sided, however, as the companies provided Hayden and his team with cheap rates for transporting supplies, horses, and equipment.

It is difficult to imagine now, with our wealth of media, just how important and unique the landscape sketches, paintings, and photographs by these artists and photographers were to an eager eastern public and to the policymakers who administered the unsettled lands. The terrain in these works – vast treeless plains and massive snow-capped mountains – were substantially different from that of the settled East. The availability of pictures of these locations made the West seem more real and accessible to an eastern audience. Hayden believed in the power of the image over the descriptive verse of the written word. He relied heavily on photographs and Thomas Moran's sketches and oil paintings to convince Congress of the importance of continued geological surveys. Hayden felt that these images were "the nearest approach to a truthful delineation of nature" and that "to the intelligent eye they speak for themselves better than pages of description."

Thomas Moran

Thomas Moran first became interested in the spectacular landscape features of Yellowstone in the spring of 1871 when his friend Richard Watson Gilder, editor of *Scribner's Monthly*, asked him to finish

some sketches that had been made by amateur draftsmen during an earlier expedition to Yellowstone. The result was one of the first published descriptions of the dramatic geographical features of this area of Wyoming featuring geysers and hot springs, among other volcanic phenomena. Yellowstone had long been known by Indians and mountain men, but their stories of the hellish place of smoke and steam had been dismissed as invention.



Thomas Moran (middle) and William Henry Jackson (right) in Piute country, New York Historical Society

Beginning in 1870, all of Hayden's expedition parties included a draftsman of some kind to provide visual documentation. Hayden brought on photographer **William Henry Jackson** to the survey party, as well as prominent landscape painter **Sanford Robinson Gifford**. Gifford helped Jackson with his photographic work and also made his own drawings and oil sketches of the landscapes explored by the expedition that year. But by 1871, Gifford did not continue with Hayden's expeditions. A. B. Nettleton, office manager of the Northern Pacific Railroad and a friend of Moran's, wrote to Hayden introducing Moran and asking Hayden to add Moran to the 1871 expedition:

> *My friend, Thos. Moran, an artist of Philadelphia of rare genius, has completed arrangements for spending a month or two in the Yellowstone country, taking sketches for painting. He is very desirous of joining your party at Virginia City or Helena, and accompanying you to the head of the Yellowstone. I have encouraged him to believe that you [would] be glad to have him join your party, & that you would in all probability extend to him every possible facility. Please understand that we do not wish to burden you with more people than you can attend to, but I think that Mr. Moran will be a very desirable addition to your expedition, and that he will be almost no trouble at all . . . He, or course, expects to pay his own expenses, and simply wishes to take advantage of your cavalry escort for protection.*

Moran caught a Union Pacific train from his home in Philadelphia to Utah, then rode a stage coach to catch up with the expedition in Montana. The artist immediately took to working in a place unlike any he had ever seen. Decades later, William Henry Jackson published an article about their experiences together in the Yellowstone. Of Moran, Jackson wrote:

> *He was 34 years old, at this time, of slight and frail physique and did not seem to be of the kind to endure the strenuous life of the wilderness. But he was wiry and active in getting about and keenly enthusiastic about his participation in the work of the expedition. He had never camped out before . . . This was his first experience in Rocky Mountain regions, coming out entirely unacquainted with his associates, or with the country itself and all that related to it. But he made the adventure with fine courage and quickly adapted himself to the new and unfamiliar*

> *conditions and, as it turned out later, none was more untiring on the trail, or less mindful of unaccustomed food or hard bed under a little shelter tent, than he was.*

Glossary

chromolithographic reproduction: (or chromolithograph) a picture printed in colors from a series of lithographic plates (lithography is a method of printing from a flat surface).

Sanford Robinson Gifford: (1823-1880) American landscape painter, associated with the Hudson River School artistic movement.

Ferdinand V. Hayden: (1829-1887) American geologist, noted for his pioneering expeditions into the Rocky Mountains.

William Henry Jackson: (1843-1942) American photographer, painter, and explorer of the American West.

Thomas Jefferson: (1743-1826) 3rd President of the United States, Founding Father, author of the Declaration of Independence, and American lawyer. Jefferson oversaw the purchase of the Louisiana Territory from France and arranged for the exploration of that territory by Meriwether Lewis and William Clark.

Meriwether Lewis: (1774-1809) American explorer, soldier, and politician. He is most well-known for his role in the Lewis and Clark Expedition, exploring the land acquired in the Louisiana Purchase.

Louisiana Purchase: (1803) purchased from France during President Thomas Jefferson's administration, the region of the United States encompassing land between the Mississippi River and the Rocky Mountains.

Thomas Moran: (1837-1926) American painter and printmaker, most noted for his landscapes of the American West.

Northern Pacific Railroad: (or Railway) a transcontinental railroad which ran along the northern tier of the western United States, starting in Minnesota and ending at the Pacific Ocean in Washington state. Construction began in 1870 and was completed in 1883. The railroad's main purpose was to ship goods like timber, wheat, minerals, and cattle to the East, while transporting prospective settlers to the West.

Pacific Railway Act: (1862) signed into law by President Abraham Lincoln on July 1, 1862, this act provided Federal government support for the building of the first transcontinental railroad, which was completed on May 10, 1869.

Union Pacific Railroad: one half of the original transcontinental railroad, the Union Pacific was incorporated under the Pacific Railroad Act of 1862 and signed into law by Abraham Lincoln. It was intended as a war measure during the Civil War. In 1869, it would join with its other half, the Central Pacific Railroad, at Promontory Point, Utah to connect the two railroads with a ceremonial “last spike,” also referred to as the “Golden Spike.”