Mapping the Nation

While the essential outlines of the lands of the Earth were still being discovered, the New World was being surveyed and marked for ownership.

Cartographers flourished in the New World—their guidebooks, illustrations, and maps promoted settlement.

George Washington, Benjamin Franklin, Thomas Jefferson, Paul Revere, and Daniel Boone all did surveying.

The Land Ordinance of 1785 was the basis for the surveying and auction of public lands and gave our Nation its checkerboard appearance.

The Louisiana Purchase doubled the territory of the United States. Lewis and Clark were commissioned to explore and map the new territory.

In 1807 the U. S. Survey of the Coast was established to chart our coastlines and harbors.

From 1838 until the Civil War, the Corps of Topographical Engineers laid out boundaries and began mapping the West. John Charles Frémont and Charles Preuss mapped the Oregon Trail.

King, Hayden, Powell, and Wheeler led the four major surveys of the West, which led to the establishment of the U. S. Geological Survey.

John Wesley Powell, second Director of the Survey, obtained authorization from Congress to map the entire country. This was the beginning of the National Mapping Program.


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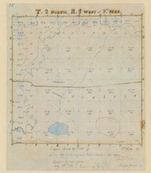
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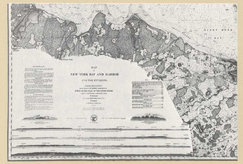
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1.
c. 1585—John White. "La Virgenia Pars." Courtesy of the Trustees of the British Museum.
2.
1588—Probably by Baptista Boazio, Plan of Drake's attack on St. Augustine, 1586. Courtesy of the National Maritime Museum, London.
3.
1814—Samuel Lewis (after William Clark). "A Map of Lewis and Clark's Track." Courtesy of the Library of Congress, Geography and Map Division.
4.
1815—General Land Office. Illinois township plat (scale, 2 inches to the mile). Courtesy of the National Archives, Records of the Bureau of Land Management.
5.
1844—U. S. Coast Survey. "Map of New York Bay and the Environs." Detail. Courtesy of the National Archives, Records of the Coast and Geodetic Survey.
6.
John Charles Frémont (1813-1890). From *Life Explorations and Public Services of John Charles Fremont*, 1856. Courtesy of the Smithsonian Institution Libraries.
7.
1845—Charles Preuss. "The Great Salt Lake." Detail.
From Mary C. Rabbitt, *Minerals, Lands, and Geology*; courtesy of the United States Geological Survey.


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1889—U. S. Army, Corps of Engineers. ". . . Grand Cañon of the Colorado," 1871. Courtesy of the Smithsonian Institution Libraries.
2.
1876—Dept. of the Interior. "Green River from Union Pacific Railroad to the mouth of the White River," 1873. Courtesy of the United States Geological Survey.
3.
1877—Dept. of the Interior. "Northern Central Colorado," sheet XII. Courtesy of the United States Geological Survey.
4.
1878—Analytical geological map of the Great Salt Lake area.
From Mary C. Rabbitt, *Minerals, Lands, and Geology*; courtesy of the United States Geological Survey.
5.
Clarence King (1842-1901). Courtesy of the United States Geological Survey.
6.
Ferdinand V. Hayden (1829-1887). Courtesy of the Smithsonian Institution Archives, Merrill Collection (#78-107).
7.
George M. Wheeler (1842-1905). Courtesy of the United States Geological Survey.
8.
John Wesley Powell (1834-1902). From Mary C. Rabbitt, *Minerals, Lands, and Geology*; courtesy of the United States Geological Survey.

The Earth from Above

Aerial photography probably began in 1858 when a French photographer, called "Nadar," photographed a village from the basket of a balloon.

World War I brought the marriage of the airplane and photography. After World War I, flyer-inventors developed equipment and methods to produce maps from aerial photographs.

The TVA project in the 1930s was the first major project using photogrammetry for mapping.

By the 1970s cartographers had new tools—computers and satellites.


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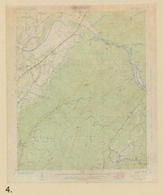
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1.
c. 1865—"L'Intrépide Nadar." Caricature from *Le Journal Illustré*.
Courtesy of the Library of Congress, Geography and Map Division.
2.
1924—Brock and Weymouth, Inc. "Aero-Topographic Map made by the Brock Process."
Courtesy of Harry Tubis.
3.
1925—U. S. Army Air Service. "Air Navigation Map. Louisville, Kentucky to Dayton, Ohio."
Courtesy of the National Archives, Records of the Army Air Forces.
4.
1938—Tennessee Valley Authority and U. S. Geological Survey. "Tennessee (Polk County), Oswald Dome Quadrangle." Scale 1:24,000.
Courtesy of the Tennessee Valley Authority, Chattanooga.
5.
1951—Tennessee Valley Authority. "Mt. Joy Quadrangle Tennessee, 7.5 minute series (topographic)."
Courtesy of the Tennessee Valley Authority, Chattanooga.

The Specialists

Thematic, or special-purpose, maps relate phenomena to geography. They can show the results of investigations, serve as analytical tools in research, and illustrate social forces.

Subway maps, city plans, population distribution maps, weather maps, air pollution maps, health hazard maps, farm crop maps, railroad maps, sales distribution maps, traffic patterns, and bird's-eye views are among the many types of thematic maps.


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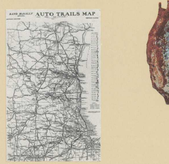
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1874—Rand McNally and Company. Map showing railway routes and stations of the Chicago, Milwaukee & St. Paul Railway. Courtesy of the Library of Congress, Geography and Map Division.
2.
19th century. Chinese map of Washington, D. C.
From the collections of the American Geographical Society, courtesy of the University of Wisconsin-Milwaukee.
3.
1886—Sanborn Map and Publishing Co. "Passaic, New Jersey."
Courtesy of the Library of Congress, Geography and Map Division.
4.
1917—Rand McNally. "Rand McNally Official Auto Trails Map . . ."
Courtesy of the Library of Congress, Geography and Map Division.
5.
1903—White & Kemble. "Map Showing Properties of The United States Steel Corporation."
Courtesy of the Library of Congress, Geography and Map Division.
6.
1935—Mayor's Committee on City Planning. The City of New York. "Population." Detail.
Courtesy of the National Archives, Records of the Federal Housing Administration.

Remote Mapping

Cartographers had to wait for technology to map the ocean floor, map through Amazonian cloud cover, map beneath the surface of the Earth, or map the hidden terrain beneath the polar ice cap.

Helicopters and airborne radio soundings enabled cartographers to map the South Pole. Side-looking radar and short-range navigation enabled cartographers to map the Amazon basin. Sonar enabled cartographers to map the ocean floor.

In 1975 a satellite gave cartographers their first global view of the Earth.


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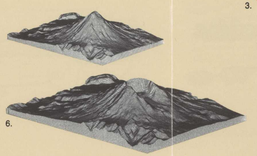
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1972—ERTS-1 in orbit (artists concept). First U. S. satellite program devoted to the study of Earth's natural resources. Courtesy of the National Aeronautics and Space Administration.
2.
1957—Bruce C. Heezen and Marie Tharp. "Physiographic Diagram. Atlantic Ocean (sheet 1)." Chart of the ocean floor. Courtesy of Marie Tharp.
3.
1973—U. S. Geological Survey. "Chincoteague Marsh, Va., Plot of Wetland Classes Determined by Signature Analysis of MSS 4, 5, and 7."
From Morris M. Thompson, *Maps for America*; courtesy of the United States Geological Survey.
4.
1976—General Electric Co. (in cooperation with the National Geographic Society and NASA). "Space Portrait, U.S.A." Courtesy of the National Aeronautics and Space Administration.
5.
1979—Projeto RADAMBRASIL, Brazilian Ministry of Mines and Energy. "Cuiabá. Região Centro-oeste do Brasil—1:250,000."
Courtesy of the United States Geological Survey.
6.
1980—U. S. Geological Survey. Perspective views of Mt. St. Helens generated from digital elevation models. Courtesy of the United States Geological Survey.

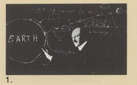
The Cosmos

Robert Goddard successfully launched his liquid-fueled rocket in 1926 and with it he launched the space age.

On July 20, 1969, the astronauts of Apollo 11 arrived at a lunar site which had been mapped prior to their arrival by cartographers working approximately 236,000 miles away.

A "new cartographer" has developed—one whose tools are aerial photogrammetry, computers, and spaceship television systems.

Extraterrestrial mapping and exploration are the adventure of the future; but through advances in mapmaking the explorers will arrive with maps in hand!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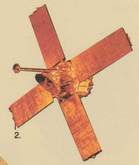
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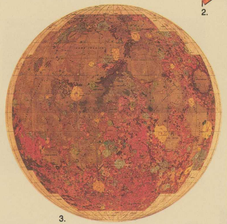
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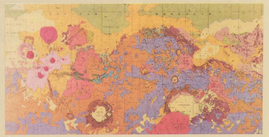
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1.
Robert H. Goddard (1882-1945). Physicist and pioneer in rocketry. Photographed at Clark University, 1924. Courtesy of the Clark University Archives.
2.
1969—Mariner Mars spacecraft. Photoconcept model by NASA. Courtesy of the National Aeronautics and Space Administration.
3.
1971—Don E. Wilhems and John F. McCauley. "Geologic Map of the Near Side of the Moon." 1:5,000,000 scale map from USGS *Geologic Atlas of the Moon*. Courtesy of the United States Geological Survey.
4.
1974—U. S. Geological Survey. "Reference Mosaic of Mercury." Courtesy of the United States Geological Survey.
5.
1976—Mars. Computer-generated, false-color exaggerated image based on data generated by Viking 1-6. Courtesy of the National Aeronautics and Space Administration.
6.
1978—David H. Scott and Michael H. Carr. "Geologic Map of Mars." Detail. Courtesy of the United States Geological Survey.

Mapping through the ages—

Maps & Minds