Looking Back in Time 1889 to 1950

Cartographer's Engraved Copper Plates from the United States Geographic Survey

Cartographers in the Field This Depression-era oil painting, created by Hal Shelton in 1940, depicts mapping techniques used in the early days of cartography, including an alidade and stadia rod for determining distances and elevations and a plane-table for sketching contour lines. This 4-by-6 foot painting is on display in the USGS library in Menlo Park, California.

HIS 186 Introduction to Collections Management
Lane Jones

Between 1879 and 1885 the USGS surveyed approximately 796,590 square miles in the following States and Territories:

Massachusetts, Connecticut, New York, New Jersey, Maryland, Virginia, West Virginia, North Carolina, Kentucky, Tennessee, Alabama, Georgia, Missouri, Kansas, Texas, New Mexico, Arizona, Nevada, Montana, Idaho, Wyoming, California, and Washington.

Congress appropriated $3,486,649.00

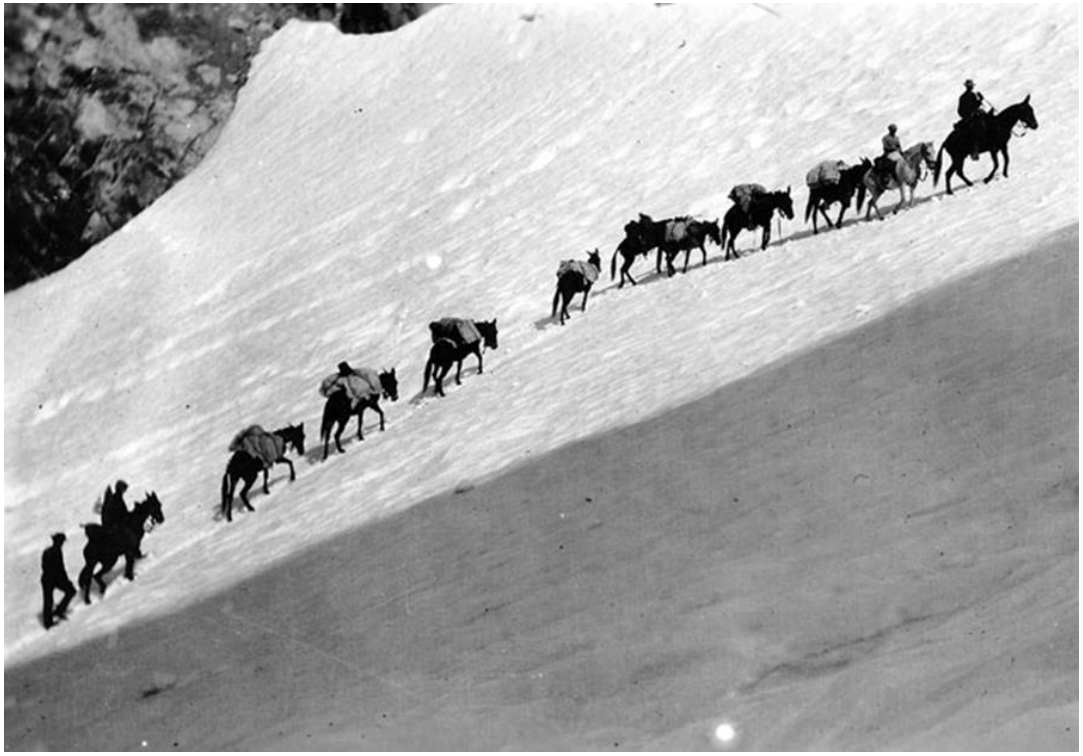
To fund the expeditions

A geological party 1883
Cripple Creek Mining District
Colorado

Expeditions often included one or two geologists, up to four topographers, topographer's assistants, and camp personnel; typically a cook, and for larger groups, a packer, and a teamster to handle the wagon train.

Field work instruments included a small transit which included a small telescope mounted on a planetable tripod.

With it, the topographer, from primary and secondary triangulation points (usually on the highest peaks), took numerous readings of horizontal and vertical angles to other points and salient features.



A USGS pack train carries men and equipment
up a steep slope
while mapping the Mount Goddard, California quadrangle.
Date: 1907

Topographer George Stanley Druhot working with a tripod, planetable, and alidade at Kahekili Leap, on the island of Oahu.
His two companions are Malcolm Springer and Tai Hai Lau
1928
Photographer: Henry Matsuda

These angles and descriptions of points sighted were recorded in a notebook by the topographer's assistant, who also made a drainage and profile sketches of the surrounding country.

The area covered was a complete sweep of 360 degrees.

The assistant was often an artist and his panoramic sketches were often beautiful as well as accurate. Another duty of the assistant was to care for the barometer, and record its readings.

With great precision, an engraver carefully cuts away small ribbons of copper to create the contour plate for a US Geological Survey topographic quadrangle.

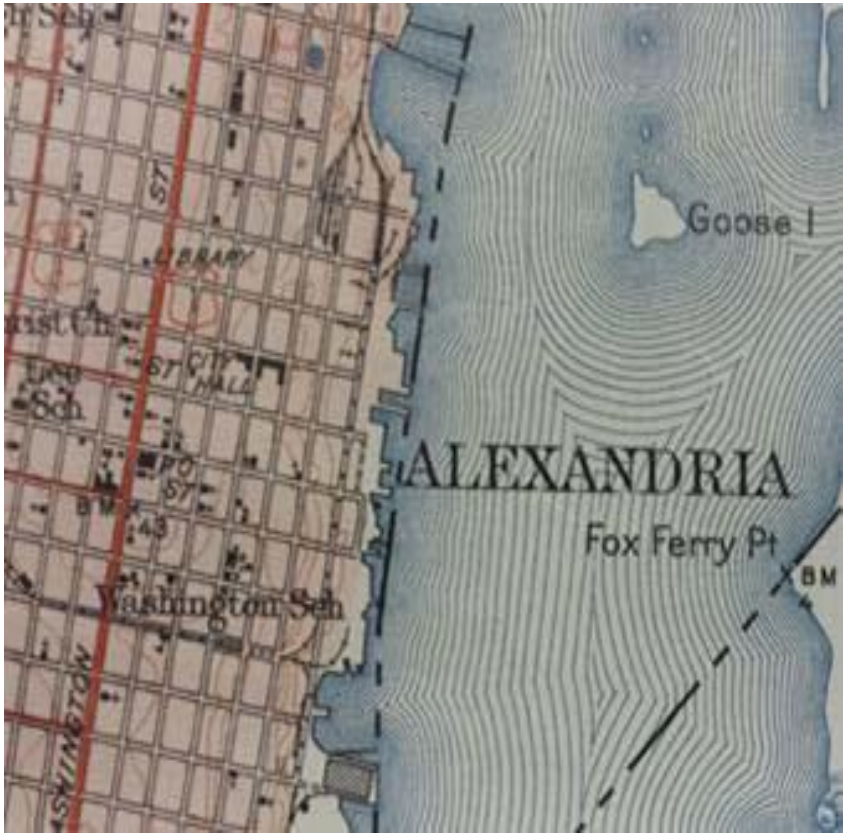
Until well into the twentieth century, the two-dimensional representation of landscapes occupying three-dimensional space required the meticulous recording of the observations of human beings physically located within that space. A person (or persons) documented measurements and sketched notable features, then transferred both to paper. The resulting notes could later be transcribed, drawn to scale, and reproduced. The culmination of this effort conveyed the observations of an eyewitness to another person solely through the use of mutually intelligible symbols.

Lithographic Printing Stones for Map-making

each USGS topographic map typically required multiple lithographic stones for printing, one for each color shown on the map.

Location: Rolla, MO, USA

Topographic information was transferred from copper or zinc plates to a lithographic stone for printing



"A portion of the engraving on the plate used to print points, lines, and text in black ink. Engravings on the plate are left-to-right reversed. This plate was cleaned and treated to improve the visibility of the engraving. The plate was used to print the Washington [D.C.] and vicinity, 1:31,680-scale topographic map"

A zinc plate in its storage cabinet. Most plates were stored horizontally in wooden cabinets to prevent touching and warping (photo courtesy of Bruce Geyman, USGS)

Final Disposition

Beginning in February 2015 the General Services Administration made the copper plates still held at the USGS headquarters in Reston, VA available to the public for purchase. This was done only after the plates were offered to federal, state, and local governments (including schools and universities).