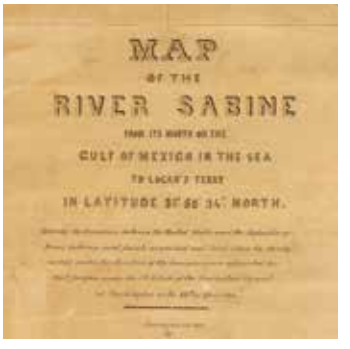
JOURNAL OF THE INTERNATIONAL MAP COLLECTORS' SOCIETY

JUNE 2023 No.173 ISSN 0956-5728

ARTICLES

REGULAR ITEMS



Front cover **Hal Shelton, detail from 'Valdez and Vicinity', 1948. Private collection.**

THE REVOLUTIONARY CARTOGRAPHY OF HAL SHELTON

Shaded relief, natural colour, and ski area mapping

Wesley A. Brown

In 1952 Richard Edes Harrison (1901–1994), one of the twentieth century's most renowned cartographers, described the work of artist and mapmaker Hal Shelton as 'magnificent in execution and conception'.[1] Forty-five years later, in 1997, Hal Shelton (1916–2004) was honoured by the Geography and Map Division at the Library of Congress as one of 'the four greatest living American mapmakers' along with Harrison, Arthur Robinson (1915–2004) and Marie Tharp (1920–2006).[2] I had admired Shelton's maps for years and had added several to my collection, so I was excited to attend this special event. After the programme, a small dinner was held for the honorees at which I was seated next to Hal and his wife. Among the crowd of easterners, we happened to live only twenty miles apart in Colorado and struck up a friendship.

As I had researched Hal's cartographic work, including having made several visits to his home in the town of Golden, just on the edge of the Rocky Mountains, it became clear why the Library of Congress was so keen to honour him. Shelton had done groundbreaking work in three different genres of cartography: shaded relief, natural colour, and ski area maps. This paper describes his career and the different types of maps he produced.

After earning a degree in scientific illustration from Pomona College in California, and unable to find a job as an artist during the Great Depression, in 1938 Shelton obtained a position as a surveyor with the United States Geological Survey (USGS). Although he spent most of his time creating maps in the field and at the drafting table, his artistic talents were soon discovered, and he was assigned to several special art projects for the USGS including a painting (Fig. 1) which still hangs in the regional office in California.

Fig 1. Hal Shelton, *Cartographers in the Field*, 1940. The oil painting depicts mapping techniques used early in the 20th century, including an alidade and stadia rod for determining distances and elevations, and a plane-table for sketching contour lines. 8 x 1.2 m (6 x 4 ft). USGS office in Menlo Park, California.

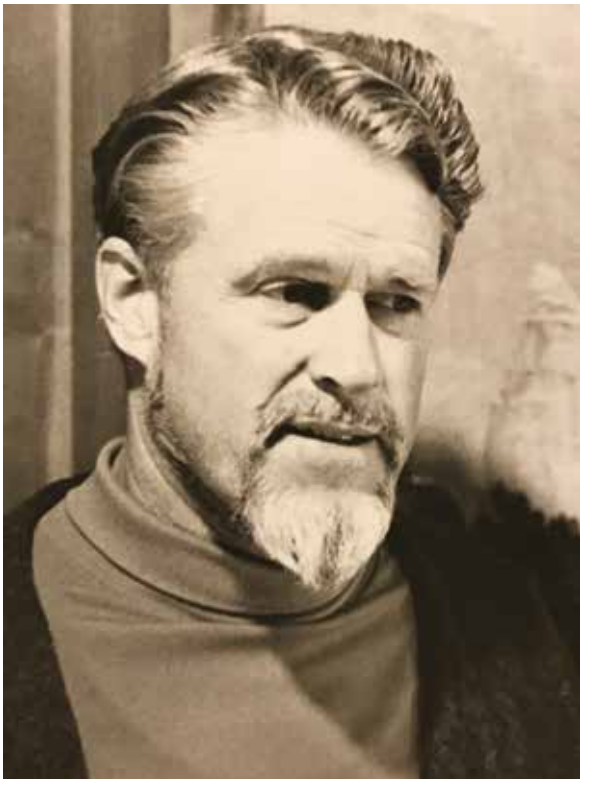


Fig. 2 Hal Shelton (1916–2004) pictured at prime working age. Library of Congress.

Shaded relief maps

Mapmakers who create shaded relief maps use special printing techniques and occasionally add colour to emphasise mountain slopes to create 'the effect of the third dimension for the map and rendering its larger features more understandable'.[3] The technique is most successful for mapping mountainous areas where the terrain has considerable altitude differences. The idea for using shading to indicate slopes had been around since the 1800s; however, putting it into practice proved difficult. Baron Fredrich Wilhelm von Egloffstein (1824–1885), a brilliant German-trained cartographer working for the United States Army

Fig. 2 Frederick von Egloffstein, detail from 'Geological Map No 2, Rio Colorado of the West', 1861. 37 x 87 cm (15 x 34 in). The area was explored by 1st Lieut. Joseph C. Ives, Corps of Topographical Engineers in 1857–58. Author's collection.

Corps of Topographical Engineers was a forerunner of the technique. He accompanied 1st Lieutenant Joseph Christmas Ives on his 1857–58 expedition to explore the Colorado River and Grand Canyon area and produced a striking shaded relief map of the Grand Canyon. It was published in 1861 (Fig. 2). To demonstrate differences in altitude Egloffstein developed a technique to show topographic features from an oblique angle by illuminating one side and leaving the other dark. This was accomplished using a time-consuming process of etching extremely fine parallel lines (impossible to see with the naked eye) to the printing plate which created different intensities of grey rather than the traditional black ink on white paper. This approach had never been done, at least not by mapmakers in the United States. But it was prohibitively expensive and Egloffstein used the technique only once more for a map of expeditions and surveys of New Mexico and Utah.[4]

Early in the twentieth century, the US Secretary of the Interior requested a more artistic technique be employed for a special map series of the western national parks. John Renshawe (1852–1834), inspector of maps and accomplished watercolourist, adapted existing topographic maps of the area by replacing the contour lines with gradations of colour to indicate relief. In 1913 the USGS began publishing Renshawe's maps which included Crater Lake (1913), Yosemite (1914), Glacier (1914), and Yellowstone (1915) along with one or two a year thereafter. The practice was discontinued in 1928 when it too was deemed too expensive (Fig. 3).[5]

In Europe, Eduard Imhof (1895–1986), Professor of Cartography at the Swiss Federal Institute of Technology, began developing these techniques in the 1930s; but in the United States, shaded relief maps were no longer produced. And this is where Hal Shelton comes into the story. How did Shelton get the idea for shaded relief maps? He described the momentous event to me: In the early 1940s, after preparing a draft quadrangle map[6] in a remote part of Nevada, he went into town to ask the locals for the names of the various geographic features in their area. As was standard for USGS, the map he had created

Fig. 3 John H. Renshawe, USGS, 'Panoramic View of the Yellowstone National Park, Wyoming-Montana-Idaho', 1915. 53 x 46 cm (21 x 18 in). Scale: 1:187 500. Author's collection.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YELLOWSTONE LAKE
PANORAMIC VIEW OF THE YELLOWSTONE NATIONAL PARK, WYOMING-MONTANA-IDAHO