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Exploring Desert Stone

Steven K. Madsen

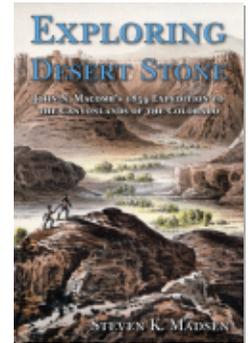
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THE BONES AND THE MAP

Additional challenges awaited Macomb and Newberry following their safe return to their homes in the East. Macomb needed to oversee the completion of a final report of the expedition. A high-quality, large-scale map, based on information from Dimmock's exemplary fieldwork, that fully depicted the region explored by Macomb had to be created. But who would take on the task? Artifacts and other materials gathered by Macomb's men needed to be submitted to the Smithsonian Institution. In addition, experts in various scientific endeavors needed to study the specimens collected by Newberry and issue their own reports. With a looming Civil War, would Newberry be able to complete his assigned task? Moreover, would Macomb see the fruits of his labors?

In February 1860, Newberry sent Dr. Joseph Leidy, secretary of the Smithsonian Institution, "three boxes of bones from the Jurassic rocks of south[er]n Utah." In his letters to Dr. Leidy, Newberry begged him to write an article on the dinosaur fossils he had discovered for inclusion in the expedition's published report.¹ For unexplained reasons, Leidy failed to do so.

That year, Newberry also sent the Smithsonian several examples of ancient pottery he collected from New Mexico, Colorado, and Utah, including a stone hammer, arrowheads, and a flint saw from ruins on the San Juan River. This collection, however, was overlooked.² Furthermore,

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1. Newberry to Dr. Joseph Leidy, January 17, February 8, 20, 1860, July 15, September 6, 1861, College of Physicians of Philadelphia.
 2. "Ancient Pottery from New Mexico, Collected by Dr. J. S. Newberry," accession number 291, 1860, Record Unit 305, Office of Registrar, U.S. National Museum, SIA.

U. S. National Museum.
CARD CATALOGUE OF ACCESSIONS.

Macomb, Capt. J. N.

DATE	Acc. No.	Cat. No.	NATURE OF OBJECT.	LOCALITY.
1860	27		Eleven boxes of Geol. & Nat. Hist. Colln.	St Mexico
1860	35		Two Specimens Zoology.	San Juan
.	38		Skins of Mammals.	St Mexico

Courtesy of the Smithsonian Institution Archives

U.S. National Museum Accession Record, 1860. John N. Macomb's contribution to the Smithsonian Institution.

by late November, the Smithsonian seemed to have lost the plants that Newberry had gathered on the expedition. He wrote a terse note to the staff: "McCombs [*sic*] plants you engaged to send to Dr [John] Torrey last spring did you not? I will write to Dr T. immediately about them and see if he can catalogue them for our report. If not, Dr. Engelmann will take them up at once." Newberry then hesitated: "They had perhaps better be left for the present."³ (Later, Newberry visited Dr. Torrey "to look over the plants we collected." He noted that Torrey "will make a brief report" on the plants "without compensation." Torrey "would like some 5 or 6 plates to represent the new species if he can find any one to make the drawings. the cost would be about \$50," added Newberry. But Torrey never issued his report.)⁴

The following year, Macomb asked the War Department for additional funds to make a chemical analysis of the mineral ores "now deposited at the Smithsonian Institution" and to make illustrations of specimens gathered on the expedition, which he hoped to include in his report. (In 1860, Macomb had submitted skins of mammals, eleven boxes of geological and natural history collections from New Mexico, and two zoological specimens from the San Juan River to the Smithsonian.)⁵

Accompanying his request, he reported the discovery of gold in the region, "A new interest has lately been given to the scene of our exploration from the fact that gold has been discovered, a short distance northward of it, in such quantities as to induce a considerable immigration thither,

3. Newberry to "Professor," Washington, D.C., November 27, 1860, SIA.

4. Newberry to Macomb, July 26, 1861, NA.

5. Macomb to Humphreys, February 15, 1861, NA; Capt. J. [N.] Macomb, accession number 027, 1860, Record Unit 305, Office of Registrar, U.S. National Museum, SIA.

and already we hear of the establishing of a settlement at the ‘Pagosa’ near our upper crossing of the San Juan.”⁶

Nothing came of Macomb’s petition. Moreover, following their return to Washington, the beginning of the Civil War diverted the explorers’ energies and drew the attention away from the summations of the expedition. The three principal explorers would leave their homes to serve in the war.

However, as late as July 5, 1861, Newberry was still revising the report. He complained to Macomb that his notes were “too long at one End and too short at the other—too much on the country East of Santa Fé—too little West—I have now omitted all East of Santa Fé and the Rio Grande. The Western notes I trust will be of some little help to you.”⁷

In late July 1861, Newberry wrote Macomb to report his progress:

I believe I said to you that I could hand in my report complete by the end of September and that I should like \$100 for drawings. The M.S. [manuscript] is all written except the final chapter and the descriptions of some of the new species. These with the drawings which are giving me much trouble will I fear occupy all of the interval between the present time and the time specified—I am however doing my best to hurry on the work and it shall be done just as soon as possible, and have it well done. September I expect to spend in Washington and shall there be busy with our geological map & sections.—and in putting my report in perfect order for the printer.⁸

Newberry’s geological map never made it into the final report.

When the government suspended the publication of the expedition’s findings, Newberry lamented, “Much most valuable information in regard to the far West has been lost to the country and to the world.”⁹ (The Macomb report could not have been issued at the outset of the Civil War without the accompanying map, which was not completed until 1863 and made public the following year. Moreover, it’s possible that the delay in

6. Macomb to Humphreys, February 15, 1861, NA.

7. Newberry to Macomb, July 5, 1861, NA.

8. *Ibid.*, July 26, 1861.

9. Macomb, *Report*, 13. In his “Geological Report,” Newberry recorded his extensive study of the Colorado Plateau. He noted that aside from some isolated mountains, the “rocks composing the plateau are sedimentary throughout.” He divided the Colorado River drainage into two groups—mountain ranges and the great plateau. He explained that the mountain systems of the region would require “years of patient study” to fully comprehend; so he provided a “skeleton sketch of their extent, structure, and direction.” He referred to the Rocky Mountain system as “the great backbone of our continent.” The Rocky Mountain drainage furnished most of the water that flowed down the Colorado. The composition of the lower Colorado ranges, he reported, were markedly different from the Rocky Mountains and contained a “much greater degree of purely eruptive rocks.”

finishing Newberry's illustrations for the Macomb report may have caused its late issuance. In 1875, Macomb apparently submitted Newberry's finished report, "with its twenty-two illustrations," to the Office of the Chief of Engineers for publication. That same year, Ferdinand B. Meek, updated his report on cretaceous fossils that he had prepared in 1860.)

Newberry's geological report comprises the bulk of the final work. He contributed more than one hundred pages to the report, while Macomb wrote less than ten. Moreover, Newberry submitted a thirteen-page report on the carboniferous and Triassic fossils he collected on the expedition. The final edition also contained a fourteen-page report by Ferdinand B. Meek on cretaceous fossils gathered by Newberry's team and a map of the region compiled by Prussian aristocrat Baron Frederick Wilhelm von Egloffstein.¹⁰

Before the printing of the expedition report, Egloffstein, who had been with Ives in the Grand Canyon, issued the official map of the expedition separately under his name in 1864 to capitalize on the mining activity in the San Juan Mountains of Colorado. (Thus, Egloffstein's map of the Macomb expedition was available for Powell to peruse five years before he launched his expedition down the Colorado. It seems highly unlikely, since Egloffstein's map had circulated among the military brass in Washington, D.C., and the Secretary of the Interior had studied it, that Powell possessed no knowledge of it.)

The Macomb expedition map plotted the easiest routes into the region and helped debunk the geographical myths of that time.¹¹ In addition, the *Preliminary Map of the Surveys in Colorado . . . 1873*, made under the command of Lieutenant E. H. Ruffner, stated that "use is made of . . . the topography given by . . . Macomb in 1859." When published, the final report of the expedition provided valuable information for prospectors traveling to Colorado's mineral-rich Rockies and for cattlemen who

10. F. B. Meek wrote his report in 1860, which he updated in November 1875, just before the publication of the full report. His material included "descriptions and illustrations of eleven new species of Cretaceous fossils." He described silicified trunks of trees, leaves, vegetable remains, mollusks, and oysters. Meek named one fossil, "Prionocyclus Macombi," in honor of Captain Macomb. Newberry wrote a separate report on carboniferous and Triassic fossils. Teeth, ferns, leaves, and fruit are among the fossils illustrated and described by Newberry. At the "Cobre," the old copper mine nine miles north of Abiquiu, Newberry discovered "great numbers of fossil plants," including trunks and branches of trees. Newberry also named a fossil, "Otozamites Macombii," after Macomb.

11. F. W. von Egloffstein, *Map of Explorations and Surveys, in New Mexico and Utah made under the direction of the Secretary of War by Capt. J. N. Macomb, Topographical Engineers, assisted by C. H. Dimmock, C. Engineer, 1860* (New York: Geographical Institute, Baron F. W. von Egloffstein, 1864). Egloffstein sent running proofs of his map to Macomb in Washington, D.C., and asked him to get critiques of his work from those who had been in the field, within the region covered by the map. He also displayed his map to a number of government officials for their input.



Courtesy of Kansas State Historical Society

Frederick Wilhelm von Egloffstein.

supplied the miners with beef, results that were not part of the original goals of the expedition.

In the realm of geography and cartography, Egloffstein was a pioneer.¹² He introduced Americans to a new way of visualizing geography. It was a radical departure from the two-dimensional, hachured maps of the past. Lieutenant Ives explained, “This method of representing topography is . . . truer to nature. It is an approximation to a bird’s eye view, and is

12. Egloffstein’s pioneering endeavor had begun earlier when he produced the maps for E. G. Beckwith (1854) and the Ives expedition (1857–1858). After he had seen the maps drawn for Ives, Macomb petitioned the government for additional funds so that he could contract with Egloffstein to produce a map for inclusion in his report. (The Macomb map, drawn by Egloffstein, was more finely ruled than his earlier maps.) See Macomb to Humphreys, October 1, 1860, February 15, 1861, March 16, 1861, NA; Humphreys to Macomb, October 8, 1860, March 18, 1861, NA; Wm. Pennington, Speaker of the House of Representatives, to C. Holt, Secretary of War, February 26, 1861, NA. Egloffstein is considered America’s “Father of Half-Tone Engraving.” “Frederick W. von Egloffstein,” *Catholic Encyclopedia* on

intelligible to every eye.”¹³ According to historian William Goetzmann, Egloffstein’s “process has been incorporated in every geography textbook from that time to the present.”¹⁴

Egloffstein’s complex mapmaking technique included the construction of plaster models of the terrain, experimentation with oblique lighting, the use of “daguerreotype technology” and a “half-tone process” that involved finely ruled lines and the use of acid to etch the steel plate.¹⁵ His new process of mapmaking was also cost effective. Lieutenant Ives explained: “Nearly one-half of the most expensive part of map engraving—the hachures upon the mountain sides—is dispensed with.”¹⁶

Historians consider Egloffstein’s shaded relief map, issued in Macomb’s report, his finest work. The map is “one of the most beautiful maps ever published by the Army,” wrote Carl Wheat. A modern map seller has noted that the map “demonstrates the culmination in the process developed by Egloffstein to convey the idea of altitude.” In addition, it represents “a remarkable 3–dimensional realism unmatched in the period.”¹⁷

The Egloffstein map furnishes an added bonus for students of history. In addition to showing public surveys, key mining districts, and forts, it carefully retraces the routes of numerous other explorers who passed through the region: Lt. James H. Simpson in 1849, Maj. Oliver L. Shepherd in 1858, J. C. Brown’s chain survey, Macomb’s wagon road (from Fort Union

CD-ROM, <http://www.newadvent.org/cathen/05327.htm> (accessed June 20, 2007). In 1865, Egloffstein was awarded patent number 51,103 by the United States Patent Office for his “heliographic and photographic spectrum for producing line-engravings.” In 1869, Egloffstein received a government pension for his Civil War service with the New York Infantry, Regiment 103. Ten years later, he petitioned the government for naturalization. “Frederick W. von Egloffstein,” Civil War Pensions. Organization Index to Pension Files of Veterans who served between 1861 and 1900 (July 19, 1869). Publication no. T289. National Archives, Washington, D.C.; “Frederick W. von Egloffstein,” Soundex Index to Petitions for Naturalizations filed in Federal, State, and Local Courts in New York City, 1792–1906, Publication no. M1674, National Archives, Washington, D.C. See <http://www.footnote.com/searchdocuments.php?query=Frederick+W.+von+Egloffstein&collection=1#7969122> (accessed April 21, 2008.) “In 1878 [Egloffstein] and his family moved back to Germany, residing near Dresden, where in lingering poor health he died in 1885.” Richard G. Biedleman, *California’s Frontier Naturalists* (Berkeley: University of California Press, 2006), 306.

13. Joseph C. Ives, *Report upon the Colorado River of the West* (repr., New York: Da Capo, 1969), appendix D.
14. William H. Goetzmann, *Army Exploration in the American West, 1803–1863*, (New Haven, Conn.: Yale University Press, 1959), 393.
15. J. B. Krygier, “Envisioning the American West: Maps, the Representational Barrage of 19th Century Expedition Reports, and the Production of Scientific Knowledge,” *Cartography and GIS* 24, no. 1 (1997): 27–50, http://go.owu.edu/~jbkrygie/krygier_html/envision.html (accessed October 31, 2006).
16. Ives, *Report upon the Colorado River of the West*, appendix D.
17. Carl I. Wheat, *1540–1861, Mapping the Transmississippi West*, vol. 4 (San Francisco, Calif.: Institute of Historical Cartography, 1960), 142; Old World Auctions. “Lot #165—Map of Explorations and Surveys in New Mexico and Utah . . .,” http://www.oldworldauctions.com/auction106/detail.asp?owa_id=2145212957 (accessed April 13, 2005). See also Goetzmann, *Army Exploration in the American West*, 393.

to Santa Fé), Capt. H. B. Schroeder in 1859, Capt. Joseph R. Walker in 1859, Maj. Electus Backus 1859, Col. Wm. W. Loring in 1858 and 1859, Maj. John S. Simonson in 1859, Father Silvestre Velez-Escalante in 1776, Lt. E. G. Beckwith in 1853, Lt. Amiel W. Whipple in 1853, Lt. Joseph C. Ives in 1858, Lt. William H. Emory in 1846, Capt. Randolph B. Marcy in “mid winter” 1858, Capt. John W. Gunnison in 1853, and Capt. John C. Fremont in 1843, 1844, and 1845. Unfortunately, Egloffstein misplaced the Old Spanish Trail route above the Big Bend of the Dolores River, a fiction he copied from Lieutenant Beckwith’s map of the Gunnison expedition.

Using precise reference points such as latitude, longitude, elevation, and lines of triangulation established by Macomb and other government expeditions, Egloffstein built a framework that enabled him to construct his large map of the region. He apparently used Dimmock’s splendid field map and Macomb’s manuscript map as base maps for the construction of his masterpiece. The extent of the region covered by the map reached some twelve thousand square miles.¹⁸ (Near the center of this region rests the Four Corners of Arizona, Colorado, New Mexico, and Utah.)

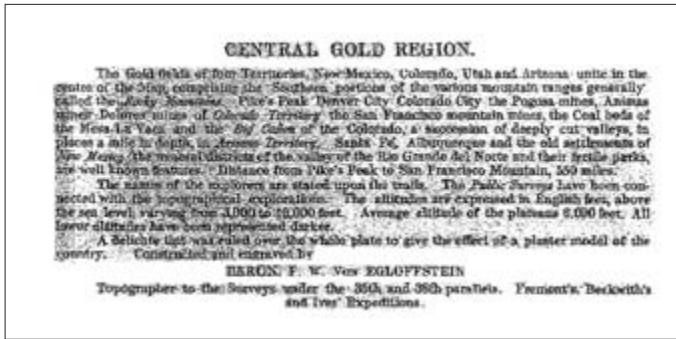
Using data from surveys in addition to Macomb’s, particularly the 1853 railroad expedition of Capt. John W. Gunnison, Egloffstein built a composite map. As noted earlier, Gunnison followed a route to the north of Macomb’s path—along the North Branch of the Old Spanish Trail. Both surveys nearly intersected each other’s path at the La Sal Mountains, above present-day Moab, Utah. Egloffstein took the information gathered by both parties to construct his large-scale map. He also took data from the 1854 Pacific railroad survey of Lt. A. W. Whipple. Whipple followed the 35th parallel from Fort Smith, Arkansas, to California via Albuquerque.

In addition to the data he collected from the Macomb, Whipple, and Gunnison surveys, Egloffstein combined the topographical features and geographical positions found on the Simpson, Emory, and Ives maps, taking “care to preserve the material of each party, exploring in their own fashion and mapping in their own language.” He wrote, “Every map has its own character, difficult to read and impossible for one who has not been over the ground himself or close by. This new style of topography . . . reduces these different languages of mapping in *one*, plain and readable.”¹⁹ In addition, Egloffstein asked to borrow Macomb’s copy of Josiah Gregg’s map of New Mexico. He explained, “On those old maps many valuable features are delineated which disappear on the recent publications.”²⁰

18. Fremont proposed the same method for the construction of his 1843–1844 expedition map. Donald Jackson and Mary Lee Spence, eds., *The Expeditions of John Charles Fremont*, vol. 1 (Urbana, Ill., 1970–1984), 776. See also Macomb, *Report*, 7.

19. Egloffstein to Macomb, June 12, 1861, NA.

20. *Ibid.*; See Josiah Gregg, *A Map of the Indian Territory, Northern Texas and New Mexico, Showing the Great Western Prairies* (New York: Henry G. Langley, 1844).



Lower right corner of the Frederick W. von Egloffstein map.

In constructing the most accurate map of the region possible at the time, Egloffstein collected all available geographical information. He complained of the “endless labor” in searching for maps “scattered over so many Offices” in Washington, D.C. To help him in his search, he asked Macomb “to gather a few maps of the mining districts around Pike peak.” He explained, “The work would gain much in value and secure a certain longevity.”²¹

On his map, Egloffstein was careful to include the names of both the “Grand” and “Upper Colorado” rivers because “The blue river, or Na-un-ka-rea river has been called ‘Upper Colorado’ by the settlers of Colorado Territory giving rise to the name of that territory; I have therefore added both Grand river and Upper Colorado. This river rises at Long’s peak and is fully as long as the Green river, deserving the main name Colorado as it drains the whole mountainous district between the del Norte and the Platte.”²²

Egloffstein admitted to Macomb that his depiction of the San Juan “mountain district” was “vague.” He proposed that Macomb send a final proof of his map to Albert Pfeiffer in New Mexico “to get from him . . . the most reliable information of the San Juan Mountains [and] . . . the parks of the upper Animas, Dolores, and Uncompahgre [sic] Rivers.” He added, “There are many weak parts of the map, and as gold may be discovered in almost every section of that country, I fear the consequences; an early “exposition” of the errors embraced in the construction.”²³

Egloffstein felt that the map would “gain much in correctness and popularity” if preliminary copies of the map were also sent to Kit Carson, Antoine Leroux, Colorado Territory’s governor, and the surveyor general

21. Egloffstein to Macomb, June 12, 1861, NA.

22. *Ibid.*, June 2, 1861, NA.

23. *Ibid.*, June 12, 1861, NA.

for their review. Furthermore, he wanted to get input from “all parties who have travelled and explored” in the New Mexico region.²⁴

Whether or not Egloffstein got what he wanted is unknown. Macomb was heavily engaged in Civil War duties at the time and, in 1862, Egloffstein too joined the war effort. He helped organize a regiment of New York volunteers and commissioned a colonel. Wounded in battle, he later retired from the Army and returned to his printing pursuits. Finally, in 1864 he published his great map of the San Juan Exploring Expedition. In all likelihood, his map made it possible for prospectors swarming Colorado’s southern Rockies to take advantage of detailed landscape views.²⁵

Egloffstein believed that the Macomb map was destined to become “a document of much value and an ornament to the bureau of topographical engineers.” (The Egloffstein map is today a very rare and highly prized cartographic gem.) He praised Macomb for “the great amount of original work your map is furnishing, thus making a contribution to geography, which otherwise would have been burried [*sic*] perhaps forever in the reports and archives of the War Department.” He predicted that Macomb’s map of New Mexico, together with the Texas boundary map of that period, “will form a set of geographical maps much wanted in the scientific and travelling circles of Europe, and carry your name all over the world, where geography is cultivated.” (On exhibiting his rendition of the Macomb map in Washington, D.C., Egloffstein had caught the attention of Secretary of the Interior Caleb B. Smith and the Prussian Ambassador, “Baron F. von Gerolt.”)²⁶

Sadly, that never happened for Macomb or Egloffstein. The Civil War arrested their dreams.

24. Ibid.

25. “Frederick W. von Egloffstein,” Catholic Encyclopedia on CD-ROM, <http://www.newadvent.org/cathen/05327.htm> (accessed 20 June 2007). On 28 October 1862, Macomb reported, “But little progress has been made during the past year, upon the engraving of the steel plate of my map of the San Juan River, New Mexico and Colorado, for the reason that the person with whom the arrangement was made for the engraving, accepted the command of one of the regiments in the field (103d. N.Yk) and was severely wounded whilst rendering distinguished service against the enemy in North Carolina.” Macomb to Colonel S. H. Long, Washington, D.C. Letters Received by the Topographical Bureau of the War Department. NA. Microcopy No. 506, Roll 53, M. In mid-1863, Egloffstein informed Macomb, “Your plate is doing well and you will receive a good impression of the same during the week.” Egloffstein to Macomb, May 30, 1863, NA.

26. Egloffstein to Macomb, [5], June 28, July 16, 1861, NA. John L. Hazzard “engraved the Lettering” and assisted Egloffstein with the topography of the “Map of New Mexico and Utah.” See Hazzard to Macomb, July 16, 1862, NA. Samuel Sartain was responsible for the map’s ruling and Frederick Langenheim was the photographer. See Egloffstein to Macomb, July [10], 1861, NA.