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Article Summary: McIntosh presents evidence that the published map of the Yale paleontology expedition was inaccurate. The explorers had followed the Dismal River believing that it was the Middle Loup.

Cataloging Information:

Names: Othniel Charles Marsh, Frank North, Luther North, "Buffalo Bill" Cody, Charles W Betts, George Bird Grinnell, Harry D Ziegler, Spotted Tail, T Mitchell Prudden, Thomas Maghee

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Photographs / Images: members of the 1870 Marsh expedition in Chicago; [fig 1] the Yale map of the expedition (*Harper's New Monthly Magazine*, 1871); [fig 2] the military map of the expedition; photograph of one of the party's campsites, probably near Fort Bridger (*The Passing of the Great West: Selected Papers of George Bird Grinnell*, John F Reiger, ed, 1972); [fig 3] map by C B McIntosh showing "some unexplained logistics" of the trip up the Loup fork; [fig 4A] map by a scout of Company M, Fifth Cavalry, 1870; [fig 4B] portion of military maps, 1870 Marsh expedition; [fig 5] McIntosh's proposed correction of route for 1870; [fig 6] McIntosh maps: "Fording the river on July 20, 1870"; drawing of Marsh and his students recovering Indian skulls (Charles Betts, *Harper's New Monthly Magazine*, 1871); [fig 7] McIntosh map of the Marsh expedition, July 24-26; [fig 8] section of Curtis map by a scout of Company I, Third Cavalry, 1872; [fig 9] section of map by a scout of Companies L and M, Third Cavalry, 1873



Members of the 1870 Marsh expedition in Chicago en route to Nebraska: John Reed Nicholson (standing at left), George Bird Grinnell, James W. Wadsworth, Othniel Charles Marsh, Charles Wyllys Betts, Harry Degen Ziegler, Henry Bradford Sargent, John Wool Griswold (sitting at left), Alexander Hamilton Ewing, Eli Whitney, Charles McCormick Reeve, and James Russell. Courtesy of the Yale University Press.

THE ROUTE OF A SAND HILLS BONE HUNT: THE YALE COLLEGE EXPEDITION OF 1870

By C. Barron McIntosh

Othniel Charles Marsh of Yale College held the first chair of paleontology established in the United States. After a short summer visit to the Rocky Mountains in 1868, Professor Marsh decided that a good way to explore the paleontology of the West would be to lead some Yale students on expeditions into selected areas. He planned to use military posts as bases for explorations into the nearby hinterlands.

Marsh came west with his first group of students in the summer of 1870.

Their first stop was Fort McPherson, Nebraska, from which they planned to travel northward into the Nebraska Sand Hills. Most of the students had never been on a western pony. Therefore the group spent some time at the fort becoming acquainted with the horses and equipment for the trip.

Professor Marsh and the students, along with a company of the Fifth Cavalry under Lieutenants Bernard Reilly and Earl D. Thomas, headed north on July 14. Major Frank North and two Pawnee scouts led the column. The caravan was composed of seventy men and six army wagons loaded with provisions.

"Buffalo Bill" Cody, then scouting

from Fort McPherson, accompanied the expedition the first day. Cody, the students, and Marsh gathered around the campfire that evening to discuss the development of Sand Hills geology. Apparently Cody had difficulty believing Professor Marsh's explanation of theories concerning how the Tertiary deposits of the Sand Hills were first laid down. Two of the students, in later articles, mentioned Cody's jokes about the theories.¹

The destination of the Marsh expedition was the Loup Fork River, known today as the Middle Loup River. There the group planned to look for fossils in the Tertiary deposits exposed in water-cut cliffs adjacent to the river valley.

C. Barron McIntosh is professor emeritus of geography at the University of Nebraska at Lincoln.

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A map of the expedition's route, accompanying an article by Charles W. Betts, one of the students on the trip, was published in *Harper's New Monthly Magazine* in 1871 (Figure 1).² This map (called hereafter the Yale map) shows the expedition's five-day journey north from Fort McPherson to the Middle Loup River, a six-day trek west up the river to the "head of the Loup Fork," and five days traveling south to Birdwood Creek, the North Platte River, and back east to Fort McPherson.

I questioned the accuracy of this map almost from the first time I saw it. Of most concern was the portion indicating the expedition's route south from the head of the Loup Fork (Middle Loup River) to the upper portion of Birdwood Creek. In 1857 Lieutenant G. K. Warren had identified the head of

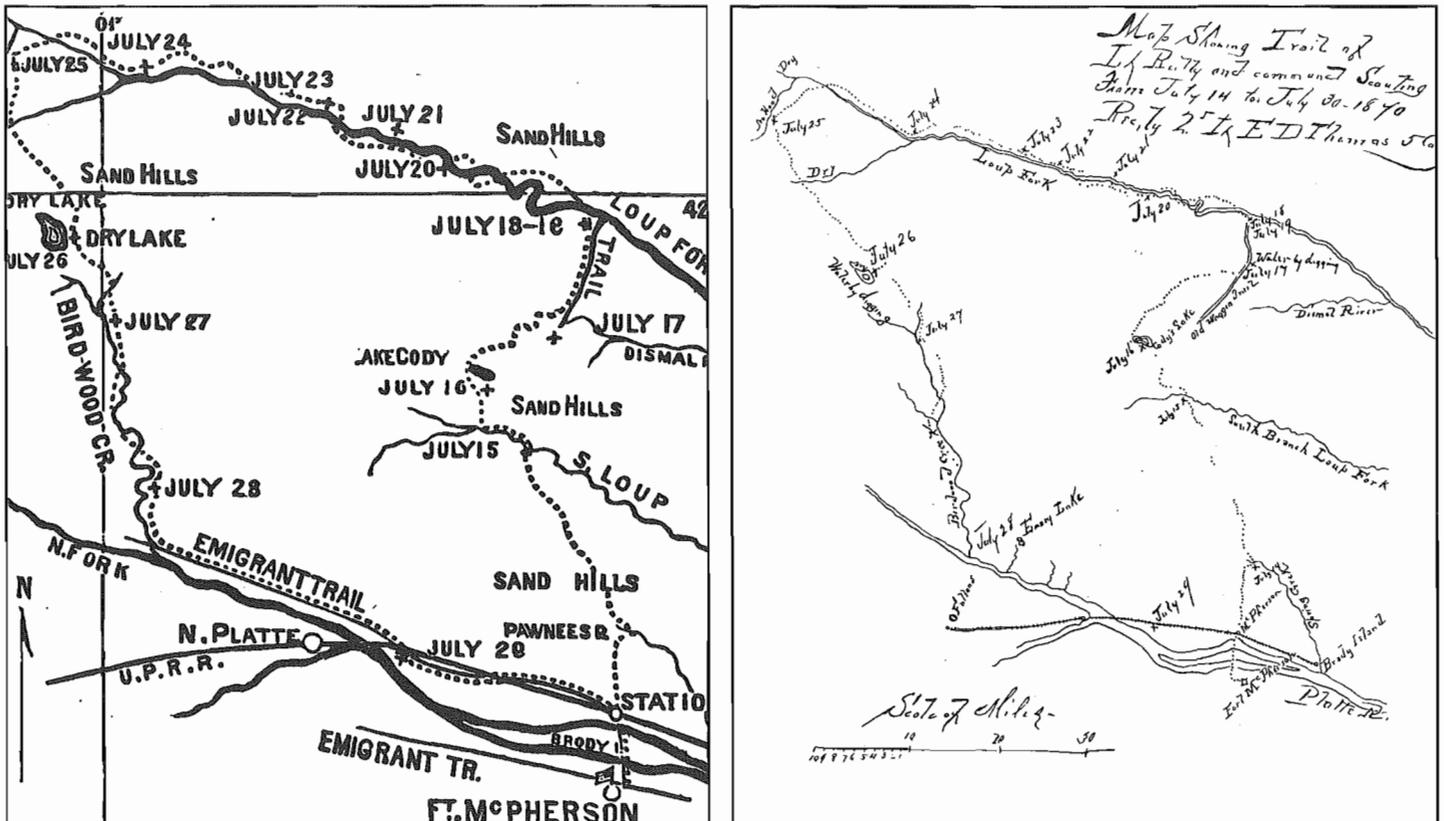
the Middle Loup River as being where the valley of the north branch of the Middle Loup in southwestern Cherry County has a north-south alignment of about one mile. Warren's camp in 1857 was in that valley, located today in Section 25, Township 26N, Range 37W.

From the head of the Middle Loup (that point from which current U.S. Geological Survey maps show a continuous water flow on to the east), the distance south to Marsh's first campsite on upper Birdwood Creek (July 27) appeared to be more than could be covered in two days. The distance measured in a straight line on current USGS maps is nearly fifty-five miles. However, a company of cavalry, six heavily loaded wagons, and the Yale party of thirteen would have had to zig and zag around every sand dune in their path as they took a general southeas-

terly course. Therefore the total distance traveled would have been closer to sixty miles. To cover that distance in two days would have required forced marches with probable loss of mules and horses, for the only surface water found was too alkaline to drink. The expedition obtained fresh drinking water only once during those two days, and that by digging in the dry portion of an alkaline lake bed.³ Until recently, however, the lack of a scale of miles on the Yale map prevented checking its accuracy.

While studying a microfilm of early military maps at the Nebraska State Historical Society, I found a map identified: "Map Showing Trail of Lt. Reilly and command scouting from July 14 to July 30, 1870" (Figure 2).⁴ The name Reilly and the dates sounded familiar. Was this a map of the 1870 route of the

Figure 1. The Yale map of the 1870 O.C. Marsh expedition. Harper's New Monthly Magazine (1871), 664 . . . (right) Figure 2. The military map of the 1870 Marsh expedition. Tracing by C.B. McIntosh.





After exploring the Sand Hills, the Marsh expedition traveled into Wyoming. This photograph of one of the party's campsites probably was taken near Fort Bridger. From *The Passing of the Great West: Selected Papers of George Bird Grinnell, Edited and with Introduction and Commentary by John F. Reiger*. Copyright 1972 by John F. Reiger, assigned 1984 to the University of Oklahoma Press.

Marsh expedition? But “scouting”? Recent events have shown how the military uses euphemisms for projects for which public monies are being spent. It seemed logical that the same thing could have happened in 1870 when a military commander granted a favor to an influential friend.

The route followed by the military “scouting” party was similar to that shown on the Yale map. The military map turned out to be the one made by the cavalry escort to the Marsh expedition, and it probably is the map Marsh or Betts used to produce the map published in *Harper's* in 1871. Although the map as it appears on microfilm is quite faded, all campsites are dated and all but one clearly located (Figure 2). Most importantly, it had the one essential element not found on the Yale map — a scale of miles.

This scale, with the military map as a base, was used to measure the straight-line distance from the July 25 camp at the “head of Loup Fork” to the camp at “dry lake” on July 26. The distance was about nineteen miles. The distance

measured from “dry lake” to the July 27 camp on Birdwood Creek was approximately nine miles. The combined distance of twenty-eight miles measured from the “head of Loup Fork” to the Birdwood camp shown on the military map was a significant discrepancy to the actual distance of nearly fifty-five miles calculated from the USGS map.

Why, along this western leg of the route, did such a great disparity in distance exist between the trail drawn on the USGS map and the trail found on the two maps made in 1870? There could be two possible explanations. Either the route (thematic pattern) was incorrect because of careless cartographic work involving an incorrect scale, or the route could have been drawn on an incorrect network of rivers (reference pattern of location). I decided to test the entire route using the scale from the military map.⁵

The test, combined with evidence provided by contemporary sources, reveals the true route of the 1870 Marsh expedition was not along the Middle Loup River but along the Dismal

River. This error must have been recognized by Marsh and others as early as 1873. Yet the book, *O.C. Marsh: Pioneer in Paleontology*, by C. Schuchert and C.M. LeVene, published by Yale University Press in 1940, still claimed Marsh went up the Middle Loup River in 1870. This article attempts both to correct a historic error and to provide a location base for correcting paleontological correlations based on fossils found by Marsh along his claimed route up the “Loup Fork River.”

The Expedition's Claimed Route: North to the Middle Loup River

First I tested the route using the long held premise that the expedition went up the Middle Loup River. From a known point, Fort McPherson, a measurement 11.8 miles NNE shows a campsite in the valley near the head of a small stream (Figure 3). Today this stream is Pawnee Creek. The military map labels it Spring Creek; the Yale map calls it Pawnee Sp[ring]. The measured point is within a radius of one mile of the July 14 campsite identified on the military map. The distance measured using the military map scale makes close contact with a named physical feature.

The expedition traveled a straight-line distance of almost nineteen miles to the NNW on July 15. George Bird Grinnell, one of the students, noted, “The hardest day's march . . . was the second [one] . . . out; we were 14 hours in the saddle without a drop of water except what we carried in our canteens. I never realized what thirst was before. Your mouth becomes perfectly dry and your lips split.”⁶ Charles W. Betts further emphasized their discomfort: “Hour after hour they marched over burning sand hills without rocks or trees, or sign of water, while the thermometer stood at 110 degrees in the shade of the wagons.”⁷ Harry D. Ziegler wrote, “Professor Marsh believes that another day's experience of the same want would have destroyed half their stock and perhaps have produced the

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saddest results among the men.”⁸ Grinnell added, “The sand hills were not high but they were very steep, and the sand was deep, making the pulling hard for the teams.”⁹

The reality of such travel conditions casts further doubt on the accuracy of the 1870 maps’ depiction of the western leg of the journey. If it took the expedition fourteen hours on July 15 to cover a straight-line distance of nineteen miles, how could it have covered fifty-five miles from the “head of the Loup Fork” to the Birdwood in only two days, through similar or even more difficult terrain?

The distance traveled for the second day, July 15, plotted on the USGS map, indicates a campsite a little over a mile from the South Loup River. The distance traveled on the third day, July 16, measured on the USGS map, locates a site about one mile short of the campsite shown at Cody Lake on the military map. Use of the military map scale to plot distance on the USGS map produced only minor errors in distances between the first three campsites. Considering the lack of an accurate map base and the wheel-attached odometer method of measuring distance in 1870, the military map scale must be accepted as reasonably accurate.

There is no landform or water feature identified on the 1870 maps as being associated with the campsite on July 17. Measuring 14.4 miles along the compass direction of travel shown on the military map establishes an assumed campsite for July 17. A measured 4.8 miles north then locates the campsite occupied on July 18 and 19. That camp should have been located on the Middle Loup River but it falls more than seven miles short of that river when distances according to the military map scale are plotted on the USGS map.

Why should there be such a large distance discrepancy at the fifth campsite after the scale had tested reasonably accurate at the first three campsites? Could there have been a mislabeling of

ivers in the reference pattern of location? These questions were tested further by measuring westward from the alleged campsite on the Middle Loup as shown on the military map.

The Expedition’s Claimed Route: Westward Along the Middle Loup River

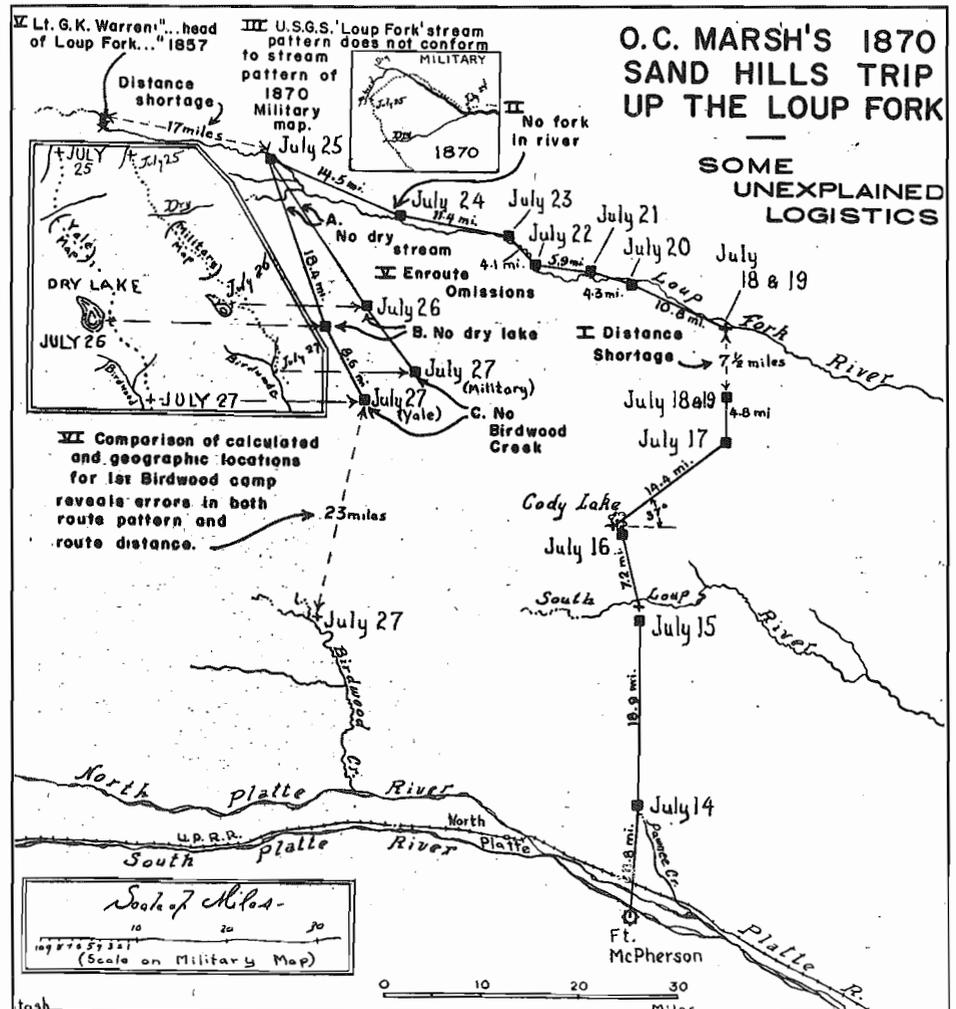
As the expedition traveled upriver, a prairie fire moved toward it from the west. It was speculated that Indians had started the fire to harass the expedition. Westward from where the party encountered the fire, Betts reported, “From this point we marched over the burned prairie that stretched

on every side as far as the eye could reach, studded with roasted cactus and dead grasshoppers; and it was with great difficulty that isolated patches of grass were found for the stock.”¹⁰

Both the Yale and military maps show the camp for July 24 near a fork in the river. There is no fork in the Middle Loup at the measured site of the July 24 camp on the USGS map. This is a definite break in the chain of argument that attempts to prove the premise favoring the Middle Loup route.

The distance of 14.5 miles traveled on July 25 should have taken the expedition to a campsite at the “head of

Figure 3. Map by C.B. McIntosh.



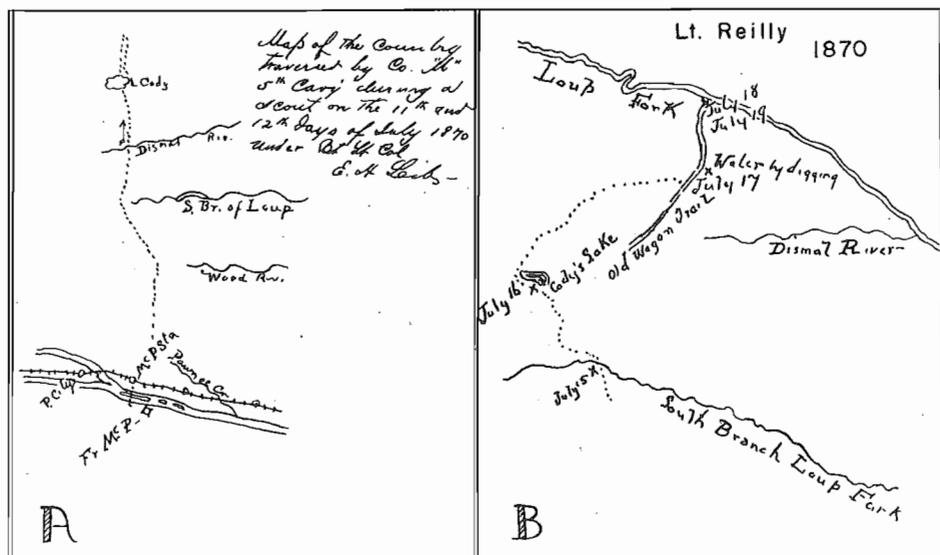


Figure 4A. Map of a scout of Company M, Fifth Cavalry, July 11-12, 1870 . . . (right)
 Figure 4B. Portion of military maps, 1870 Marsh expedition, July 14-27, 1870.
 Tracings by C.B. McIntosh.

the Loup Fork." This same distance measured along the Middle Loup River on the USGS map reached a point seventeen miles short of the "head of the Loup Fork" as identified by Lt. Warren in 1857. On July 25 the military map shows the expedition moved parallel along the north branch from the fork of the river for about 10.5 miles. At that point the party forded the river and traveled southwest six miles through the dunes before striking the river again. The military map pictures the river flowing north from the July 25 campsite and making a sharp curve to the east. The USGS map does not show any comparable bend along the upper Middle Loup River. The error in measured location of the July 25 campsite on the USGS map represents another definite break in the chain of argument testing the premise that the route followed the Middle Loup River.

The discrepancy between the distance measured on the 1870 military map and the distances measured on the USGS map becomes compounded the longer the route is associated with the

Middle Loup River. The difference was only seven miles at the point where the route first reached the river. There was a ten mile discrepancy in the location of a river fork at the July 24 camp. The July 25 campsite is seventeen miles short of the "head of the Loup Fork," claimed as the location of the expedition's camp on that date. The complexity of the problem only increases when it is noted that branches of the river shown on the military map do not conform to the pattern of branches shown on the USGS map.

The Expedition's Claimed Route: South to Birdwood Creek

In an attempt to salvage any sense of reality in the route as plotted on the USGS map, the compass direction of travel from the July 25 and July 26 campsites was determined for both the Yale and military maps (Figure 3). The military scale distances were then marked off along the compass directions and plotted on the USGS base map. There was no "dry lake" near either of the plotted campsites for July

26 and no Birdwood Creek in the vicinity of the measured campsite for July 27.

The distance error increased again. Measurements to campsites for July 27 on the USGS map were a minimum of twenty-three miles from the head of Birdwood Creek, where the Yale and military maps place Marsh's camp on that date. This discrepancy would have been even greater had measurement been made from a campsite adjusted to Warren's "head of the Loup Fork."

Why should the expedition's route show the first large distance error where it supposedly reached the Middle Loup River? And why do these errors increase in size and complexity the longer the route is associated with the Middle Loup? The answer to these questions is simple. The army at Fort McPherson was not knowledgeable about the length or the location of the Dismal River.

Map A in Figure 4 records the route of a scouting trip north from Fort McPherson to a little beyond Cody Lake.¹¹ This trip occurred July 11 and 12, 1870, just two days before the Marsh expedition headed north. The scouting party, Company M of the Fifth Cavalry, mapped the Dismal River along a west-to-east line located south of Cody Lake when, in fact, the river lies north of the lake.

Map B in Figure 4 shows the northeast part of the military map from the Marsh expedition. The Dismal River on that map is identified as starting northeast of Cody Lake and flowing eastward from that point. Maps of two military routes traversed within a few days of each other are obviously contradictory and neither is correct.

Luther North, brother of Frank North, the scout on the Marsh expedition, later became a close friend of George Bird Grinnell, one of the students on the trip. Discussing the route Grinnell had taken on the 1870 Marsh trip, Luther North said in a letter to Grinnell, "After reading your Story of the Bone Hunt in the Magazine you sent me I have figured it out this

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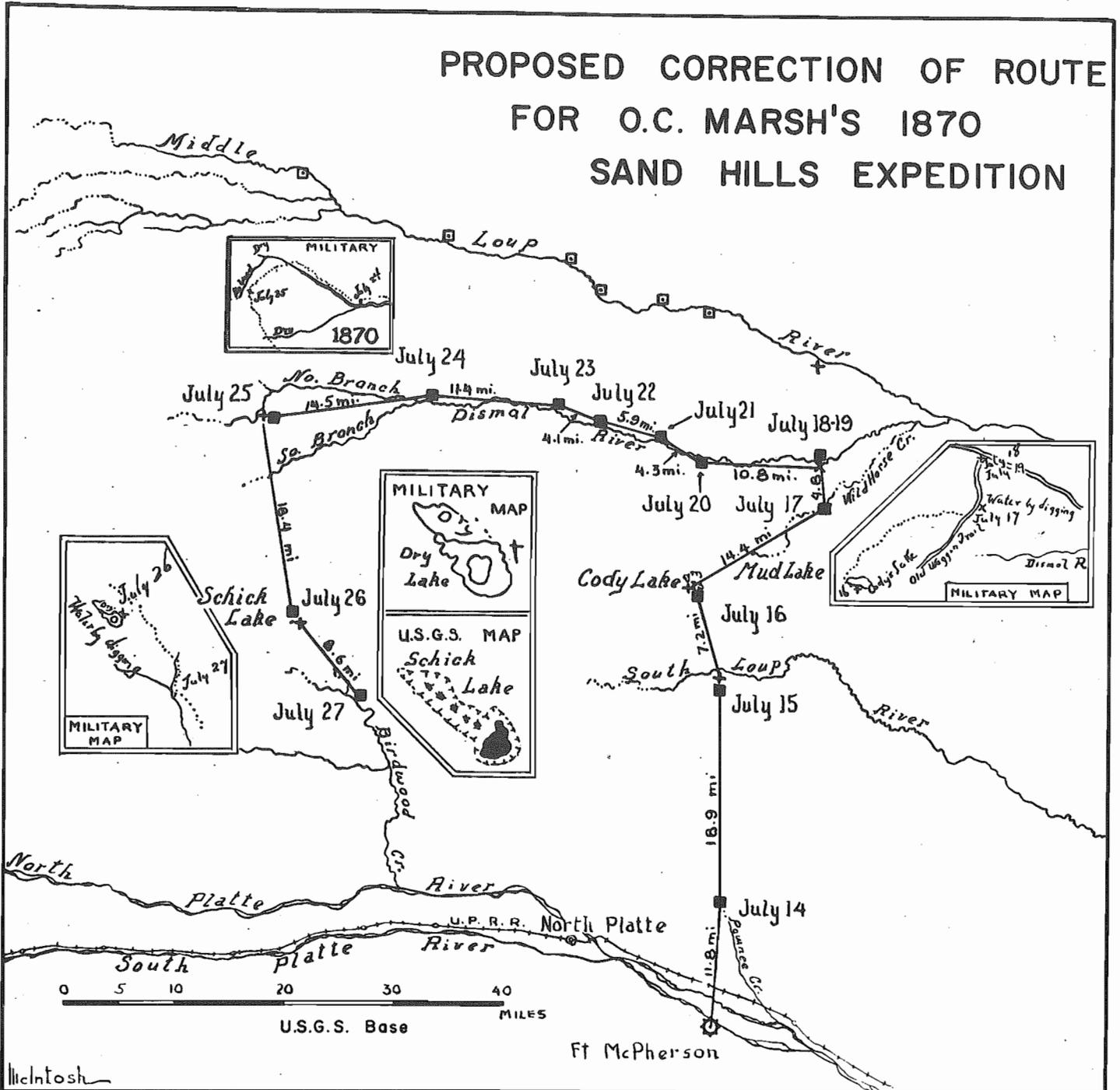


Figure 5. Map by C.B. McIntosh.

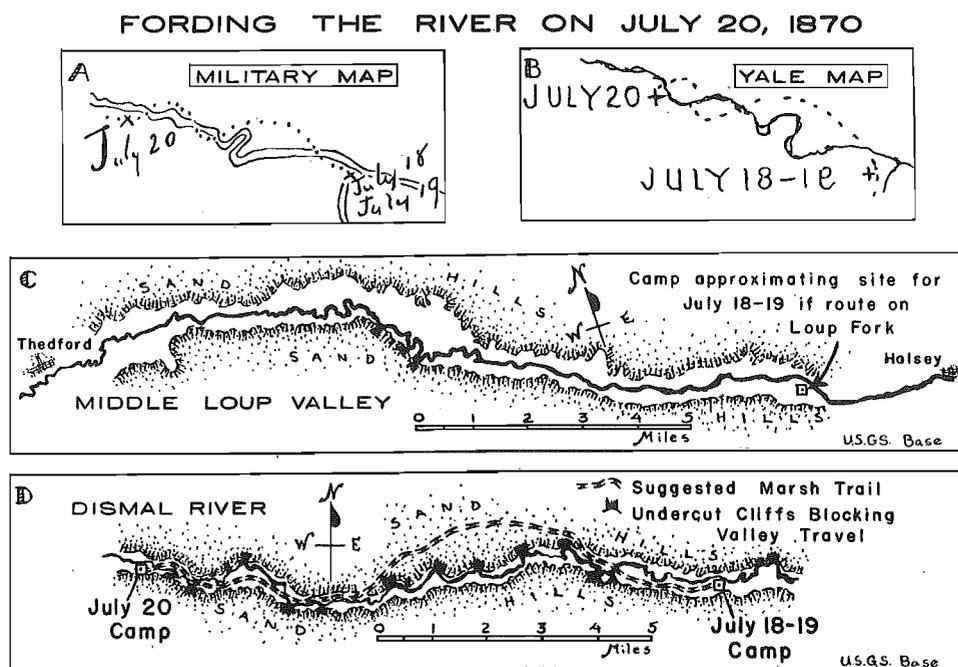


Figure 6. Maps by C.B. McIntosh.

way — you crossed the head of the South Loup and that was what Frank took for the Dismal.”¹² Grinnell, who in the late 1870s had spent some time at the Cody-North ranch at the head of the south branch of the Dismal, evidently was questioning himself as to the true route of the 1870 expedition. In his 1923 article mentioned by North, Grinnell says, “We worked up the river quite a long way but I have never known which of the branches we followed.”¹³ In 1870 the location of the Dismal River was in question. Frank North had not been through this country and even one of Marsh’s students questioned the route.

The Expedition’s True Route: North to the Dismal River

Of the water features shown on the military map, only those that were touched, crossed, or followed are shown in Figure 3. If the Dismal River is inserted as part of the reference pattern of location on the USGS map and distances measured again according to

the military map scale (Figure 5), the first three campsites are identical to those plotted in Figure 3.

The course of the trail from the July 16 camp at Cody Lake (Figure 3) was determined by the compass. In Figure 5 reason replaces the compass point. Harry D. Ziegler, one of the students, said, “The guides found the country almost impassable for wagons . . . [but made] the fortunate discovery of a trail made by Spotted Tail and his party while on their way to their present reservation in 1868.”¹⁴ This trail (identified as “the old wagon trail” on the military map) is shown in Figure 2 and Figure 5 inset. It approximates the intermittent course of Wild Horse Creek. Spotted Tail, acquainted with this valley route to the northeast toward the Whetstone Indian Agency, would have found this small stream dry in late summer. The Brule chief would have turned north at the first reasonable passage through the dunes to the fresh water of the Dismal, as shown by the trail on the military map.

Marsh and his associates, after spending July 17 wandering among the dunes northeast of Cody Lake, were ready to camp shortly after finding Spotted Tail’s trail in the valley of Wild Horse Creek. A note on the map beside the July 17 campsite reads, “water by digging.” With the creek dry they would have dug for water at the lowest point they could find in the stream bed. Their camp would have been nearby. Therefore the campsite for July 17 shown in Figure 5 has been determined by rotating the distance of 14.4 miles from the Cody Lake camp until it crossed the intermittent course of Wild Horse Creek.

The following day the expedition would have followed Spotted Tail’s trail north to the Dismal. A measurement of 4.8 miles north from the July 17 camp determines a point less than one mile north of the Dismal River. From there on north or northeast to any point on the Middle Loup River is over eight miles. This compares favorably to the error of seven plus miles found in attempting to make the route reach the Middle Loup (Figure 3). The evidence leads to the conclusion that the first leg of the Marsh expedition ended on the Dismal River rather than on the Middle Loup River.

The Expedition’s True Route: Westward Up the Dismal River

The campsite for July 18 and 19 on the military map was on the south side of the Middle Loup River. Measurement of the presumed route up the Dismal has been calculated from a campsite adjusted to the south bank of the Dismal River. The measured straight-line distance between morning and evening campsites on July 20 was about 10.8 miles. The campsite that night was again on the south side of the river. But the route for that day shown on both the military and Yale maps (A and B in Figure 6) raises the question: Why did the expedition ford the river four times on July 20?

Map C (Figure 6), tilted from true

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compass direction for better comparison with the Dismal River, shows the Middle Loup Valley along an area between present Halsey and Thedford, Nebraska. The Marsh expedition's claimed campsite for July 18-19 on the Loup is directly north of the measured and adjusted probable campsite on the Dismal for the same dates. In 1857 Lieutenant Warren moved along the north side of this portion of the Middle Loup Valley without meeting any physical obstruction. Traveling on the south side in 1870, the Marsh party would have encountered no obstruction for the first seven miles. By fording the river at that point, the expedition could have continued on the north side all the way to present Thedford.

Warren described the Middle Loup near Thedford as being thirty yards across in a valley one-half mile in width. If the Marsh expedition had been following the Loup, there would have been no need to repeatedly ford the river when a wide valley provided easy travel for the six heavy wagons.

In contrast to the Middle Loup, Warren described the Dismal River as "about 15 yards wide with sandy bluffs and *no valley*" (emphasis added). J.H.

Snowden, Warren's topographer, wrote in his journal that Warren and Hayden had found the Dismal "running between rocky hills of the Mauvais terres."¹⁵

The Dismal River, Map D in Figure 6, is at the same scale as the Middle Loup River in Map C. The contrast between the two river valleys is obvious. The Middle Loup Valley is wide with few obstructions; the Dismal River Valley is steep and narrow with frequent blockage on either side. The Marsh party, starting west from their July 18-19 camp along the south side of the river, was forced to cross and recross the stream as their route was blocked by undercut bluffs.

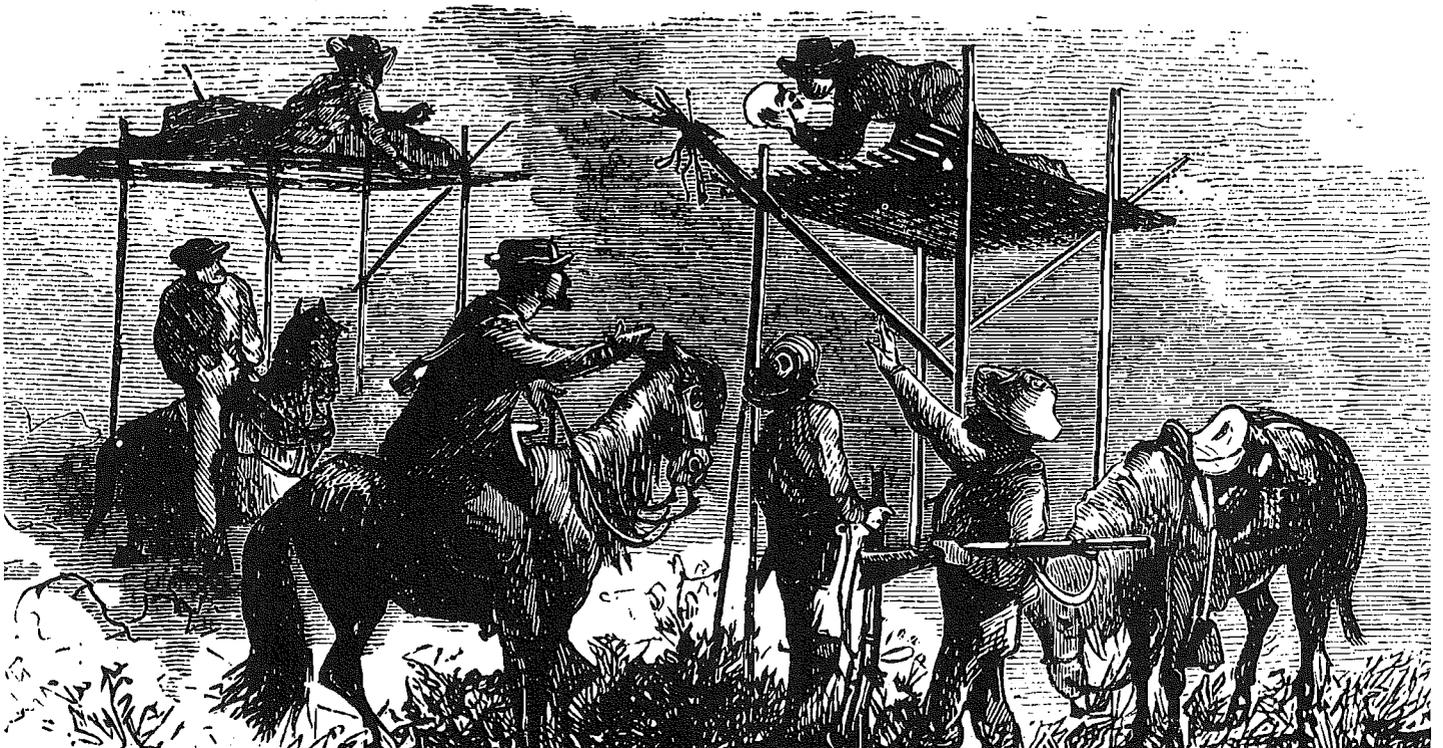
During this same portion of the journey, the Marsh party also encountered an Indian burial site. Betts, in the *Harper's* article, quoted Marsh as saying, "We can't study the origins of the Indian races unless we have those skulls."¹⁶ Marsh took the skulls and sent them back east for further study.

For three or four days the expedition watched smoke approaching from the west. The fire advanced more rapidly along the south side of the river than on the north. It reached the Yale party on

the evening of July 21 when it was camped on the north bank. The flames were so intense that sparks flew north across the river and the men were forced to use wet blankets to beat out fires that started nearby. Betts wrote, "Across the river wavy lines of fire crept up the rolling sand hills, and, catching the clumps of cotton-wood and pine trees, wrapped them in crackling pyramids, while each gust of wind from the rising storm would sweep a whole hillside into a sheet of flame."¹⁷ Grinnell added, "The advance of the fire along the hills on either side of the river was interesting and when our anxiety with regard to the camp had subsided—very beautiful."¹⁸ Fortunately, a "heavy thunderstorm came up and partially extinguished the fire, so that there was no more danger from it."¹⁹

Betts, Grinnell, and Ziegler all mentioned trees — cottonwood, ash, pine, and cedar — as being seen along the river they followed. In the area of the campsite of July 21 where they encountered the fire, the Dismal River Valley has an abundance of trees while directly to the north there is relatively little timber along the Middle Loup. The

Charles Betts's article in Harper's New Monthly Magazine in 1871 included this drawing of Marsh and his students recovering Indian skulls.



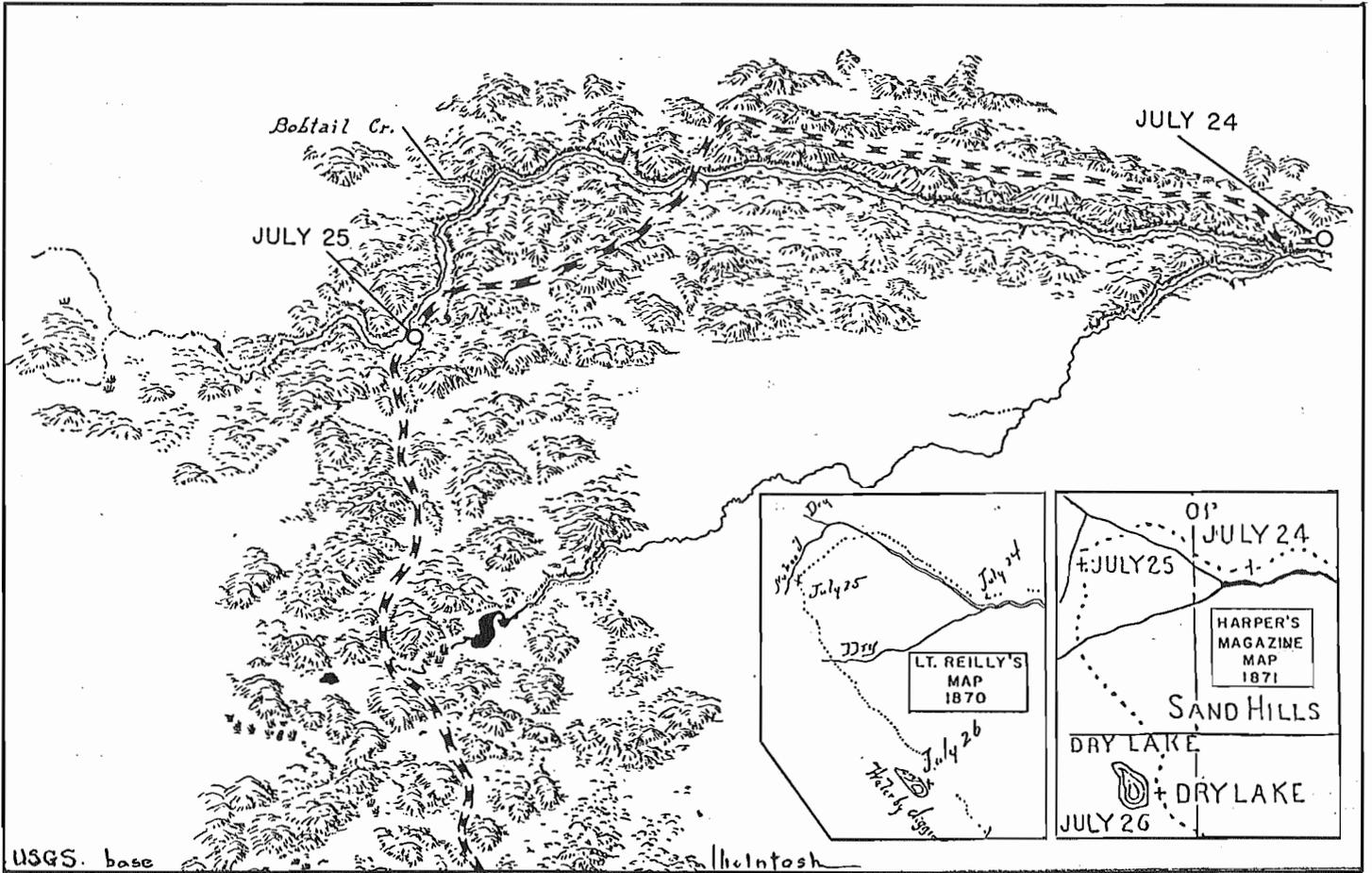


Figure 7. Route of the 1870 Marsh expedition, July 24-26. The pictured route is arbitrary in that the path could have gone on either side of several dunes. Map by C.B. McIntosh.

same situation existed in the 1870s according to the field notes of government surveyors.²⁰

Measuring distances between campsites westward places the July 24 camp close to the forks of the Dismal River (Figures 5 and 7). Both the military and Yale maps show the July 24 campsite near a similar forked pattern in a river (Figure 7 insets). The Dismal River route, using the military scale, provides another verifiable association with a physical feature not found on the Middle Loup.

On July 25 Marsh headed west along the north side of the Dismal River for about 10.5 miles before fording the

river and traveling southwest another six miles to a campsite on the east bank of the north fork (Figure 7). The straight-line distance of 14.5 miles that day took the party from the Dismal forks to a point within two miles of the headwaters of the river. What they had not realized was that they were at the head of the Dismal River and not at the head of the Middle Loup.

Both the Yale and military maps show a tributary coming into their river from the northwest (Figure 7 insets). The military map is more definitive in showing this tributary as both short and dry. Figure 7 drawn on a USGS base map shows a similar tributary in

almost exactly the same location. Bobtail Creek, short and intermittent, provides still another association with a physical feature favoring the Dismal River route. The Middle Loup River has no similar pattern of features.

*The Expedition's True Route:
From the Dismal to Birdwood Creek*

Heading south on July 26, the expedition would have crossed a dry stream bed between five and six miles from where they camped the night before (Figure 7). Both the military and Yale maps show this crossing. The south fork of the Dismal, shown as intermittent west of Jefford Lake on

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the USGS map, would have been between five and six miles from the campsite on the north fork. The south fork would have been dry in late July.

The expedition traveled a straight-line distance of about 18.4 miles on July 26 and camped beside a dry lake. Betts described the western leg of the journey: "We . . . once more encountered the privations of an unexplored desert, where water was only once obtained, and then by digging in the dry bed of an alkaline lake."²¹ The military map shows the camp was located just east of this alkaline lake, the water so alkaline it was undrinkable. The northern portion of the lake has the word "dry" written in it. It must have been in that area where they dug to obtain less brackish water.

Schick Lake on the USGS map is nineteen miles SSE from the July 25 camp, compared with the 18.4 miles measured to "dry lake" on the military map (Figure 5). Schick Lake has standing water in the southeast portion of the depression in which it is located as does the "dry lake" on the military map. A depression contour line around Schick Lake extends to the northwest forming a valley outline very similar to the shape of the valley associated with the "dry lake" on the military map. Because of the accurate comparison of both route distance and shape, Schick Lake is accepted as the campsite for July 26 and as further verification of the Dismal River route.

Both the Yale and military maps show the July 27 camp on Birdwood Creek just south of the confluence of two small streams near the north end of the creek (Figure 3 insets). The military map shows the distance from "dry lake" south to the July 27 camp on Birdwood Creek at about 8.6 miles. That distance measured south from Schick Lake locates the camp on the USGS map just south of the same confluence on the Birdwood at a location almost identical to that shown on the military map.

The July 27 camp on Birdwood

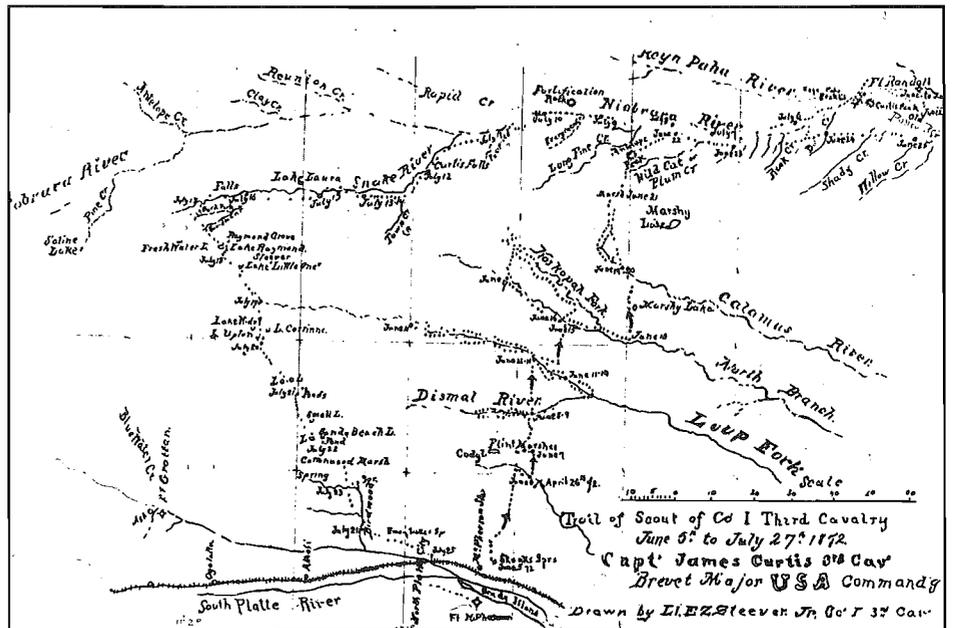


Figure 8. Section of Curtis map of a scout of Company I, Third Cavalry, June 5-July 27, 1872.

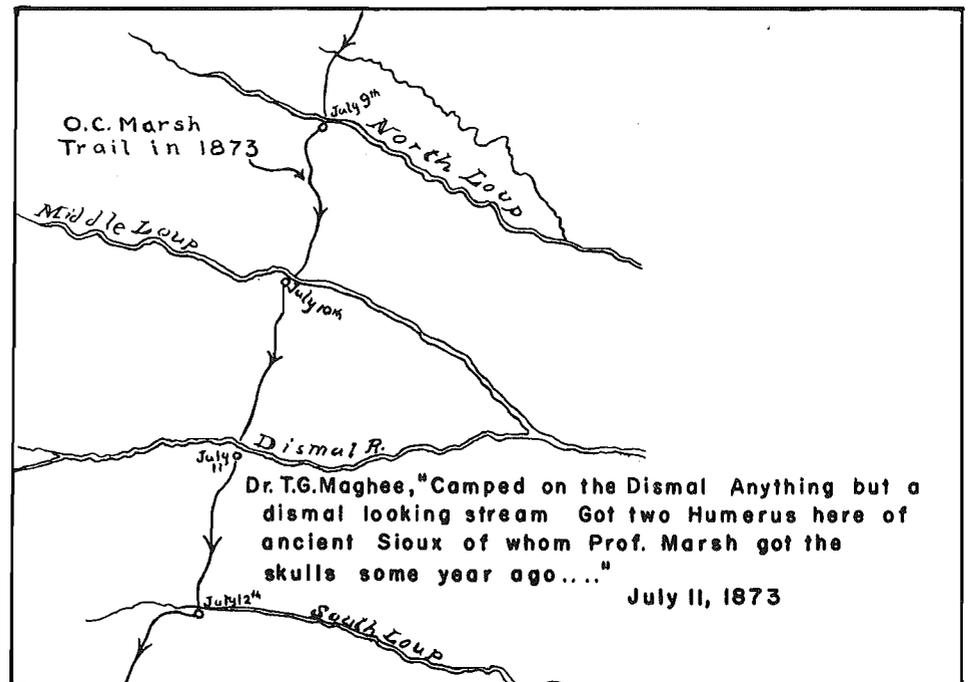


Figure 9. Section of map of a scout of Companies L and M, Third Cavalry, June 18-July 13, 1873. Tracings by C.B. McIntosh.

Creek closes the Marsh expedition's route to a recognized continuing water course down the Birdwood, the North Platte, and the Platte rivers back to Fort McPherson. With the military map scale transformed to the USGS scale and map, testing provides at least twelve consecutive verified associations between identifiable physical features and the campsites or route along the Dismal River. Every link in the chain of argument favors a route along the Dismal River rather than along the Middle Loup, which for so long has been thought to be the river followed by the 1870 Marsh expedition.

In June 1872 Captain James Curtis led a cavalry scout north from Fort McPherson. A small segment of his map shows that his expedition investigated and surveyed the correct sequence of rivers from the South Loup River north to the Calamus River (Figure 8). The Curtis map was found among T. Mitchell Prudden's papers at Yale University.²² Prudden was one of the students who accompanied O.C. Marsh on a second Yale expedition through the Sand Hills in 1873. Probably the Curtis map was used by the 1873 party. On that trip Marsh traveled from North Platte up Birdwood Creek and crossed through the Sand Hills to the Niobrara. Then he went east to the confluence of the Minnechadusa and Niobrara rivers (Valentine area), where the expedition turned south for the return to North Platte. Dr. Thomas G. Maghee, contract military doctor on the 1873 Marsh expedition, was aware of the Curtis map for he mentioned the "Curtis Trail" in his 1873 journal.²³

The 1873 Marsh expedition was accompanied by a military escort under command of Captain Anson Mills. The military map for the 1873 expedition was found in the same search that located the military map for the 1870 trip.²⁴ Figure 9 is a tracing from Captain Mills's map of the 1873 route where the Marsh party moved southward across the North Loup, the Middle Loup, the Dismal, and the South Loup rivers

with campsite locations and dates. While camped on the south side of the Dismal River, Dr. Thomas Maghee wrote in his journal on July 11, "Camped on the Dismal — anything but a dismal looking stream. Got two humerus here of ancient Sioux of whom Prof. Marsh got the skulls some years ago" (emphasis added).²⁵ At this same camp, T.M. Prudden in his journal of July 11, 1873, also mentioned the burial site from which Marsh had obtained Indian skulls in 1870 as being on the Dismal River.²⁶ Discovery of those skeletons at the 1873 camp on the Dismal River provides conclusive proof that the Marsh route of 1870 was up the Dismal River rather than the Middle Loup River.

Although the evidence is convincing that O.C. Marsh and his students ascended the Dismal River — not the Middle Loup — in 1870 to find those skulls, the failure of the military escort and the Yale party at the time to recognize their error can readily be excused. They were exploring uncharted territory, unknown even to the experienced scouts. However, the failure of O.C. Marsh to publicly acknowledge the mistake after it had been recognized in 1873 is more difficult to explain, in view of its implications for documentation and analysis of the materials collected by his 1870 expedition.

NOTES

¹Harry D. Ziegler, "Results of the Yale College Expedition to the Far West," *New York Herald*, December 24, 1870. Charles W. Betts, "The Yale College Expedition of 1870," *Harper's New Monthly Magazine*, vol. 43 (1871), 664.

²Betts, "Yale College Expedition," 663.

³George Bird Grinnell, "An Old-Time Bone Hunt," *Natural History*, vol. 23 (1923), 333; Betts, "Yale College Expedition," 666.

⁴The microfilm contains records of the U.S. Army Continental Commands, Department of the Platte, from the National Archives. It is filed as RG533, Roll 2, State Archives, Nebraska State Historical Society.

⁵It soon became apparent that the military map scale had been constructed carelessly. The individual mile units shown for the first ten miles are not equal. In placing the twenty and thirty mile marks, the cartographer measured only nine miles instead of ten.

The distances between campsites for the test were determined by using a corrected scale. However, even using the original military map scale would have resulted in minimal error in reconstructing the trail route since the distances involved for each measurement were short to begin with.

⁶John F. Reiger, ed., *The Passing of the Great West: Selected Papers of George Bird Grinnell* (New York: Scribners, 1972), 36.

⁷Betts, "Yale College Expedition," 664. James Mackay made essentially the same statement on his trip through the eastern Sand Hills in 1796, "[There are found] . . . neither trees, nor soil, nor rocks, nor water."

⁸Ziegler, "Results of the Expedition."

⁹Grinnell, "Old Time Bone Hunt," 332.

¹⁰Betts, "Yale College Expedition," 666.

¹¹RG533, Roll 2, State Archives, NSHS.

¹²Luther North to George Bird Grinnell, November 8, 1923. MS 449, Luther H. North papers, State Archives, Nebraska State Historical Society.

¹³Grinnell, "Old Time Bone Hunt," 333.

¹⁴Ziegler, "Results of the Expedition."

¹⁵Warren's and Snowden's original journals are at the Nebraska State Library in Albany. Microfilm copies are at the Nebraska State Historical Society. In 1857 Warren referred to the Dismal River as the "Sand Hill Fork." Snowden called it, "fork of the Loup River."

¹⁶Betts, "Yale College Expedition," 666.

¹⁷Ibid.

¹⁸Grinnell, "Old Time Bone Hunt," 333.

¹⁹Reiger, *George Bird Grinnell*, 36.

²⁰At the Nebraska State Surveyor's office I examined the field notes kept by the government surveyors which included a "General Description" of each township. At the time of the original survey (1874-75) trees were abundant along that portion of the Dismal River where the fire was encountered. Trees were sparse or entirely absent along that portion of the Middle Loup River directly north of the fire area on the Dismal.

Surveyor Fred M. Dorrington wrote in the summary of T21N, R28W: "Along the [Dismal] river is found some groves of cedar and ash and along either bank is scattering trees mostly dead burned." Dorrington had underlined the word burned. This township was where the Marsh party camped on July 21, 1870, the night the expedition members observed the fire on the south side of the river. Trunks of trees burned in 1870 still would have been much in evidence four years later when the township was surveyed by Dorrington.

²¹Betts, "Yale College Expedition," 666.

²²T. Mylan Stout, Professor Emeritus, University of Nebraska, provided the author with a copy of the Curtis map as well as granting access to other notes and journals in his personal files on Marsh.

²³Charles Lindsay, ed., "The Diary of Dr. Thomas G. Maghee," *Nebraska History* 12 (July — September, 1929), 247-304.

²⁴RG533, Roll 2, State Archives, NSHS.

²⁵Maghee "Diary," 263.

²⁶T.M. Prudden, "Notes on Trip with Prof. O.C. Marsh in 1873 to Collect Fossils in the West," T.M. Prudden Papers, Yale University Library.