

# Part 2

## The Long Expedition Stay at Engineer Cantonment

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**Right Above: Engineer Cantonment (Missouri River) with *Western Engineer* in foreground, by Titian Ramsay Peale.** Courtesy of American Philosophical Society, Philadelphia (APSimg5646)

**Right Below: Engineer Cantonment site (March 2003) with arrow depicting location of cabins on Titian Peale images.** NSHS, State Archeology Office

The Long Expedition began in Pittsburgh in early May 1819 and over-wintered at Engineer Cantonment on the Missouri River from Sept 17, 1819, to June 6, 1820, while awaiting new orders. The revised mission involved an overland journey to the Rocky Mountains and concluded with the return to Fort Smith, Arkansas, in September 1820. After meeting as planned with the steamboat *Western Engineer* at Cape Girardeau, the scientists used various methods to make their own way back east to prepare reports.<sup>1</sup>

On September 19, 1819, the Long Party began construction of their quarters adjacent to a small harbor suitable for mooring their boats for the winter, and near Fort Lisa, the trading post operated by the well-known fur trader Manuel Lisa. The selected location of Engineer Cantonment is only briefly described in James' official report on the expedition:

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The position selected for the establishment of winter quarters for the exploring party, was on the west bank of the Missouri, about half a mile above Fort Lisa, five miles below Council Bluff, and three miles above the mouth of Boyer's river. At this place we anchored on the 19<sup>th</sup> September, and in a few days, had made great progress in cutting timber, quarrying stone, and other preparations for the construction of quarters. Cliffs of sparry limestone rise in the rear of the site we have selected, to an elevation of near three hundred feet . . .<sup>2</sup>

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Further description of the winter quarters site is offered later in the *Account* text:

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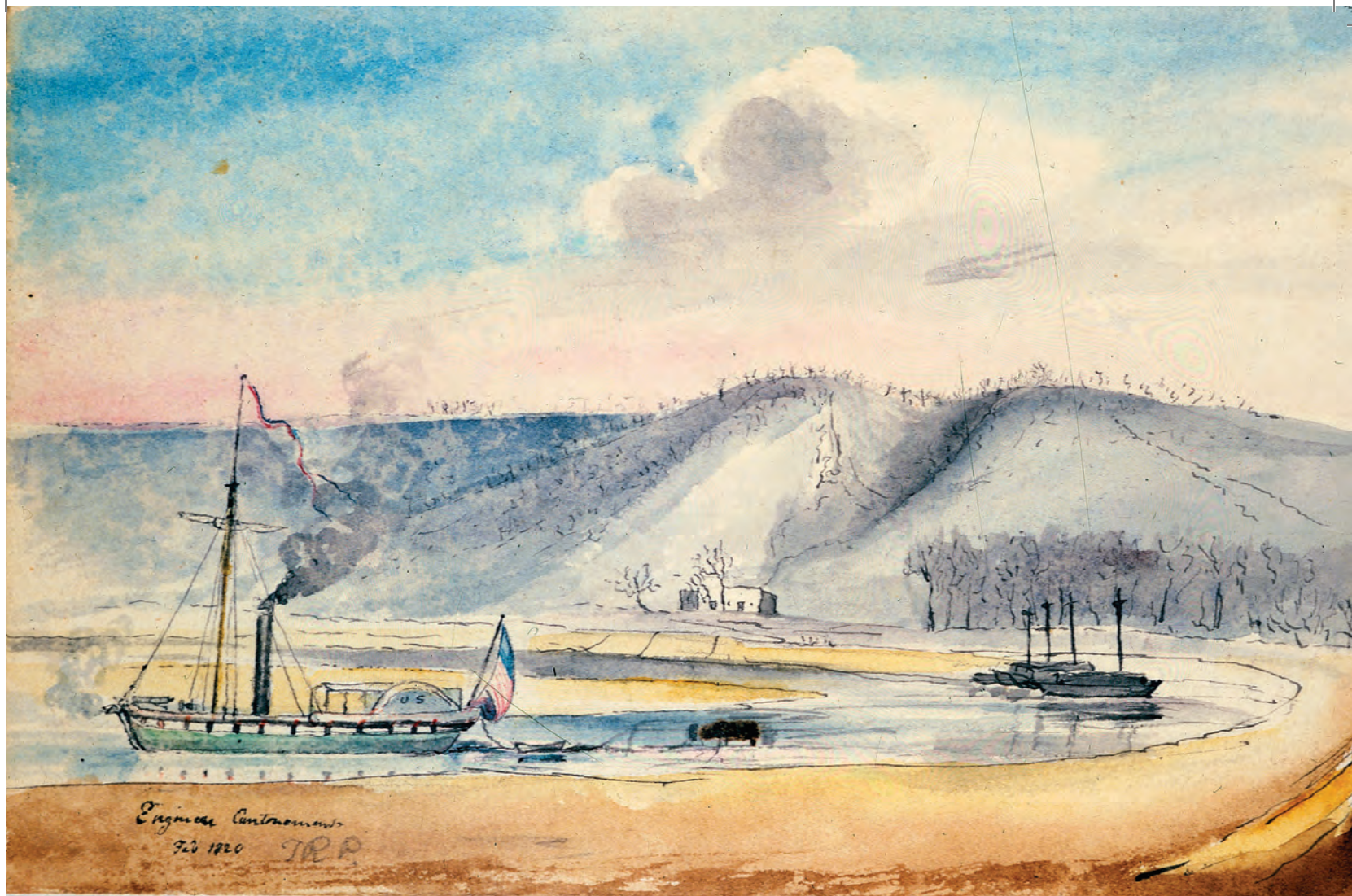
(this place) . . . , a very narrow plain or beach, closely covered with trees, intervenes between the immediate bank of the river, and the bluffs, which rise near two-hundred feet, but are so gradually sloped as to be ascended without great difficulty, and are also covered with trees. This spot presented numerous advantages for the cantonment of a small party like ours. Here were abundant supplies of wood and stone, immediately on the spot where we wished to erect our cabins, and the situation was sheltered by the high bluffs from the northwest winds. The place was called Engineer Cantonment.<sup>3</sup>

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The several weeks following the scientists' arrival were filled with setting up the winter quarters, initiating scientific studies, hosting a variety of formal councils and informal visits with Native Americans, and preparing for Major Long's return to Washington. The expedition report provides little information concerning the composition of the cantonment and construction of buildings, making the archeological investigations all the more important.

Prior to Long's departure, Jessup had decided to resign his position on the expedition and return back east. In taking his leave of those remaining at the cantonment, Long issued orders that assigned specific tasks for each of the scientists to carry







out over the winter months. These additional directives, reinforcing and supplementing their initial orders, were as follows:<sup>4</sup>

- Thomas Say was to “examine the country, visit the neighboring Indians, procure animals, &c.,” with the support and assistance of Lieutenant Graham who would also cover any necessary expenditures;
- Say was to be accompanied by Samuel Seymour and Titian Peale whenever their particular services were required;
- Mr. Dougherty had permission from Major O’Fallon to assist in all matters concerning contacts with the Indians and was to be consulted in all efforts to visit or to acquire information from local tribes;
- In addition, the scientists were to consult Long’s initial orders of the past March, including the objectives and questions provided by the Philosophical Society of Philadelphia, and Secretary of War, Calhoun, as well as Jefferson’s instructions to Lewis and Clark;
- And finally, Lieutenant Graham was instructed to continue taking “every opportunity for celestial and barometric observations, and calculate latitude, longitude, magnetic dip and variation, with the utmost precision,” an attention to detailed, accurate observations that represented a hallmark of the Long Expedition and set high standards for subsequent American exploration. Graham was also to continue his usual meteorological observations with assistance from Lieutenant Swift or anyone else in the party when it would not interfere with other duties.

### Councils and Interactions with Local Tribes

A series of councils were held at Engineer Cantonment that involved most of the local tribes. A major objective of the expedition was establishing formal governmental contacts with the upper Missouri tribes. The formal council meetings at Engineer Cantonment were conducted between October 3 and October 11, when Major Long returned to Washington. After that date, formal meetings were moved to Camp Missouri where O’Fallon, and possibly Dougherty, presided. Each meeting involved hundreds of native guests, including both leaders and warriors. Numerous

speeches were given by the governmental hosts and the native chiefs, and tribal dances were performed to honor their hosts and the occasion of their meeting.

On October 3, roughly a hundred Oto and a number of Ioway arrived at Engineer Cantonment. After the leaders were seated, one of the principal chiefs, *Shonga-tonga* (the Big Horse) introduced a series of dances accompanied by native instruments and songs performed to honor the occasion.<sup>5</sup> Although most of the dancers were veteran warriors, three were young warriors painted entirely black to signify their position as peacekeepers assigned to preserve order at the ceremony. The three included Ietan or *Sha-mon-e-kus-se*, who later became the well known principal leader of the Oto during the 1830s and also visited Washington; *Ha-she-a*, known as Cut-Nose, due to losing the tip of his nose in a quarrel with Ietan; and *Wa-sa-ba-jing-ga*, called Little Black Bear.

The council with the Oto continued on October 4, with more than 200 of the three related nations in attendance, including about 100 Oto, 70 Missouri, and 50 or 60 Ioway who “arranged themselves, agreeably to their tribes, on puncheon benches, which had been prepared for them, and which described a semicircle, on the chord of which sat the whites, with Major O’Fallon and his interpreters in the centre. Sentinels walked to and fro behind the benches; and a handsome standard waved before the assembly.”<sup>6</sup> A detailed pictorial record of this event is illustrated in Samuel Seymour’s watercolor painting titled, “*Oto Council*” (right). O’Fallon addressed the Oto, followed by replies from the chiefs, and ended the meeting by distributing presents, including guns, tobacco, and blankets, to the attending tribes. Cut-Nose, Little Black Bear, and Black Bird also presented their robes to O’Fallon.<sup>7</sup>

The next day, October 6, about 70 Pawnee representing the Grand Pawnee, Pawnee Republicans, and Pawnee Loups (French name for the Skidi, or Wolf Pawnee) arrived near Engineer Cantonment around noon. The scientists visited the Pawnee in the evening, joining those at the Grand Pawnee fire and smoking with their hereditary chief, Long Hair. The Pawnee Loups with their leader Knife Chief sat at another fire, while the third was occupied by the Pawnee Republicans (who had robbed a contingent of the Long Party in August while traveling through modern-day Kansas), and their chief, Dorian who was of mixed heritage.<sup>8</sup> The Tappage Pawnee band was apparently not represented. The following morning the Pawnee seated themselves on the benches



provided at the council circle and were addressed by O'Fallon, who recited their offenses and admonished them to reform their behavior and to return the stolen items. By the close of the meeting, much of the stolen property had been returned and the Pawnee promised that the offenders would be punished.<sup>9</sup> Seymour's drawing of this meeting titled, "Pawnee Council" (p. 16), provides a view of the council circle from a different orientation than the Oto meeting. This image shows the harbor and a single boat, possibly the *Western Engineer*, in the background, instead of the bluff as in the illustration of the Oto council. Again, based on the details of this image, it would appear that the councils were held in the wooded area directly north of the cantonment buildings.

A third council was held at Camp Missouri on October 14 when 400 Omaha gathered at O'Fallon's request and chose to air some of their own concerns and grievances.<sup>10</sup> Big Elk (*Ong-pa-ton-ga*) spoke for some time comparing the good will of his people towards the whites as opposed to the duplicity of the Pawnee who would flatter to receive presents and then do ill deeds,

complaining about the disparity of treatment of the two nations, "Never has one of my nation stained his hands with the blood of a white man. I do not understand, my father, your mode of treating those well, who treat you ill," referring to the council meeting and presents, including sabers given to the chiefs, which the Pawnee received.<sup>11</sup> He also expressed his belief that so many soldiers were unneeded in this area where there was no substantial threat from the native groups and that they would be more useful being moved upriver where there was conflict. He voiced related concerns that hunting by the soldiers would drive away game needed by his people to survive.

Small groups of individuals from several tribes visited the cantonment on a number of occasions and for a variety of purposes. On November 15, a small party of Sioux, three Teton, and one each of the Yankton and Shawnee divisions, came with the intention of examining the steamboat and were treated to a tour that included seeing the steam engine in action and demonstrations of the various weapons that it carried, including the air gun and two howitzers.<sup>12</sup>

**Oto Council, by Samuel Seymour.** Courtesy of Academy of Natural Sciences of Drexel University, Philadelphia, ANSP Archives Collection 79



**Pawnee Council at Engineer Cantonment, 1819-1820, by Samuel Seymour.** Courtesy of Beinecke Rare Book and Manuscript Library, Yale University

Big Elk, the principal chief of the Omaha, along with Big Eyes, a fellow chief, also known as Little Cook and *Wash-co-mo-ne-a*, came to the cantonment simply for a social visit, arriving March 8 and bringing jerked bison meat for the scientists.<sup>13</sup> Anticipating that the scientists must find the Omaha strange for always moving about in the winter cold when they have warm houses in their village, Big Elk explained his presence saying, “our poverty and necessities compel us to do so, in pursuit of game; yet we sometimes venture forth for our pleasure, as in the present instance, to visit the white people whom we are always delighted to see.”<sup>14</sup> The visitors stayed through much of the next day and upon leaving were presented with small gifts including tobacco.

Guidelines for Say’s ethnographic work were based primarily on Jefferson’s instructions to Lewis and Clark, along with specific guidance and

questions compiled by a committee of scientists at the APS, several of which were physicians and were most interested in questions concerning diet, disease, and other health-related issues. In addition to his personal contacts with the Indians, Say also learned much about the various Missouri River and Plains tribes from John Dougherty, who had been assigned to assist Say. Dougherty had acquired a thorough knowledge of the various tribes during the ten years he spent traveling throughout the area after joining Lisa’s Missouri Fur Company in 1809 and later serving as interpreter and sub-agent for Benjamin O’Fallon, a position he continued to hold during his work with the Long Expedition.

Other traders working for Lisa would return from the field with news concerning a variety of activities occurring in the native communities they were serving and provided another important



source of information for Say, largely concerning difficulties the tribes were having with disease and the very cold winter of 1819-20. Say's ethnographic information also came from meetings with a number of Native Americans at Engineer Cantonment and at least one documented trip away from the Cantonment. He reports that John Dougherty, who had lived for a time in the Omaha village, was the source for much of his information on the Omaha.<sup>15</sup>

Both Omaha and Oto, ranging from chiefs to trappers, appear to have made frequent visits to Engineer Cantonment and nearby Lisa's Post for a variety of purposes. These visits provided ample opportunities for Say to supplement John Dougherty's information on these two nations. Other tribes, particularly the Pawnee, are mentioned in these contexts far less often.

A trek to the Pawnee villages was undertaken by O'Fallon, Dougherty, Graham, Say and a military escort from April 20 until May 6, 1820, and included visits of roughly three days at each of three villages.<sup>16</sup> On this westward journey to the Pawnee villages, Say describes virtually daily encounters with members of the Oto and Omaha tribes. During the first two days he met several Oto and Omaha hunters and trappers. On the following day, April 23, the travelers spent a "short time" with a party of Omaha headed by a man known to traders as *Voleur*, at "the relics of whose former village" Say's group had seen on Shell Creek, and also along this same creek had observed a large earthen excavation measuring about 60 m long, 40 m wide, and 9 m deep that was revered by the Pawnee and known as *Pawnee Medicine*. Say conjectured this feature might initially have had a defensive purpose, and was perhaps built by the Arikara.<sup>17</sup>

On April 27, the party moved on toward the village of the Pawnee Loups (Skiri or Skidi Pawnee), passing the Republican village at 6.5 km distance and continuing on another 5 km to the Pawnee Loups living at the Palmer site. When they were within 3 km of the village, they were asked to stop and allow time for the chiefs to adequately prepare themselves to greet the representatives of such a "great and powerful" nation.<sup>18</sup> In a short time, a large number of warriors suddenly appeared over the rise and after a series of maneuvers charged O'Fallon's party until they were encircled by "three or four hundred mounted Indians, dressed in their richest habiliments of war," rushing around them in every direction, "with streaming feathers, war weapons, and with

loud shouts and yells."<sup>19</sup> The simply dressed chiefs approached the party in a statelier manner, shaking hands with all and expressing great pleasure at seeing them, adding that their grief over recent losses in battle would now be replaced by joy.<sup>20</sup>

It was on the return trip to the village that they first saw *Petalesharoo*, whom they knew of by name and reputation, but had never met. This man, a recognized leader at a young age, is most noted for his daring and heroic rescue of a young female captive, the intended sacrifice to Venus in the *Great Star* ceremony.<sup>21</sup> Although Petalesharoo's rescue had already become public knowledge when he visited Washington in 1821, Say might well have been the first to describe the actual ceremony, presumably based on information he obtained during his visit.<sup>22</sup> Petalesharoo performed a second rescue the following spring when he managed to save a small Spanish boy by substituting a "large mass" of merchandise as the sacrifice, an act Say suggested might put an end to the use of human sacrifice.<sup>23</sup>

Departing the Pawnee Loups village on April 29, the party headed back to the Republican village where they were greeted by the chiefs in a manner signifying their "penitence for their offences," recognizing that a war party from their village had earlier robbed Say's exploring party near the Kansa village. While shaking hands with each, Say closely scrutinized all, trying to identify those who had been involved, but he could recognize only one.<sup>24</sup> In a council with the chiefs, O'Fallon once again spoke at length, admonishing the Pawnee Republicans for their unacceptable behavior and offering them "peace or war."<sup>25</sup> Better conduct in the future was promised by the chiefs. The principal chief expressed regret that their poverty allowed them to present only "four horses, sixteen bison Robes, and a package of dried meat," while also acknowledging that the chief (also named Petalesharoo) who had made a promise at Engineer Cantonment to punish the warriors who had robbed Say, failed to do so and had left the village.<sup>26</sup> O'Fallon was not pleased and denigrated the man, indicating he would be denied dignity should he encounter this chief in a future council. That night the impoverished village lost 140 horses in a Kansa raid.

### Natural History Studies and Experimentation

Say and Peale worked as a team in documenting biological diversity in the cantonment locality, with Say taking the lead



responsibility in writing the scientific descriptions and naming all new species. Known as an excellent shot and with considerable skills learned in his father's museum as well as in the field, Peale probably handled most of the collecting and specimen preparation tasks as well as illustrating the wide variety of identified species, particularly those that served as type specimens for naming and describing new species.

One of the most cited examples of the lengths Say and Peale went to in collecting specimens involves Peale's numerous attempts to outwit and trap a very wary and crafty "prairie wolf" or coyote.<sup>27</sup> The first attempt employed a specially constructed "live trap" (large baited box tilted up at one end on a stick) clearly demonstrated the difficulty they would face trying to trap this animal. A very large box (nearly 2 m long and wide) was constructed with a plank floor. This method failed when the coyote burrowed under the wooden floor and pulled the bait down through a crevice between the floor planks. Other methods generally involved a number of variations on each and included a large wooden cage with a hole in the top as the only opening—which the animal refused to enter. Another involved a large double "steel trap" hidden in the leaves with bait suspended above that was also rejected, even after the leaves were burned to remove the scientist's scent. In fact, when bait was hung at a number of locations surrounding the trap, only the bait above the trap remained in place the following morning. The final attempt involved a "log fall trap" where one log, raised at one end on "an upright stick, was resting upon a rounded horizontal trigger stick" on the lower log, and was positioned to fall on the lower baited log. Unfortunately, only a few of the other scientific endeavors and living activities at the cantonment are described in similar detail.

This type of experimentation provided insights concerning the intelligence, ingenuity, and behavior of this wily animal. Following eventual capture using a falling log set-up, Peale made a number of sketches of the coyote (see p. 51) and Say provided the systematic description and scientific name for this new species that had been previously observed, but was not adequately documented by Lewis and Clark to be assigned a formal scientific name.

Although dealing with paleontological materials was not specifically identified as an objective for the scientists, several members of the expedition, particularly Say, actively hunted for fossils whenever the opportunity arose. The notably

fossiliferous Pennsylvanian limestone exposed in the nearby quarry presented an excellent opportunity that Say utilized to identify several new fossil species during his stay at the cantonment. Thirty of their "most important" finds are described in footnotes.<sup>28</sup> Five of these were named as new species.<sup>29</sup> Based on the footnotes included in the *Account*, Say did not limit himself to the adjacent exposure and appears to have examined some part of the bluffs extending south, at least to the vicinity of the Platte River since two of the new fossil species identified while at the cantonment were from rocks on the "Missouri near the Platte."<sup>30</sup> It may have been Say's search for fossils in the quarry that led him to discover three new species of snakes that were revealed when their hibernation was interrupted by workers quarrying stone for Camp Missouri chimneys.<sup>31</sup>

In addition to their officially defined studies, which included daily recording of routine meteorological observations, the scientists also occupied themselves in a few more spontaneous observations. Some were quite straightforward data collection, such as measuring the width of the Missouri River in various places, comparing the depth of ice on the river and the Boyer River, and comparing the temperatures of the water in a spring and in the river with the atmospheric temperature.<sup>32</sup>

Other measurements made of the Missouri's flow were more complex. Finding a break in the ice on February 24, Graham and Say conducted the usual series of six experiments, successively measuring the time it took a porter bottle to float to the length of its cord, the mean of which gave the velocity of the river. However, they recognized that this only measured the surface stratum where they reasoned additional friction from the ice would impede the measurement, so they decided to find an average at different depths, and found the velocity at 10 feet in depth to be "greater by almost 452 yards per hour."<sup>33</sup>

### Hunting Trips

A number of hunting trips are noted, some part of which were probably focused on collecting scientific specimens, though the objective of most was more likely for procurement of fresh meat for subsistence. Several trips were made to the Boyer River which entered the east side of the Missouri a few miles downstream from the cantonment. On February 12, Say, Peale, and Dougherty traveled to the Boyer to obtain fish, whether for science or subsistence purposes is



not specified. While encamped at a pond near the Boyer, the party cut holes into the fifteen-inch-thick ice and caught an otter and a number of small fishes, including three new species, several being identified as the genus *Gasterosteus*.<sup>34</sup> Oddly, no fishes are noted in the list of species identified at the cantonment. According to the Peale Museum accession book, Major Long on March 23, 1821, delivered nine (unfinished) sketches of fish made by Peale. Only two of these, however, appear to be represented in the APS collection of Peale's work.<sup>35</sup>

The most notable hunting expedition by Peale and Dougherty involved a trip made sometime between February 12 and February 22, 1820, when they accompanied an Oto "hunting party to near the 'Sioux River'."<sup>36</sup> This probably refers to the Little Sioux River located in present-day Iowa. The mouth of this stream is a short distance to the northeast of Engineer Cantonment on the east side of the Missouri River. Peale documented this trip in a number of sketches that he later converted into drawings and paintings. These include what might be considered his best-known image, a sketch of an Oto man on a charging horse aiming his bow and

arrow, presumably at a nearby bison. On this hunt, Peale and Dougherty managed to kill twelve bison, a feat that was celebrated with a dinner and ball at Cantonment Missouri and by a dinner party for eleven people at Engineer Cantonment where they roasted the entire hump of a bison.<sup>37</sup>

On March 19, 1820, Peale, Swift, and Dougherty left the cantonment again to hunt on the Boyer.<sup>38</sup> They traveled in a pirogue, presumably an open boat similar to the two used by Lewis and Clark. Another trip to the Boyer was made on April 12 by Say, Seymour, and Lieutenant Graham, along with Lieutenant Talcott and an unnamed soldier from Cantonment Missouri, traveling in what Say refers to as "our small row boat," possibly the same boat as the pirogue noted above.<sup>39</sup> Their objective was to ascend the Boyer to the point it flows through the bluffs. On the morning of the second day on the Boyer, the party awoke to the loud calls of the sandhill crane. Say spent some time observing and describing the birds while awaiting return of the soldier sent on an errand to the cantonment.<sup>40</sup> Peale was not on this trip but previously had made at least three drawings of sandhill cranes at the cantonment,

**Otos Hunting, 1820, by Titian Ramsay Peale.**  
Courtesy of American Philosophical Society (APSimg2689)



all dated March 1820. Resuming their trip on April 14, the party encountered large numbers of a small species of rattlesnake (probably prairie rattler), observed a wooden bridge constructed across the stream by the Omaha, and reached the bluffs that evening. The next day, they continued on foot since the stream was too shallow for the boat and after eight km, the valley narrowed considerably. The following morning they returned to the boat and the next day, April 18, began their descent of the stream.

### Dietary Health, Feasting and Other Social Affairs

The scientific party at Engineer Cantonment “received frequent supplies of provisions” from Camp Missouri, possibly consisting of War Department staples, such as salt pork and flour, provided to the expedition.<sup>41</sup> They usually managed to provide for their own subsistence by hunting; however, even though this meant adding a variety of new experiences to their meals, including using the fruit of the *Gymnocladus canadensis* as a substitute for coffee and sometimes dining on skunk, which they found to be a “remarkably rich and delicate food.”<sup>42</sup> They were also invited to dine at both Camp Missouri and Fort Lisa. Social visits among the three locations appear to have occurred quite frequently, both spontaneously and by invitation, and in spite of the grave difficulties with disease being experienced over the winter at the military encampment.<sup>43</sup> As discussed later in this section, a large number of the soldiers were affected and many died, primarily due a scurvy epidemic resulting from conditions unique to the Military Branch and not experienced by the Scientific Party.

Several sources note the various “dinners, dances, and other affairs” that were initiated among the soldiers and traders and also occasionally attended by the scientists. Fort Lisa was able to offer a special addition to these activities, namely two hostesses consisting of Lisa’s wife, Mary, who was well-liked by all and affectionately known as Aunt Manuel, along with an unnamed companion who had accompanied her, reputedly the first white women to have come this far west.<sup>44</sup>

The scientists claimed to have been generally well fed during their stay at the cantonment, with only a few times of relative hardship, in spite of what appears to have been a depletion of local game given that returning traders reported it difficult to find sufficient game to provide for their own subsistence and indicated that local tribes were also having problems finding food.<sup>45</sup> In a February

19 note, Say observed that Engineer Cantonment had been “well supplied with fresh meat, from game killed principally by Mr. Peale,” and although they were now “reduced again to salt pork of a very inferior quality,” that the scientists, with the exception of himself, “continue to enjoy good health.”<sup>46</sup> On December 5, 1819, the scientists were invited to dine with Manuel Lisa at his trading post and on February 22, 1820, they were also invited to a dinner and ball held at Cantonment Missouri to celebrate the return of Peale and Dougherty with a “seasonable supply of meat” after having killed twelve bison on the hunting trip with the Oto.<sup>47</sup>

A few days later on February 25, the scientists entertained Manuel Lisa and his family at Engineer Cantonment where the guests were treated to an extensive spread of meats prepared in a variety of ways. The main attraction was an entire bison hump—probably from Peale’s bison hunt on the Sioux River—cooked in the Native American manner which involved first preparing a preheated hole in the ground where the meat would be roasted. The spinous processes (prominent vertebral bones that create the distinctive hump on a bison) were removed and this area was covered with skin sewn to the sides and back of the hump from which the hair had been removed, creating a football-like mass. It was then placed in the hole, covered by cinders and earth, and a large fire was made atop of it. (An archeological feature has been discovered which represents this type of cooking facility.)

Say described the full menu as follows:

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That we sometimes have food in great sufficiency, the provision upon our table this day will sufficiently attest. It consisted of the entire bison hump, above mentioned; the rump of a bison roasted; boiled bison meat; the spinous processes roasted in the manner of spare ribs; sausages made of minced tender loin and fat, &c. It is true we have no vegetables whatever; but having been so long estranged from them we scarcely regret their absence. Their place is supplied by excellent wheat flour, of which our cook prepares us bread full equal, in point of excellence, to any that we have ever eaten. The above repast was prepared for eleven people, of whom two were ladies. The collation was succeeded by coffee as a dessert.<sup>48</sup>

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The scientists had been supplied with a cook who also managed to bake excellent bread at the cantonment, raising the question of whether an oven might have been present, such as the two bake ovens installed at Cantonment Missouri and housed in separate rooms of the post.<sup>49</sup> No field or archival evidence for an oven has yet been identified at Engineer Cantonment, though a buried feature encountered in a backhoe test might represent a roasting pit, possibly the one used for the hump roast.<sup>50</sup>

No children attended the feast. Lisa's Omaha wife, Mitain, who bore him his only two living children, Rosalie and Christopher, was not invited. Instead, Lisa ordered her to be kept away from the post, where she normally lived, while his St. Louis wife was there.<sup>51</sup>

Many things contributed to an unacceptably filthy situation at Cantonment Missouri about six miles north of Engineer Cantonment where the much larger military component of the Yellowstone Expedition over-wintered. These factors included very wet conditions, including flooding, the unfinished state of construction, accumulating trash, and stabling of livestock within the confines of the fortification. In contrast to the situation at Engineer Cantonment, where shelter and subsistence were reported to be quite acceptable, living conditions at the military encampment, even after completion of the barracks construction, continued to be described as being very unhealthy. In addition, the failure of the military's steamboats necessitated use of man-powered keelboats in much of the trip up the Missouri River which subjected the soldiers to long periods of exertion and exposure, including time in the water. As a result, the generally exhausted state of the troops by the time they finally arrived late to their over-winter site and facing imminent onset of a very bitter winter, left them even more vulnerable to disease.

These conditions coupled with very poor diet eventually resulted in a scurvy epidemic that affected more than half of the troops and was fatal for at least 160 men as reported by two surgeons attached to the Military Branch, John Gale of the Rifle Regiment, and T.G. Mower of the Sixth Infantry in a letter to the Surgeon General during October 1820.<sup>52</sup>

The diet at Engineer Cantonment also lacked vegetables; however, the scientists had plenty of fresh meat thanks to the hunting prowess of Peale and Dougherty, which supplied the vitamins needed to avoid scurvy, a disease known even


then to be clearly associated with diets deficient in Vitamin C. The hunters at Cantonment Missouri were among the few soldiers there that did *not* show signs of the disease, most likely due to their access to fresh meat and long absences from the unhealthy conditions at Cantonment Missouri.<sup>53</sup>

If this factor helps explain the difference in experience with disease between the two cantonments, then it might be presumed that the successful use of steamboat transportation by the scientists would likely have given them an advantage in avoiding the deadly effects of illness and disease that plagued the military branch. Even the routine breakdowns of the *Western Engineer* might have contributed to better health by allowing the scientists time ashore for exercise and fresh air, as well as exploration and collecting activities.

### Long Returns from Washington

Long, James, and Bell arrived in St. Louis from Washington aboard the steamboat *Telegraph* on April 27, 1820. They headed back to Engineer Cantonment May 3 on horseback. Along the route, James made detailed observations on the landscape, vegetation, and geology, also noting evidence of the widespread prairie fires that charred many areas the previous fall due to the unusually dry conditions.<sup>54</sup>

On May 26, from a high knob, Long spotted what he believed to be the Platte River in the distance to the north, indicating they were about 65 km below Engineer Cantonment. Early the following day, they sighted Fort Lisa and shortly after arrived at Boyer River which Long crossed on a raft and made his way to the cantonment about three km away, his success in getting there signaled by "the discharge of ordinance."<sup>55</sup> At that point Bell described his view of Lisa's Post as "a large and extensive Indian trading establishment," and Engineer Cantonment "consisting of log buildings, handsomely situated on the bank of the river, over which a flag was hoisted."<sup>56</sup>

Long returned from Washington with orders for an unanticipated, revised mission involving a quick journey to the Rocky Mountains, which became, perhaps, the most widely known and much-maligned component of the expedition. Long informed the scientists of the revised mission on June 1 and issued their new orders at that time. On June 6, the Long Party left their winter home at Engineer Cantonment and carried out their revised mission to the Rocky Mountains. They would never see Engineer Cantonment again. 



## NOTES

<sup>1</sup> For various detailed treatments of the Long Expedition, see Maxine Benson, ed., *From Pittsburgh to the Rocky Mountains: Major Stephan Long's Expedition, 1819-1820* (Golden, Colorado: Fulcrum, 1988); Howard E. Evans, *The Natural History of the Long Expedition to the Rocky Mountains, 1819-1820* (New York: Oxford University Press, 1997); Patrick Halley, *The Western Enterprises of Major Stephen H. Long, 1816-1821* (Norman: University of Oklahoma, Ph.D. dissertation, 1951); Edwin James, *Account of an Expedition from Pittsburgh to the Rocky Mountains Performed in the Years 1819 and 1820. By Order of the Hon. J.C. Calhoun, Secretary of War, Under the Command of Major Stephen H. Long, of the U.S. Topographical Engineers* and often referred to simply as 'the Account' (see footnote 4 in the preceding section of this *Nebraska History* issue for discussion of the various versions of the Account, 1822, 1823, 1905, 1966, 1975); Roger L. Nichols, "Stephen Long and Scientific Exploration on the Plains," *Nebraska History* 52, no. 1 (1971): 51-64; Roger L. Nichols and Patrick Halley, *Stephen Long and American Frontier Exploration* (Norman: University of Oklahoma Press, 1995); Robert E. Pepperl, Engineer Cantonment Project Research Papers [Overview of the Long Expedition] (ms on file, Lincoln: Nebraska State Historical Society, State Archeology Office, 2010); and Robert E. Pepperl and John R. Bozell, "Chapter 2: The Long Expedition and Engineer Cantonment" in John R. Bozell, Gayle F. Carlson, and Robert E. Pepperl, eds., "Archeological Investigations at Engineer Cantonment: Winter Quarters of the 1819-1820 Long Expedition, Eastern Nebraska," *Publications in Anthropology* No. 12 (Lincoln: Nebraska State Historical Society, 2018).

<sup>2</sup> Edwin James, *Account of an Expedition from Pittsburgh to the Rocky Mountains, Performed in the Years 1819 and '20, by Order of the Hon. J. C. Calhoun, Sec'y of War: Under the Command of Major Stephen H. Long, from the notes of Major Long, Mr. T. Say, and Other Gentlemen of the Exploring Party* (Philadelphia: H. C. Carey and I. Lea, Volume I, 1966 [1822] Readex Microprint ed.), 146.

<sup>3</sup> James, *Account*, 153.

<sup>4</sup> James, *Account*, 164.

<sup>5</sup> James, *Account*, 153-54.

<sup>6</sup> James, *Account*, 158-59.

<sup>7</sup> James, *Account*, 158-59.

<sup>8</sup> James, *Account*, 160.

<sup>9</sup> In August of 1819 (before arriving at Engineer Cantonment), Thomas Say, Titian Peale, John Dougherty, and several other expedition members visited a Kansa village near present day Manhattan, Kansas. During the excursion, the small party was robbed by a band of Pawnee who made off with a variety of supplies and horses. For more information on the event see James, *Account*, 147-52, 162-63.

<sup>10</sup> Thomas Say in James, *Account*, 174-78.

<sup>11</sup> Say in James, *Account*, 175.

<sup>12</sup> Like the Lewis and Clark Expedition before them, the Long Expedition also carried an air gun. Both expeditions employed this unique rifle for demonstrations to impress Native visitors. Air guns have been in use by the military in

a variety of countries since at least the sixteenth century, all of which employ various methods for producing pressurized air to propel a small ball of iron or lead ranging from roughly .30 to .60 caliber. The Lewis and Clark Expedition used a rifle with an air reservoir in the stock that was pressurized with a hand pump. The Long expedition likely used a similar gun.

<sup>13</sup> Say in James, *Account*, 193-94; John O'Shea and John Ludwickson, *Archaeology and Ethnohistory of the Omaha Indians, the Big Village Site* (Lincoln: University of Nebraska Press, 1992), 36.

<sup>14</sup> Say in James, *Account*, 193-94.

<sup>15</sup> Patricia T. Stroud, *Thomas Say: New World Naturalist* (Philadelphia: University of Pennsylvania Press, 1992), 97.

<sup>16</sup> These sites are likely: the Horse Creek (25NC2), the Cottonwood Creek (25NC5), and the Palmer (25HW1) archeological sites. All are located between the modern towns of Genoa and Palmer, 140-190 km west of Engineer Cantonment.

<sup>17</sup> Say in James, *Account*, 347-48. These observations could relate to the protohistoric (ca. seventeenth or early eighteenth century) Pawnee village complexes identified as the Gray [or Schuyler] site (25CX1) and the Wolf site (25CX2)—the only known major Pawnee settlements on Shell Creek. Both are quite early and would have been abandoned during the Long Expedition consistent with the description noting "relics of former villages."

<sup>18</sup> Say in James, *Account*, 354-55.

<sup>19</sup> Say in James, *Account*, 355.

<sup>20</sup> Say in James, *Account*, 355-56.

<sup>21</sup> As described by Thomas Say, this rite was uniquely performed annually by the Skidi Pawnee prior to spring planting as a means to assure a successful crop (Say in James, *Account*, 356-60). Petalesharoo's feat eventually brought about abolition of this ritual of human sacrifice, long viewed by the leader of the Skidi Pawnee and father of Petalesharoo, *Latelesha* (Knife Chief), "as an unnecessary and cruel exhibition of power, exercised upon unfortunate and defenseless individuals whom they were bound to protect" (Say in James, *Account*, 357-58).

<sup>22</sup> See the Reuben Gold Thwaites (ed.) version of the 'Account' in his *Early Western Travels* series Vol. XV (Cleveland, Ohio: Arthur H. Clark, 1905), 154n47.

<sup>23</sup> Say in James, *Account*, 360.

<sup>24</sup> Say in James, *Account*, 366.

<sup>25</sup> Say in James, *Account*, 366.

<sup>26</sup> Say in James, *Account*, 366-67.

<sup>27</sup> Say in James, *Account*, 172-74.

<sup>28</sup> Say in James, *Account*, 146-52.

<sup>29</sup> See listed specimens in Stuart Weller, "A Bibliographic Index of North American Carboniferous Invertebrates," Part I. *Bulletin of the United States Geological Survey* No. 153, Department of the Interior (Washington D.C.: Government Printing Office, 1898), 354, 497, 503.

<sup>30</sup> Say in James, *Account*, 159n29; Weller, Carboniferous Invertebrates, 354.

<sup>31</sup> Say in James, *Account*, 185.

<sup>32</sup> Say in James, *Account*, 188, 190, 193.

<sup>33</sup> Say in James, *Account*, 191-92.

<sup>34</sup> Say in James, *Account*, 190-91.

<sup>35</sup> John F. McDermott, "Early Sketches of T. R. Peale," *Nebraska History* 33, no. 3 (1952): 187-88.

<sup>36</sup> Say in James, *Account*, 191.

<sup>37</sup> Say in James, *Account*, 191-93.

<sup>38</sup> Say in James, *Account*, 196.

<sup>39</sup> Say in James, *Account*, 344.

<sup>40</sup> Say in James, *Account*, 344-45.

<sup>41</sup> Say in James, *Account*, 180.

<sup>42</sup> Say in James, *Account*, 180.

<sup>43</sup> Richard E. Oglesby, *Manuel Lisa and the Opening of the Missouri Fur Trade* (Norman: University of Oklahoma Press, 1963), 174.

<sup>44</sup> Oglesby, *Manuel Lisa*, 174-75.

<sup>45</sup> Say in James, *Account*, 190-91.

<sup>46</sup> Say in James, *Account*, 191.

<sup>47</sup> Say in James, *Account*, 180, 191

<sup>48</sup> Say in James, *Account*, 193

<sup>49</sup> Sally A. Johnson, "Cantonment Missouri, 1819-1820," *Nebraska History* 57 no.2 (1956): 131.

<sup>50</sup> Oglesby, *Manuel Lisa*, 174.

<sup>51</sup> Say in James, *Account*, 247.

<sup>52</sup> John Gale, "Letter Report to the Surgeon General, Dated October 1, 1820." In *Statistical Report on the Sickness and Mortality in the Army of the United States*, by Thomas Lawson, M.D., Surgeon General. (Washington: Jacob Gideon, Jr., 1840), 11-13, and *The Missouri Expedition 1818-1820: The Journal of Surgeon John Gale with Related Documents*, Roger L. Nichols, ed. (Norman: University of Oklahoma Press, 1969); T. G. Mower, "Letter Report to the Surgeon General, Dated October 1, 1820." In *Statistical Report*; Roger L. Nichols, "Soldiers as Farmers: Army Agriculture in the Missouri Valley, 1819-1827," *Nebraska History* 52, no. 3 (1971): 242; and James A. Weir, "19<sup>th</sup> Century Army Doctors on the Frontier and in Nebraska," *Nebraska History* 61, no.2 (1980): 199. These surgeons specified the particular mode of transportation during the journey as one of the disease-causing factors at Cantonment Missouri. Surgeon Mower concluded that the men were enfeebled due to unhealthy confinement and other factors during their trip down the Ohio River, a condition that would worsen during their man-powered navigation of the Missouri River, necessitated by failure of their contracted steamboats. Surgeon Gayle also noted the troops were weakened with continuous illness by the time they arrived at their wintering site. This is largely attributed to the extreme exposure and exertion associated with their use of man-power during their ascent of the Missouri River in keelboats that replaced their failed steamboats.

<sup>53</sup> Say in James, *Account*, 196.

<sup>54</sup> Say in James, *Account*, 404-14.

<sup>55</sup> John R. Bell, "The Journal of Captain John R. Bell, Official Journalist for the Stephen H. Long Expedition to the Rocky Mountains, 1820," In *The Far West and the Rockies Historical Series 1820-1875*, Vol. 6, Harlin M. Fuller and LeRoy R. Hafen, eds. (Glendale, California: Arthur H. Clark, 1957), 84-85.

<sup>56</sup> Bell, "Journal," 86.