The Wheeler Survey in New Mexico and Arizona: Samuel E. Tillman's Tour of Duty in 1873

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Samuel E. Tillman traveled by railroad, stage, and "government ambulance" to reach Camp Apache, Arizona, in late August 1873. Here this Corps of Engineers officer reported to First Lieutenant George M. Wheeler for a tour of duty. Wheeler left for the East shortly afterwards, and First Lieutenant Tillman was put in charge of the party.

Wheeler commanded the United States Geographical Surveys west of the 100th meridian. The principal objective of the Wheeler Survey, as it came to be known, was the systematic topographic surveying and mapping of the western half of the country. Wheeler's field expeditions of the 1870s also made scientific observations and collected data concerning the region's ethnology, geology, natural history, climate and
Samuel E. Tillman, c. 1876. Photo courtesy of Tennessee State Library and Archives.
weather, and general geography.¹ Tillman's responsibility on this assignment was to survey the area from Camp Apache in east central Arizona southward to Camp Bowie in southeastern Arizona. From there he was to move eastward to Fort Cummings in southwestern New Mexico and northward to Laguna pueblo in west central New Mexico. His scrutiny was to include the neighboring country along this route.

While Tillman was still at Camp Apache surveying the Indian reservation he was able to make some observations about the resident Apaches. He was particularly amused by the mixed success of the medical officer to obtain height, weight, and chest measurement data of the adult male Indians. He was not impressed, however, with the process by which they made their own variety of home-brew or the product itself, and he was somewhat bemused by how they slaughtered their ration cattle.

In the field, as he had been all through his boyhood days, Tillman was always curiously interested in animal behavior. Hence he comments on an encounter with bears, a skunk experiment, a mummified sheep, coyote habits, and observations about deer, quail, wild turkeys, and rattlesnakes. He humorously explains how to catch jack rabbits. He is surprised by a deserted mining town. He calms his near mutinous workers. His cook and his orderly reveal some unusual and confidential matters about themselves.

Finally he traveled on to Fort Union, to the east of Santa Fe, where he transferred the animals to the Quartermaster Department and stored the pack train equipment. In mid-December he took a stage to Pueblo, Colorado, from thence he returned to the East by train, reporting back

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to Washington at year's end to spend three months digesting the survey data his party had collected.\textsuperscript{2}

Subsequently, Tillman had three more tours of duty with the Wheeler Survey, in several western states and territories. As in the present instance, each assignment in the field carried over for several months into the following year in the Washington office to assemble field data, draft maps, and prepare reports. Generally, Tillman was typical of the Corps of Engineers officers Wheeler had in charge of the several parties simultaneously conducting surveys over various segments of the West.

Tillman (1847–1942) was born on a middle Tennessee plantation near Shelbyville, Bedford County. His father was prominent in local affairs and served in Congress after the Civil War. Young Sammy's semi-classical education in a nearby academy was interrupted by the Civil War. His community as well as his family was not of one persuasion concerning secession, so he witnessed the seesaw changes in military control that characterized the war years in this region. On one occasion he was momentarily "impressed" into the Confederate service as a wagon driver, but he outwitted his impressers and returned home within hours.

After the war, upon the recommendation of Andrew Johnson, who was a family friend and the military governor of occupied Tennessee, President Abraham Lincoln appointed Tillman as a cadet to the United States Military Academy. There he ranked near the head of the graduating class of 1869. On his first assignment he was posted to Fort Riley and saw service on the Kansas frontier. Several months later, in August 1870, he reported back to the Military Academy where he became an instructor in chemistry, mineralogy, and geology. In 1873, passing up an implied promotion to a professorial chair in the department in another two years, Tillman requested transfer to field duty in the Corps of Engineers.

Following the 1873 stint with the Wheeler Survey in New Mexico and Arizona, Tillman was attached to the jurisdiction of the superintendent of the United States Naval Observatory. In 1874–75 he went with a party to Tasmania to observe the transit of Venus across the

\textsuperscript{2} Tillman was in charge of the topographical drafting room. He was to compile "a careful catalogue of the records of the field results . . . and a thorough inventory of the maps[,] charts and plans of every Kind. . . . He will revise at once the list of camps, and distances etc and cause a sketch of the triangles and trigonometric [sic] connections of the southern part of the survey during the year 1873 . . . [and] will complete the sextant observations made by himself." George M. Wheeler, Special Order No. 1, January 2, 1874, Records of the Office of the Chief of Engineers, Record Group 77, National Archives, Washington, D.C.
disk of the sun. He then returned to the Military Academy as an instructor in astronomy and applied mechanics for the summer and the ensuing school year. After the three more successive tours with the Wheeler Survey, 1876, 1877, and 1878, he accepted an invitation to return to the Military Academy in 1879.

The following year he was promoted to professor and head of the Department of Chemistry, Mineralogy, and Geology. He served in that capacity until retirement in 1911. To provide for the needs of his classes, he wrote their textbooks in chemistry, mineralogy, geology, and physics. During the World War I years, he returned to his alma mater as superintendent.

Two primary sources record Tillman’s experience with the Wheeler Survey in 1873. Both are in the library of the United States Military Academy, West Point, New York. First, his daily diary sparsely and unevenly chronicles the progress of his survey party. Its principal value is to corroborate sometimes indirect or vague reference to items or to supplement details found in the other document. The second source is Tillman’s 233-page holograph autobiography. For this, he utilized his diaries, drafts from public lectures and addresses, fugitive notes, and miscellany. It covers his boyhood, cadet years, service in the West, and the transit of Venus. He reasoned that his years as an academician and superintendent at the Military Academy were already well documented in the institutional records; he was, therefore, not concerned with them in the autobiography. Essentially, his narrative account details experiences and observations that otherwise generally are not recorded in official reports.

Even with a massive infusion of the autobiography, the diary would still be unsatisfactorily incomplete as an account of Tillman’s tour of duty in 1873. On the other hand, the autobiographical account given here reasonably stands by itself. It is strengthened occasionally by citations to the 1873 diary and supplemented by excerpts from other


4. There is also a 128-page “Fair Copy” of the same manuscript in which he had begun a revision of the first draft. It had not progressed far enough, however, to cover the 1873 tour.
The Wheeler Survey in New Mexico and Arizona, 1873. The points of reference for Samuel E. Tillman’s survey party: from Camp Apache to Pueblo Laguna by way of Camp Bowie and Fort Cummings.

Tillman manuscripts. After literal transcription from the holograph manuscript, only limited conventional and silent editorial changes have been introduced to enhance the readability of Tillman’s account: paragraphing, capitalization, deletion of repeated words or phrases, elliptical omission of extraneous details, and transcription of casual flourishes into appropriate punctuation.

[West Point to Fort Apache]

In June 1873 I informed Prof. Kendrick, the head of my department of instruction, that I wished to be relieved from duty at the M.A. [United States Military Academy] and return to duty with the Engineer Corps of the army to which I had been transferred. . . .

I was relieved from duty at W.P. [West Point] about Aug. 1st 1873 and left there under orders to report to Lt. G. M. Wheeler of the Engineer Corps, U.S.A. at Ft. Apache, Arizona before the end of the month, for duty on the survey work which that officer was then conducting. I went by my home in Tennessee, stopping a couple of days
and then set out for Fort Apache, Arizona. As my route passed through Junction City Kansas, I stopped a day there to visit Ft. Riley which I had left three years before to go to W.P. The personnel of the post had entirely changed and I made myself known to no one there. I went on passing through Denver and Colorado Springs to Pueblo where the R.R. terminated. From there I went by stage to Santa Fe and via Albuquerque to Fort Wingate N.M. From there I traveled in a government ambulance to Fort Apache, Arizona, and reported to Lt. Wheeler there on the 21st of August. He, within a few days, left for the East having turned over his survey outfit and party to me.

In my ride from Pueblo, Colorado to Wingate N.M. and then to Ft. Apache, Arizona, I had traveled 750 miles in wheeled vehicles propelled by animal power. Of course in a journey of that length in that country at that time there was much that was new and interesting to me, but nothing so impressive or startling as was that vast herd of buffalo into which I rode on an April morning in 1870. However, I may mention that between Pueblo Colo. and Ft. Apache Arizona, I passed through the Indian village of Laguna and by the celebrated Zuni Indian settlements.

The driver of the ambulance with which the Q.M. [Quartermaster]


9. For Tillman’s description of this experience, see Smith, “Kansas Frontier.”
at Wingate supplied me was ordered to report to me and to be ready to depart on that trip at such time as I should designate. The driver’s name was given me with the information also that he was a reliable, competent man, but given to drawing a rather “long bow.” When he reported to me I asked, “What is your full name?” He replied “Samuel,” the surname I have forgotten, and added, “I am known out here as ‘Navaho Sam.’” I found Sam to be a good-natured, obliging man but rather too talkative as a sole companion; however I did not discourage him for he was interesting in his stories though they might be exaggerations.

There was one section of the road over which we were to pass on the way to Apache of about 20 miles, over which we were cautioned to drive between sundown and sunup as insuring greater safety against Indians. I had been advised to stop at certain definitely located springs when I should arrive there, until an hour after sunset, then pass over that section before daybreak the next morning.

We arrived at the designated springs about 3:00 P.M. The immediate surroundings were quite attractive and I told Sam that I would take a walk for exercise and would be back by 5:00 o’clock and added the caution that he must not leave camp while I was away. I walked to a little knoll about a mile away, slightly above the general level, and sat down there in the shade for about an hour. Shortly after starting back, as I walked slowly along a jack rabbit jumped up, made a couple of hops, stopped and stood up on his hind legs in order to observe me over the low sage brush.

I had become quite familiar with that species during my year in Kansas and knew how to succeed in the effort I was about to make. I gradually lowered myself sufficiently to cause the rabbit to rise higher in order to see me over the shrubbery. He arose as I expected and when he was well up, I arose slowly carrying a spherical stone about 2 inches in diameter in my right hand. When in erect position I heaved the stone with all my might at the rabbit and hit him near his left shoulder. The blow completely upset him. I rushed over and picked him up before he got on his feet again.

I started to camp with him and on the way back concluded to try to equal some of Sam’s stories to me and was quite successful, I think. . . . When Sam [saw] me returning with the rabbit now fully alive he met me with, “Where did you get him, you did not have your gun with you?” I said no I did not, but you know these rabbits are like the antelopes. They have a great deal of curiosity and if you don’t scare them when they first jump up you can often catch them alive without much trouble. Sam said “Yes, I know they are very curious animals,
but how do you catch them?" ... "Oh, I said, I call it charming them and this is how you accomplish it."

When the rabbit hops up, you stop instantly and remain perfectly still. It will usually stop after two or three jumps and look to discover what you are doing. Then you make some slow motion such as—left hand up, right hand down. After a few seconds put the right up and left down, all by slow movements. These two movements generally bring the rabbit nearer. Then push one arm out level with your shoulder, then the other always by slow motions. With the arms thus extended drop slowly to your knees. This movement will bring it still nearer. Now when down on your knees, draw a handkerchief, letter, or better some colored object from your pocket and slowly transfer it to the ground. After it once starts to keep an eye on your movements every cautious motion will bring it nearer. Finally you may have to put a watch or other bright object to attract within easy reach. With this explanation, Sam said that he knew that snakes could charm birds and that he had heard that cats also could, but he never before had heard of charming jack rabbits.

We put the rabbit in the feed box of the ambulance and carried ... it alive at [to] Apache. During my stay there I heard that Sam had told the soldiers that he and I using our mules as saddle animals had run the rabbit down and thus captured it alive. From this fact, I inferred that he could not trust himself to explain the method by charm or perhaps did not believe in it, and could explain the possession of the live rabbit in no other way than that he gave.

[Fort Apache]

I was at Apache for about a week before the field work of the expedition began and the stay there afforded very much of interest relating to the organic and the inorganic world both of the past and present. The evidences of geological changes were numerous both in beautiful fossil specimens and the physical features of the region. In leaving Apache the next objective was Ft. Bowie ... nearly directly south. Before leaving Apache a few points of interest deserve mention: first among these were the many fossil shells petrified in different colored silica; perfect forms of both the Orthis and Atrypa species were very numerous.

The White Mountain Apache Indians had then for the first time been induced to assemble upon a reservation only a few miles from the post and through the kindness of Capt. Randall, in command of the post, I procured a real acquaintance with these nearly untamed
savages. I was the guest of Capt. Randall, slept at his quarters and was there three times a day for meals as well as at other times. By 7:00 o’clock in the morning and at nearly all meal times, there usually were present from three to six Indians sitting or squatting upon his open piazza and welcoming any sort of friendly recognition from the Capt. Their great and untiring interest in his words impressed me greatly. He treated them always as welcome visitors, making to them friendly remarks or bestowing small gifts. The Indians too seemed to exercise a sort of consideration, as for instance, the immediate departure of one group when another arrived.

I went with Capt. R. one afternoon to their camp and it was an interesting experience. There had been recently issued to them certain articles of food, included among which were corn meal, shelled beans etc. and a few beef cattle. At several places in the camp we saw efforts being made to ferment the meal in order eventually to produce a sour mash which yielded a beverage that they enjoyed. All sorts of vessels were being used for mash tubs, mainly empty tins of various kinds which they had procured from the post refuse. But in addition to these we saw also several natural depressions in rocks being used for liquid containers.

10. Tillman was surveying the Apache reservation. Diary of Tillman, September 1, 3, 1873. George Morton Randall had served in the Civil War as an enlisted man and officer. He was advanced four times in brevet ranks to colonel. He returned to the army in 1865 as an infantry captain and served with George Crook against the Apache in the early months of 1873. By the time Tillman arrived at Camp Apache, there was a lull in military-Apache confrontation, and Randall was in command of the agency guard. Randall subsequently received brevet ranks of lieutenant colonel and colonel for his service against the Apache in 1873–1874. He remained in the army and earned regular commissions from captain to brigadier general in 1901. Francis B. Heitman, Historical Register and Dictionary of the United States Army, from Its Organization, September 29, 1789, to March 2, 1903, 2 vols. (Washington: Government Printing Office, 1903), 1: 814; Ralph Hedrick Ogle, Federal Control of the Western Apaches, 1848–1886 (Albuquerque: University of New Mexico Press, 1970), 115–16, 129, 142–45.

11. “Before we were up in the morning we would be made aware of their presence by the rustle of their leather moccasins and leggings as they squatted on the porch. Soon, as numbers increased, would be heard grunts and guttural sounds gradually swelling into a sort of conversation. When we stepped out for our first morning breath they would be sitting on the floor with their blankets wrapped around them.” Lecture text, “Experiences in the Great West,” March 18, 1893, Tillman Papers, Miami University Libraries.

12. “I saw the Indians making tizwin out of the corn just issued to them for bread ration. This is a beverage sufficiently alcoholic to produce intoxication, at least among Indians... and that they were having a good time was evidenced by the incessant and unmelodious noises which proceeded from their camp during the entire night. The distant observer heard only a continuous thumping as though someone were pounding
In the forenoon of this same day, I saw the Indians kill and butcher a couple of the beef cattle that had [been] issued to them. The kill was preceded by an attempt to make a hunt of the cattle as though they were wild buffalo. This was a decidedly ridiculous [performance]. . . . After wounding and killing the animals in an unnecessarily cruel manner, the butchering was accomplished very quickly and I think with expertness and every part of the carcasses was finally carried away.

We left their camp an hour or so before sundown and returned to the post, Capt. Randall remarking that it was not yet advisable for individual white men to enjoy their hospitality beyond daylight.

The medical officer of my surveying party was the steward of a regular army hospital and was very energetic and interested in carrying [out] his instructions. Among them was the obtaining of accurate measurements of the full grown warriors of this tribe of Indians. After considerable effort a couple of these were induced to come to our camp for this purpose. The steward had in front of his tent a very simple arrangement for procuring their height and weight, but the Indians were at first very suspicious of this; but they soon understood its purpose when we compared our height and weight with theirs.

The steward then wished to procure certain of their physical measurements, the first of which were their chest measurements before and after a full inspiration. Of course the word inspiration was not understood by these Indians. The steward attempted to show them what he wished to do. He inhaled and exhaled a full breath and at the same time tried to have them see the change in the dimensions of his chest. He tried to get them to imitate himself, but they did not understand. Finally, I suggested that he had been breathing through his nostrils with his mouth shut, “to try breathing through his mouth.” This he did, and the Indians seemed to partially understand his desire and made some effort to imitate him. He soon got them to inhale and exhale with open mouths in unison with himself. With this success the Indians indicated satisfaction and almost smiled.

With this unexpected success the steward thought, and I thought too, that he was quite ready to proceed further. He had them stand, side by side about a foot apart. He reached into his tent and took therefrom a small black book, which he handed me and asked if I would record for him. At practically the same instant he drew from the pocket of his shirt a small steel tape measure and drew it partly from

a cracked drum, but a nearer approach made perceptible a bedlam of discordant sounds which even an Indian could hardly enjoy without the accompaniment of tizwin. . . . We tried some and the taste was like a sort of beer.” Ibid.
its case, intending to explain its purpose and the next step to the Indians. The tape made that unavoidable noise when rapidly drawn out. I saw at the instant that black book appeared, a change in the Indians' expressions. The sight of that metallic tape suddenly displayed [to] them added further change and when the shrill note of [the] tape came it left no doubt in their minds that they had been outwitted and that their only safety lay in flight. They bounded off toward their reservation, 4 miles away, at a speed which seemed most remarkable for bipeds.

[Fort Apache to Camp Bowie]

On Sept. 7th 1873 with the party placed in my charge, we set out from Camp Apache to attempt to follow the instructions left with me. Lt. W. had suggested to me that in all our movements, I keep one man with me as a sort of orderly, who should always be on hand to transmit any instructions to other members of the party etc. This being my first experience on such work, I thought it a good suggestion and selected as my orderly a half-breed, Mexican and Indian, who spoke some English as well as the Indian and Mexican-Spanish. With the Indians he bore the name of "Chiquito," indicative of his under size. He was very anxious to accompany the party. There were also with the party three young and enthusiastic scientists: Mr. G. K. Gilbert, the geologist; Mr. H. W. Henshaw, naturalist, anthropologist, etc. and Dr. Oscar Loew, chemist and mineralogist. The first two named became greatly distinguished in later life and Dr. Loew returned to Germany in 1875 and there filled an honorable position.13

13. "My outfit consisted of thirty men, nine attached to the survey party, thirteen soldiers and eight packers. This required thirty riding mules and thirty pack animals." Ibid. Grove Karl Gilbert (1843–1918) became chief geologist, U.S. Geological Survey, 1889–1892. Henry Wetherbee Henshaw (1850–1930) later served as chief, Bureau of Biological Survey, U.S. Department of Agriculture, 1910–1915. Oscar Loew (1844–1941), chemist, plant and nutrition physiologist, held academic and research assignments in several countries. For further biographical data, see Dictionary of American Biography, s. v. "Gilbert, Grove Karl," by George P. Merrill; s. v. "Henshaw, Henry Wetherbee," by Edward A. Goldman; Neue Deutsche Biographie, s. v. "Loew, Oscar" by Brigitte Hoppe. "Dr. Loew, . . . desired above everything to determine why the skunk occupied so much space in nature. He secured a live animal and managed to bottle some of the liquid for analysis, but had great difficulty in obtaining a laboratory for his research. On our return to Washington the Smithsonian would not permit him to work in the room which had been assigned to the expedition. However, he had a friend in New York, who loaned him a private laboratory. The Doctor told me with great amusement, 'that a formidable crowd filled the street outside the building and soon two blasted policemen appeared and ordered him to close the windows, after which he could hardly work in such a confined
Under the program outlined in my instructions our next objective point was Ft. Bowie, distant on a straight line a little over 100 miles, nearly due south from Apache. Outside of the regular official work of [the] party, which it is not here attempted to describe, the following incidental experiences and observations were noted: A mother black bear and two 1/3 grown cubs were fired at simultaneously by three of our riflemen, before the bears had become aware of our presence. Both the cubs were wounded but were able to take refuge in a scrubby piñon tree. The mother bear apparently was not hit and started off on the run, but when she saw that the cubs were not following, she stopped and without hesitation came rapidly back to the tree where the cubs were.

When the riflemen saw her coming back they too went up into low piñon trees. The old bear did not seem to know from where the shots had come. She stood up on her hind feet under the tree where the cubs were, apparently bewildered as to where the marksmen were, they being about 75 or 80 yards away. A 2nd volley killed her, and it was then deemed best to kill the cubs. The conduct of old bear in coming back to defend her cubs was thought very remarkable. This was early in Sept. and their skins were not thought worth preserving.

In the cañons of the two tributaries entering the Gila from north, Prieto and Bonita, in eastern Arizona there were abundant indications of bears. They had well beaten paths in each of these cañons.
Along these streams we also saw fine flocks of wild turkeys. They are a different game to get by fair hunting and we killed only one though many were seen. In the canons of the Prieto and Bonita were seen very interesting cliff dwellings of the Indians, approached by narrow paths along the cliff sides. In one of these canons was a large opening in a side cliff, nearly filled with excreta of bats. Similar accumulations have been found in many places. In the canons just above named and in arroyos in the same region were the evidences of the beavers' work. At one of the camps of a side party in this region a rattlesnake was killed and tested as food. Of all four of the men I was the one who partook of the reptile; thought it fairly palatable. It was fried just as fish were at the same meal.

On the way to Bowie the ascent of Mt. Graham was made from the North. At the summit our aneroid indicated 10,600 feet above sea level and 7,800 above the point where the road from Apache to Bowie crosses the Gila. Four of us spent the night on the mountain and the view in the clear morning was magnificent, extending in a N. and S. judge, the bear seemed to be tumbling down after me and when I struck a ledge about twenty feet below, I tore along in the opposite direction as hard as I could go, still creating considerable hubbub. When I dared pause to look back, my delight was great to see the bear dashing away from me at top speed, apparently as frightened as I was. Katharine Tillman Martin, version of Samuel E. Tillman account, Tillman Papers, Special Collections Department, Miami University Libraries.

16. Tillman's party had been surveying and exploring the southeastern reaches of the present San Carlos Reservation in Graham County. His reference here to Prieto Creek is a variant name for Eagle Creek. Granger, Will C. Barnes' Arizona Place Names, 166. He noted two brief descriptions in his diary: "In sight of our camp last night were some Indian ruins. A kind of stone house made to enclose a recess in the wall of the cañon. The thickness of the wall of the house is about one foot, built of volcanic fragments and a clay mortar containing also same. The most perfect one enclosed a space of about 40 Sqr feet. It is loop holed or windowed having five holes around about one foot from the bottom and another series of four at 3 feet above, the holes a little over three feet apart." Diary of Tillman, "Ruin Camp," September 26, 1873. "Visited ruins on the East bank of Bonita. A continuous line of houses 200 feet long was found, ruins in places much larger than described yesterday. We could travel along from house to house without getting outside. The houses were built so as to form a parapet upon the roof. The rafters of the roofs were still remaining though the covering had fallen in. The instruments used in cutting the roof poles were very dull. It would have been very easy to have enlarged the caves but it seems not to have been done." Diary of Tillman, "Termination Camp," September 27, 1873. Tillman places Ruin Camp sixteen miles from Termination Camp. This may have been on the upper reaches of Bonita Creek. He locates Termination Camp "about 15 miles" up the Bonita canyon. These cliff dwellings are noted on present maps. Diary of Tillman, September 28, 1873.

17. Mt. Graham is in south central Graham County, Arizona, in the Coronado National Forest.
direction 200 miles as we concluded from points easily recognized, and equally far, we thought, to the E. and W. though we could not check by known points in these directions.

[Camp Bowie]

On October 2nd we reached Bowie and while there for observation purposes we made the ascent of the “Dos Cabezas” two fairly isolated points in the range of the same name. They constitute striking landmarks of bare rocks. On the very top of the highest knob there lay a mummy-like carcass of a mountain sheep, apparently fairly preserved by the dry atmosphere of the region. My companion and I were much surprised by the find, and uncertain of a satisfactory explanation. Finally we thought it most likely that the animal somehow became wounded or otherwise made unable to remain with its kind and had arrived there in its search for isolation or safety from hostile species. In any case it suggested to us the thought that dumb animals may, like humans, sometimes experience influences which cause them to seek solitude? Who knows? I killed a deer shortly before climbing the peaks.

[Camp Bowie to Fort Cummings]

My instructions designated old Fort Cummings to be the next objective after leaving Ft. Bowie. Cummings was situated slightly north of east from Bowie and in a straight line about 120 miles distant. A well traveled road marked the entire distance. My party made seven camps between the two places, and the names of the places at which the camps were made, with one exception, do not now appear on recent maps. San Simon constitutes the exception. One place at which we camped for three days was called “Ralston.” It was then a deserted mining town, which two years before had had 300 inhabitants. The

18. Dos Cabezas (Two Heads) are two bald summits in the Dos Cabezas Mountains of north central Cochise County, Arizona, a few miles from Fort Bowie. Granger, Will C. Barnes’ Arizona Place Names, 35.
19. Tillman’s party departed Camp Bowie October 11, 1873. Diary of Tillman; October 11, 1873.
20. San Simon had been established in northeastern present Cochise County, Arizona, as a station for the Butterfield Overland Stage line, a few miles northeast of Camp Bowie. Granger, Will C. Barnes’ Arizona Place Names, 31, 51.
21. Ralston, presently known as Shakespeare, a ghost town, was at the northern tip of the Pyramid Mountains, two miles south of present Lordsburg, New Mexico. It had also served as a station for the Butterfield Overland Stage line. Pearce, New Mexico Place Names, 154.
place had had such prominence so recently that we were greatly surprised to find it a town with many dwellings but not an inhabitant. . . .

On our march from Bowie to Mule Springs there was one incident which is characteristic of that region at that time and worthy of mention: it occurred on Oct 14 or 15th: We met a large herd of cattle being driven from Texas to Tucson, Ariz. We asked the herder if he would sell us a beef. He replied that he could not, that he was under contract to deliver a specified number at Tucson, that he had lost several on the way and was unwilling to part with any now. However, he added, that at their camp that morning three of the herd could not be found and that he thought it very probable that we would meet them following in the wake of the herd before night, and if so we were welcome to any or all of them.

Late in the afternoon his prediction was proved true. We met the three, killed and butchered one of them shortly before we made camp. By time darkness came coyotes made known their presence at the offal of the beef, and that inspired one of our medical assistants to sprinkle arsenic liberally over the offal. I heard him next morning say that, "there are several dead coyotes out there and he thought others could be found if sought for." We did not seek them. These scavengers were then as detested as now, and stray cattle could be possessed by the first finder.

About 25 miles east from Bowie our route crossed into N.M. and a few miles further east it crossed the divide which separates the waters flowing into the Colorado from those going to the Rio Grande.

[Fort Cummings]

On Oct. 23 we reached Fort Cummings. Facilities for camping our outfit satisfactorily not being available nearer the post we located

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22. The following two paragraphs are relocated here from later in Tillman's account.
23. "A Mexican butcher from whom I bought a sheep a few days later was very different from the Texas cattle men. He agreed to let me have the sheep at two cents a pound, and my cook went with him to weigh the animal while I waited and held the mules. They returned with a very puny looking sheep both saying it weighed seventy pounds. I demurred to this saying it was impossible. The Mexican was obdurate, running his hands over the sheep and muttering 'Short wool, much meat.' I got down and asked him if he would let me weigh [it] myself on his scales. Without replying to my question he exclaimed 'Take sheep for one dollar.' He had evidently weighed the animal on his 'selling scales.'" Tillman, "Experiences in the Great West." The cattle and sheep incidents occurred while Tillman's party was encamped at Ralston. Diary of Tillman, October 14–19, 1873.
24. Fort Cummings was located at Cooke's Springs near the entrance of Cooke's Canyon to the north of present Deming, New Mexico. Prucha, Guide to the Military Posts, 69, plate 20; Pearce, New Mexico Place Names, 58.
our camp about 7 miles to the north of it, at a spring then called Mule Springs. We discovered the first afternoon after our arrival there that we had taken possession of a watering place frequented by many deer. This was shown not only by their tracks about the spring, but several of them were seen seeking to approach it that afternoon. On the next day many of them came so near that three were killed, after which I forbade further shooting.

We were expecting to receive some rations from Ft. Bayard at this point. Also, an additional topographer was to join me here, being sent from one of the survey parties farther west. These expectations had not been realized. On Oct. 25th, I made the ascent of Cooke's Peak, which is a striking conical peak near the southern terminus of the Mimbres Range, about 7 or 8 miles N.W. of Cummings. At the top of the peak the aneroid [read] 19.36. Some data found on the summit left there four years before indicated that no other ascent had been made later. We found a bright new looking pocketknife near the little monument that contained the said data, and it showed only very slight effect from rusting. If it had been there four years it certainly indicated a very dry atmosphere.

On Oct. 27th the expected rations from Ft. Bayard arrived. The distance therefrom by the traveled road the man in charge reported to be between 60 and 70 miles. It had required two days to make the trip. The mail brought me by this party made it necessary for me to reply without delay and thinking that a more direct route to Bayard existed than the traveled road from Cummings was practicable, I concluded to go to Bayard myself. So on the 28th, with my Indian orderly, Chiquito, I set out for Bayard on a direct line as indicated by the best map I had. This line passed straight across the Mimbres Range and was followed as nearly as practicable during the day.

I reached Bayard at a little after 11:00 p.m. having left my camp at 6:00 a.m. It was a beautiful and enjoyable trip for anyone who enjoys nature, animate, and inanimate, though it involved considerable climbing and descending on foot to save our mules. During the day I saw two quite large herds of deer numbering 30 or 40 each, besides two or three small bunches. These animals are attractive sights at all times and especially so when seen under excited curiosity as they gaze at unfamiliar intruders upon their usual solitudes and then bound away with an agility and grace that cannot be described or pictured.

25. Fort Bayard is located in the foothill area of the Santa Rita Mountains between present Silver City and Santa Rita, New Mexico. Prucha, Guide to the Military Posts, 60, plate 20; Pearce, New Mexico Place Names, 58.
Toward sundown that day the beautiful California quail were very numerous and I then learned for the first time that they did not roost on the ground in a single bunch as do the eastern bobwhites; however, a whole covey did seem to roost in the same small bush. Then too on that late afternoon my expertness in knocking over two quail with stones thrown by hand greatly astonished and amused my Indian striker.

At sundown we had been on our journey since 6:00 A.M. without seeing another human being or any evidence that such existed besides ourselves. We had kept to our line of travel through guidance by the sun and when the sun went down my Indian suggested camping for the night and assured me that he could cook the two quail for food. He thought it unwise, "bad medicine" traveling at night in new country. However we went on now guided by stars, and about 11:00 P.M. we struck a distinctly traveled road. I was at first entirely uncertain in which direction to follow the road, but after making a decision, we had only traveled a short distance when we saw a light not far ahead. Upon reaching the light we found it to be in the sutler's store at Ft. Bayard. We had made the trip in one day though it had required 17 hours of travel.

I found that a W.P. classmate of mine was the adjutant of the post and that a social gathering was then in progress, celebrating the return to the post of a successful hunting party that had brought in considerable game, turkeys, deer and fish. My Indian and I were welcomed with great cordiality and my classmate informed me that it was the unanimous opinion of the post that "only an ignoramus would have attempted my day's trip, and only a tenderfoot would have had the luck to make [it] in the same time." After 2 days detention at Bayard I started on Oct. 31st upon my return to the camp at Mule Springs and reached there on Nov. 1st.26

[Fort Cummings (Mule Springs) to Pueblo Laguna]

On Nov. 2nd my party left Mule Springs under instructions which required us to make specified investigations along a line which ran nearly due north, and which fell along the eastern slope of the mountain range whose waters here enter the Rio Grande from the west, this line crossing the drainage streams at varying distances from their origin. Of course the investigations specified required travel both to the east and west of this line, with special attention to the sources and general

26. The two paragraphs that follow this in Tillman's account are relocated above.
direction of flow to the Rio Grande of the many streams, the waters
of several of them being sometimes above, then below the surface.

From Mule Springs to the point where the season's work was to
end at Pueblo Laguna, on the Albuquerque-Wingate Road along a
straight line was between 170 and 80 miles. The efforts to follow in-
structions between the points named involved much hard work and
some discomfort. On one occasion the men were without water for 29
hours and the mules for 42.

On the morning of Nov. 25 my packers had become quite dissat-
sified and informed me that they were unwilling to go any further, for
they were sure that I was lost. I told them that my sextant observations
the night before showed that we were not over 13 miles south of the
Wingate-Albuquerque Road; but one of their number, Chenoworth by
name, claimed that he now recognized certain points and that we were
at least 70 miles from where I thought we were, and that they had
decided to go no further. I told them that their equipments and riding
animals belonged to the government and that if they left, they could
not take that property with them. He said that, they were not to be
"paid off" until they reached Santa Fe and that they thought that they
would be allowed the use of their animals until paid off, because the
government would be protected until they were paid.

To that I replied that you contracted to serve until reaching Santa
Fe or to the 1st of Dec. If you had not reached Santa Fe by that time
and although your proposition would prevent property loss to the gov-
ernment it would lose the service you agreed to give from now to the
time we reach Santa Fe or until the 1st of Dec. Chenoworth then
consulted with his associates and returned and said that, they would
stay one more day and see whether my prediction as to our location
was correct. By half past ten in the morning that the above given
discussion with Chenoworth took place, my prediction as to our lati-
tude was verified, for we were within 13 miles, and almost directly south
of, the point, Pueblo Laguna, where the regular work of the party was
to end. . . .

We made camp on the night of the 25th Nov. near the Indian
settlement of Pueblo Laguna. While making arrangements for the night
we were continually surrounded by a considerable number of the In-
dian population mostly children, who were greatly surprised to dis-
cover that we were going to sleep in the open with no protection from
rain except the canvas bed covers in which our blankets were rolled.
The party had no tents. The houses of the Indians were made of adobe.27

27. Some had "windows of Gypsum" that would give them a translucent quality.
I and a couple of my assistants called on the gov. and lieut. gov. of the Pueblo. The latter was the wealthiest member of the village we were informed, owning it was said 3,000 sheep and 300 cattle. He entertained us by cutting a watermelon and offering dried meat. A number of melons were suspended from the roof beams of [the] cabin by bark or vine holders. I had never before seen melons so late in the season and had no idea that they were edible so at such late date. We also visited their church building. It was ornamented on both walls and ceiling by Indian artists. In several of the cabins we saw them grinding grain by friction between stones.

[Pueblo Laguna to Washington]

In the early morning of the 26th of Nov. Sergeant Wren and the escort of 12 enlisted men were started west on the way back to Ft. Wingate and Apache, the posts from which they were detached as our escort. On that same morning my cook, by name Wilson, informed me that he would quit my service that day for he could not go nearer to Santa Fe which was my next objective point. When I asked him Why? he replied, "I am wanted there, am charged with killing a man there." I was greatly surprised, for he had done well the work for which he had been hired and it was not an easy job for a party as large as mine. Besides, on the day the packers were threatening to leave he told me that he was a good packer and could do a large part of their work as well as his own if they did leave.

After the westward departure of the sergt. and escort . . . the remainder of the party moved out to the eastward on the road to Albuquerque and Santa Fe. As already stated the survey work ended upon reaching Pueblo Laguna. We reached Albuquerque on the 29th having made by our odometer record 67 miles from Laguna. We passed through several little settlements on this march of Mexican and mixed Mexican and Indian populations. [They were] generally very unattractive; but one little place which seemed entirely Indian, between 10 and 15 miles south of Albuquerque at once attracted our attention by its neat appearance. Both their houses and yards were surrounded

"Considerable neatness was found in their houses. . . . In many . . . we saw them grinding grain; done simply by rubbing with stones." Diary of Tillman, November 25, 1873.


29. Tillman was following the San Jose River and approximating what is presently New Mexico Route 6 to Valencia from whence he used the stage road along the Rio Grande to Albuquerque. Ibid., November 26–28, 1873; Pearce, New Mexico Place Names, is useful for geographic orientation.
by adobe walls. It was by all odds the cleanest settlement we had seen and we testified our appreciation of the settlement's appearance by the liberal purchase of fruit. . . . 30

At Albuquerque I saw a peculiarly unique object the purpose of which was difficult to imagine. By the owner it was called a "stone handspike." It was 3 feet and 5 inches in length, of circular cross section throughout, $7\frac{3}{8}$" in circumference at its middle section with very gentle slopes to the end. It was made of hard green stone and gave out a distinctly musical tone when struck by a metal hammer. It had striking resemblance to tools at that time designated handspikes but evidently could not be used as those tools were, as levers to pry heavy weights etc. . . . 31

On Nov. 30th we reached Algodones and from Isleta to Algodones our march was close along the west shore of the Rio Grande and geese and ducks were seen in great numbers. On Dec. 1st we reached Santa Fe and remained there until the 6th. During the 2nd, 3rd, 4 and 5 there was snow daily and the weather windy and cold. The outfit was well provided for by the Q.M. at Santa Fe and it was a welcome rest for both men and animals. A couple of the survey party left Santa Fe on the 3rd by stage for the East.

On Dec. 6th we entered upon the last lapse of the march to Ft. Union where [our] outfit was to be entirely disbanded; but before starting, I had to make arrangements for my Indian striker, servant, who was anxious to continue with me and did not wish to return to the Indian reservation at Ft. Apache from which place he had come into my employ. When I asked why he did not wish to go back to the reservation, he replied, "Too much wife." The Q.M. at Santa Fe [agreed] to care for him and eventually did return him to the Apache reservation in Arizona.

My party reached Ft. Union 32 on Dec. 10th where the animals were transferred to the Q.M. Dept. and the equipment of the pack train stored for future use. Several members of the party left on the same day for Pueblo Colorado by the stage. On the 11th of Dec. I also left by stage for Pueblo. . . .

At the end of one stage run when I was transferred to another

30. "At Isleta, an Indian town, many signs of industry and labor were seen, vineyards arranged to protect against the cold, and enclosed in nice adobe lots." Diary of Tillman, November 28, 1873.
31. "Chlorite [was] visible in it. It was as prettily shaped as though made from wood and weighed 14 lbs 7 oz." Ibid., November 27, 1873.
32. Fort Union is located a few miles north of present Watrous, New Mexico. Prucha, Guide to the Military Posts, 113, plate 20; Pearce, New Mexico Place Names, 59.
stage I found an outside seat beside the driver and discovered that he was the same with whom I had ridden in going down to Santa Fe in the preceding August. After a short time I remarked to him, that I had ridden with him before. He replied "You are mistaken. You never rode up here before. I never fail to recognize a man who occupies the seat you are now in a 2nd time." I said, "You are mistaken this time," but I had great difficulty in convincing [him] until [saying] that there were in the stage at my other ride two Dutch engineers from Holland to inspect the Maxwell Grant property with a view of possible purchase. "Oh yes," he exclaimed, "I recall them engineers." Then he looked me over from head to foot, up and down and said, omitting his expletives, "You might as well expect me to recognize a cow after her hide is made into a pair of boots." . . . When he saw me in August, I was unshaven. My hair was cut short and I had on a summer suit. Since then, I had neither shaved nor had a haircut, and wore a heavy winter suit; but even so the change expressed in his extraordinary comparison must have been greater than what had really taken place in my appearance! I arrived at Pueblo at 5:00 P.M. on the 12th and at Denver on the 13th. 33

My chief packer during the season, Duffy by name, had received notice from his mining partner that a property of theirs had been sold and that his share of the proceeds was something over $10,000. This notice had been received by Duffy sometime before reaching Santa Fe. He had then told me that at the close of the season, he wished to go east with me and make a visit to his mother in St. Louis whom he had not seen in 24 years, that he went west in his youth in '49 and had never gone back there since.

He had reached Denver ahead of myself and when I arrived there he told me that he had changed his mind about going east, that he had not heard from his mother for over three years and that she might not now be living. Besides he said, that his stay in the city had already given him a craving to get back and join his partner whom he had left six months before when he took a packer's job on the survey. He was a willing, hard worker and knew well a packer's work, but he was not well fitted by disposition to control and direct that class of men. He came a 2nd time to talk with me and was in the same mood as before. I bade him good-by, with best wishes and very friendly feeling. I knew nothing of him until a little over three years later, then I heard that he had just been killed in a mining camp somewhere west of Denver. I

33. He traveled from Pueblo to Denver by train. Diary of Tillman, December 13, 14, 1873.
was a little saddened by the news, for I felt that he would never willfully wrong any one!

I left Denver on the 14th of Dec. for the East in company with Lieut. X Marshall who had charge of one of the W.D. survey parties operating in Colorado and after whom an elevated mountain in the state is named. In going east from Denver we twice [saw] large herds of antelope on the plains of Kansas; on one occasion so close to the R.R. that they were fired on by traveling sportsmen from the train, and one antelope was killed, which was secured by halting the train. The galloping herds, one of which was estimated to contain over 1,000 individuals presented beautiful pictures with the white and dun markings of graceful animals. My eastern journey took me to Kansas City and St. Louis, then down to Nashville, Tenn. . . . My father’s home near Shelbyville . . . my brother’s home Fayetteville . . . my brother’s home Knoxville . . . and reached Washington . . . on the 22nd of Dec. 1873. . . .

After reaching Washington . . . I was for the following three months engaged in helping to put in available form such data as my survey party had collected during our recent field work.

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34. Lt. William L. Marshall, Civil War veteran, member of the class of 1868, United States Military Academy. #2225, Register of Graduates and Former Cadets of the United States Military Academy (West Point, New York: West Point Alumni Foundation, 1970); Heitman, Historical Register and Dictionary of the United States Army, 1: 691. As Tillman did not put a period after “X” in Marshall’s name, it may be assumed he did not remember his Christian name and planned to add it later on. The “mountain” he alludes to is Marshall Pass, at 10,846 feet, located on the Continental Divide a few miles to the southwest of present Salida, Colorado, which Marshall discovered in 1873 as he was returning to Denver. United States Geological Survey, Guidebook of the Western United States, part E, The Denver & Rio Grande Western Route, by Marius R. Campbell, Bulletin 707 (Washington: Government Printing Office, 1922), caption of illustration facing page 162; Percy Stanley Fritz, Colorado: The Centennial State (New York: Prentice-Hall, 1941), 291–92.
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