31st Congress, 1st Session. [SENATE.] Ex. Doc. No. 64.

# REPORTS

OF

# THE SECRETARY OF WAR,

WITH

## RECONNAISSANCES OF ROUTES FROM SAN ANTONIO TO EL PASO,

BY

BREVET LT. COL. J. E. JOHNSTON;
LIEUTENANT W. F. SMITH;
LIEUTENANT F. T. BRYAN;
LIEUTENANT N. H. MICHLER; AND
CAPTAIN S. G. FRENCH, OF Q'RMASTER'S DEP'T.

ALSO,

## THE REPORT OF CAPT. R. B. MARCY'S ROUTE FROM FORT SMITH TO SANTA FE; AND THE REPORT OF LIEUT. J. H. SIMPSON OF AN EXPEDITION INTO THE NAVAJO COUNTRY;

AND

## THE REPORT OF LIEUTENANT W. H. C. WHITING'S RECONNAISSANCES OF THE WESTERN FRONTIER OF TEXAS.

JULY 24, 1850.
Ordered to be printed, and that 3,000 additional copies be printed, 300 of which are for the Topographical Bureau.

WASHINGTON:
PRINTED AT THE UNION OFFICE.
1850.

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31st Congress, 1st Session. [SENATE.] With Ex. Doc. No. 64.

# REPORT

OF

# THE SECRETARY OF WAR,

COMMUNICATING

*The report of Lieutenant J. H. Simpson of an expedition into the Navajo country in 1849; and, also, the report of Captain S. G. French relative to the road opened between San Antonio and El Paso del Norte.*

July 6, 1850.
Read.
August 10, 1850.
Ordered to be printed with Ex. Doc. No. 64, and that 3,000 additional copies be printed, 300 of which are for the Topographical Bureau.

War Department, *Washington, July* 3, 1850.

Sir: I have the honor to transmit herewith copies of reports from Lieutenant J. H. Simpson, of the Corps of Topographical Engineers, and Captain S. G. French, of the Quartermaster's Department, with accompanying maps and sketches, in compliance with a resolution of the Senate of the 8th ultimo, requesting "copies of the journals of all reconnaissances returned to the Topographical Bureau by officers of the United States making such surveys within the last year, and not heretofore communicated, together with copies of the maps and sketches belonging to said reconnaissances; also, the report of Captain French, of the Quartermaster's Department, designating a route for a military road from San Antonio to El Paso."

Very respectfully, your obedient servant,

GEO. W. CRAWFORD,
*Secretary of War.*

Hon. Millard Fillmore,
*President of the Senate.*

Bureau of Topographical Engineers,
*Washington, July* 2, 1850.

Sir: Under a resolution of the Senate of the 8th June, I have the honor to transmit the report and map of Lieutenant J. H. Simpson, Corps Topographical Engineers, of an expedition into the Navajo country in 1849.

The resolution calls for all sketches and drawings belonging to reports.

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In the present case there are seventy-five sketches and drawings of great interest, and highly necessary to illustrate the report. It has not been possible to have these copied in time, but, in the printing of the report, the engraver will be allowed access to the originals, from which he would rather engrave than from copies, and which course will also save time.

In the printing of the report, it is respectfully suggested that the printing of the map and sketches should be done under the superintendence of this office, from the belief that much time would be saved thereby.

Respectfully, sir, your obedient servant,

J. J. ABERT,
*Col. Corps Topographical Engineers.*

Hon. G. W. CRAWFORD,
*Secretary of War.*

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*Journal of a military reconnaissance from Santa Fe, New Mexico, to the Navajo country, made with the troops under the command of Brevet Lieutenant Colonel John M. Washington, chief of the 9th military department, and governor of New Mexico, in 1849, by James H. Simpson, A. M., First Lieutenant Corps of Topographical Engineers.*

SANTA FE, N. M., *April* 11, 1850.

SIR: I have the honor to submit, hereto subjoined, my journal and map of a reconnaissance of the country traversed by the troops under the command of Brevet Lieutenant Colonel John M. Washington, chief of the 9th military department, and governor of New Mexico, in an expedition against the Navajo Indians, in the months of August and September of the year 1849.

In addition to the journal will be found a number of appendices, viz: "A," my report to Colonel Washington of a reconnaissance of the borders of the Navajo country, with a view to the establishment of a post; "B," a comparative vocabulary of the language of the Pueblo or *civilized* Indians of New Mexico, and of the *wild* tribes living upon its borders; "C," a letter from Assistant Surgeon John F. Hammond, of the army, giving a description of a room he saw among the ruins of *Pueblo Bonito;* "D," a schedule of minerals illustrative of the mineralogical and geological character of the country traversed; "E," a table of geographical positions; and "F," a table of astronomical observations, with the results of calculation.

I also submit a number of sketches illustrative of the personal, natural, and artificial objects met with on the route, including portraits of distinguished chiefs, costume, scenery, singular geological formations, petrifactions, ruins, and *fac similes* of ancient inscriptions found engraven on the side walls of a rock of stupendous proportions, and of fair surface. For these truthful delineations, and the topographical sketches, I am indebted to my two assistants, Messrs. R. H. Kern and E. M. Kern, brothers—the former having furnished, with few exceptions, all the sketches of scenery, &c., and the latter the topography and other artistical work displayed upon the map. To both these gentlemen I tender my grateful acknowledgments for the kind, zealous, and effective manner in which they ever were found ready to co-operate with me in the discharge of my

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duties; and I owe it to them also to state that, having left Washington the spring previous, with orders to return from Santa Fe as soon as practicable after my exploration of the Fort Smith route, I consequently came hither unprovided with the proper appliances necessary for the most successful exhibition of their skill and labor. This circumstance will explain the unfit character, in many instances, of the paper on which the sketches have been drawn, and which it required, even such as it is, the ransacking of almost every store in the place to sufficiently supply. But these gentlemen had learned what a practical acquaintance with life, in its more destitute forms, will always develop—a ready resort to, and application of, expedients; and this readiness was not without its value, under the destitution referred to.

I also submit an herbarium of plants, which I think will not be without interest, in its relation to the botanical character of the country passed through. For this collection I am indebted, upon my solicitation, to Assistant Surgeon John F. Hammond, who is entitled to all the credit for the zeal, industry, and labor which this department of research exhibits.

I also forward a box of minerals, the latter marked correspondingly with the numbers to be found on the margin of the schedule already referred to, as designated "D" in the appendix. A duplicate of the schedule will also be found in the box containing the minerals. These specimens, I trust, will not be without their value to the critical eye of a competent mineralogist and geologist, to whom I would be glad to have them referred. I would also respectfully request that a reference be made of the plants to an accomplished botanist, for his judgment and expression as to their true character, novelty, &c. It is to be regretted, however, that, in the absence of a barometer, or other proper instrument to determine the atmospheric elevation of the localities of the plants, their normal condition in respect to climate can only be approximately arrived at, under the hypothetical elevation assumed. The same want of precision, however, does not exist in respect to the position of their localities in reference to the eath's surface, it being stated absolutely in latitude and longitude.

The comparative vocabulary of the languages of the different Peublo Indians in New Mexico, and of the wild tribes inhabiting its confines, although by no means complete, will not, I trust, be without its value in the investigations that are being made in our country in regard to the ethnological condition of the various tribes which inhabit our domain. I think, among inferences which may be drawn, the singular, and as I believe the hitherto unknown, certainly unpublished, fact is evolved, that, among the 10,000 (estimated) Peublo Indians who inhabit New Mexico, as many as *six* distinct *dialects* obtain, no one showing anything more than the *faintest*, if any, indications of a cognate origin with the other. The vocabulary distinctly shows the kindred character of the languages of the Navajos and of the Ticorillas branch of the Apache.*

* Gregg, in his "Commerce of the Prairies," vol. 1, p. 269, says: "There are but three or four different languages spoken among them, (he is speaking of the Peublos of New Mexico,) and these, indeed, may be distinctly named to each other."

The English author Ruxton, in his "Mexico and the Rocky Mountains," page 194, remarks: "The Indians of northern Mexico, including the Peublos, belonging to the same family, the Apache; from which branch the Navajos, Apaches, Coyoteros, Mescaleros, Mogeis, Yecopas, Mareopas, Cherecopas, Chemegenbas, Yurmarjors, (the last two tribes of the Moqui,) and the Nijoras, a small tribe on the Gila. All these speak dialects of the same language more or less approximating to the Apache, and of all of which the idiomatic structure is the same. They

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In regard to the geographical positions enumerated in appendix "E," which I determined in every instance by a series of astronomical observations, I do not claim for them that rigid approximation to the truth which a nice regard to the thermometrical and barometrical condition of the atmosphere, in the possession of the proper instruments, would have enabled me to arrive at; but I do claim for them, as they were in every instance referred chronometrically to the meridian of Santa Fe, and not to each other, and thus an accumulating error avoided, a degree of accuracy sufficiently high to subserve all the practical purposes for which the survey was made.

In regard to the map, it has been my aim to present on its face all the data necessary for a thorough knowledge of the country through which our route lay; and I think, with the information given in the table and note, no expedition can hereafter go over the same ground without being enabled to so prearrange its march as to make its progress comfortable and successful.

I cannot dismiss this introduction to my journal without acknowledging, as I now do, the important aid which I have received in the prosecution of my researches from the following-named gentlemen, who have assisted me in various ways, but chiefly by kindly interpreting for me, which their knowledge of the Spanish enabled them to do, whenever I found it necessary to call upon them: Chief Justice Joab Houghton; Señor Vigil, secretary of the province; Mr. Samuel Ellison, official translator in the State Department; Mr. James L. Collins, official interpreter to Colonel Washington on the expedition; Assistant Surgeons Lewis A. Edwards, Horace R. Wirtz, and John F. Hammond, of the army; and Captain Henry L. Dodge and Lieutenant Lorenzo Tores, of the Mexican volunteers.

I must also express my acknowledgments to Brevet Major Henry L. Kendrick, who daily furnished me with the distances from camp to camp indicated by the viameter which was attached to a wheel of one of his gun-carriages.

To the Topographical Department I must also express my obligations for the opportune receipt of the work entitled "A collection of tables and formulæ useful in geodesy and practical astronomy, by Captain Thomas I. Lee," of the corps, and which forms "No. 3" of the "papers relating to the duties of the Corps of Topographical Engineers." This work I found exceedingly useful in the solution of the astronomicol problems and geodetic operations incidental to my duties; and, containing, as it does, *multum in parvo*, and that in a comprehensive as well as succinct form, I cannot but regard it, on account of the facilities which it affords for the prompt and scientific solution of the astronomical and geodetic questions

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likewise all understand each other's tongue. What relation this language bears to the Mexican, is unknown, but my impression is, that it will be found to assimilate greatly, if not to be identical."

This *sweeping* declaration of Ruxton, grossly erroneous as it is, shows with what assiduous care travellers who profess to give to the public facts as they find them should distinguish between what they have derived second-hand, and which is, therefore, to be taken with proper distrust, and that which they have obtained directly at the fountain-head, which is alone to be received as philosophically satisfactory. I am the more surprised at the remarks of this author, as, from the title-page of his work, I notice that he, at the time he was making his investigations, was a member of an "ethnological society."

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to which our duties are constantly giving rise, as a most valuable contribution to the corps.

J. H. SIMPSON,
*First Lieut. Corps Top. Eng.*

COLONEL JOHN J. ABERT,
*Chief Corps of Top. Engineers, Washington, D. C.*

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JOURNAL.

*Santa Fe, New Mexico, August* 14, 1849.—To-day the following orders were issued from headquarters:

[ORDERS No. 32.] HEADQUARTERS 9TH MILITARY DEPARTMENT,
*Santa Fe, New Mexico, August* 14, 1849.

I. The colonel commanding intending to make a movement against the Navajo Indians, the following troops will rendezvous at Jemez, subject to further orders:

Four companies of the 3d infantry, under the command of Brevet Lieutenant Colonel Alexander, 3d infantry; two companies of the 2d artillery, under command of Brevet Major Kendrick, 2d artillery; Captain Ker's company, (K,) 2d dragoons; and Captain Chapman's mounted company of volunteers.

The infantry and artillery commands will move from Santa Fe on the morning of the 16th instant; and Captains Ker and Chapman will move with their companies and be at Jemez on the 19th instant. The artillery command will take one six-pounder gun and three mountain howitzers, in addition to their other guns.

II. The quartermaster's department will provide pack mules and packs for the transportation of the necessary baggage of the command, and for thirty days' rations for five hundred men; and the commissary department will furnish the necessary subsistence stores.

III. Lieutenant Simpson, Topographical Engineers, will accompany the expedition, making such a survey of the country as the movements of the troops will permit.

IV. Assistant Surgeon Hammond will leave the general hospital in charge of a citizen physician, until the return of Assistant Surgeon Edwards, and proceed with the command on the 16th instant.

By order of Lieutenant Colonel Washington:

JOHN H. DICKERSON,
*Lieutenant, and A. A. A. General.*

In consequence of said orders, all the departments of the service are busily engaged in preparing for the contemplated movement.

*Santa Fe, August* 15.—To day, in consequence of information having reached headquarters of the concentration of the Utahs near Albiquin, orders No. 32 have been so far modified that Captain Ker's company of dragoons, now stationed at Albuquerque, and Captain Chapman's company of mounted volunteers, now stationed at the *Placer*, instead of moving on Jemez, are to proceed to Albiquin, and, in conjunction with Major Grier's company of dragoons and Captain Valdez's company of

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mounted volunteers, the whole under the command of Brevet Lieutenant Colonel Beall, effect, if possible, a peace with the Utahs in that quarter, or, failing in this, prosecute a war against them. Effecting a peace, Captains Ker and Chapman, with their companies, are to join the main command under Colonel Washington at Chelly. Not accomplishing a peace amicably, or by force of arms, Colonel Washington will, after accomplishing his objects with the Navajos, join the troops in the Utah country.

*First camp, August* 16.—The preparations being in a sufficient state of forwardness, the portion of the troops referred to in orders No. 32 stationed at Santa Fe took up the line of march this morning, their destination being Jemez, *via* Santo Domingo. These troops consist of two companies of the 2d artillery, ("B," commanded by Brevet Major John J. Peck; "D," by 2d Lieutenant J. H. Nones; the battalion by Brevet Major H. L. Kendrick,) and four companies of the 3rd infantry, ("D," commanded by Brevet Captain George Sykes; "F," by 2d Lieutenant C. B. Brown; "G," by 2d Lieutenant Andrew Jackson; and "H," by first Lieutenant A. J. Williamson; the battalion by Brevet Lieutenant Colonel E. B. Alexander)—the whole aggregating (fifty-five of artillery, and one hundred and twenty of infantry) an effective force of one hundred and seventy-five men, under the command of Brevet Lieutenant Colonel John M. Washington, 3d artillery, commandant of the 6th military department, and governor of New Mexico. The officers of the staff are 1st Lieutenant J. H. Simpson, Corps Topographical Engineers; Brevet 1st Lieutenant James N. Ward, 3d infantry, acting assistant quartermaster and commissary; 2d Lieutenant John H. Dickerson, 1st artillery, acting assistant adjutant general; and Assistant Surgeon J. H. Hammond. Lieutenant Simpson has with him, to assist him in his duties, Mr. Edward M. Kern, of Philadelphia, and Mr. Thomas A. P. Champlin, of Buffalo. In addition to the officers mentioned, James S. Calhoun, esq., of Georgia, Indian agent, goes out with a small party of assistants to effect, in connexion with the colonel commanding, a proper treaty with the Navajos; and Mr. James L. Collins accompanies Colonel Washington, as Spanish interpreter.

Wagon transportation is furnished to the troops as far as Jemez, and then pack animals are to be resorted to.

The road taken by the artillery (see accompanying map, the red dotted line indicating the route pursued by the troops) was the usual one to Santo Domingo, *via* Agua Fria, (a small collection of *ranchos*—farms—six miles from Santa Fe,) and thence along the Rio de Santa Fe, on its east side, to Sieneguilla, a distance of 16.02 miles, where they encamped. The general course was east of south.

The infantry and my own party, having taken a more eastern route—that usually travelled by wagons to Algadones—after having marched about the same distance, sixteen miles, are encamped two miles to the east of the artillery, on a small tributary of the Rio de Santa Fe.

The face of the country to-day has been generally level—a few *arroyos* (dry beds of streams) intersecting it at intervals, and the famous Placer or Gold mountain, and the Sandia mountain, with some intermediate conical mounds, forming, to our front, the chief features of the landscape. (See plate I.) Saving a very narrow and interrupted margin bordering the Rio de Santa Fe between Agua Fria and Santa Fe, and which was cultivated in corn, the country has exhibited one extended barren

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waste, with nought to diversify it but a few dwarf or bush cedars, sparsely scattered.

At Sieneguilla—a village composed of one Roman Catholic church and a few scattered ranchos—good grass and water are found, and sufficient fuel.

At this place, Captain Ker, with his command, has also encamped, on his way to Albiquin. It was the intention of Colonel Washington, after reaching Santo Domingo, to make a night march upon the Utahs about Albiquin, and thus, effecting a junction with Lieutenant Colonel Beall's command, strike the enemy a blow when he might be least expecting it; but Captain Ker's force being unexpectedly in advance of such a movement, it is abandoned.

*Second camp, August* 17.—The infantry, as also my own party, joined the artillery, in the canon of the Rio de Santa Fe, just after the latter had left their camp. The general course to day was slightly south of west, the road threading the cañon* of the Rio de Santa Fe to its mouth, a distance of six miles; thence across the valley of the margin of the Rio Grande del Norte, seven miles, to the *Pueblo de Santo Domingo;* and thence by ford across the Rio Grande to our camping-ground, directly opposite Santo Domingo—the whole march having been 14.85 miles. Through the cañon, the road, on account of rocks and boulders, and for a mile and a half before reaching Santo Domingo, on account of sand hills, is rough; the remaining portion is level and good.

The cañon of the Rio de Santa Fe is quite interesting. Varying in depth from one hundred to one hundred and fifty feet, the Rio de Santa Fe trickling through it, its mésa (table) heights on either side are crowned by overlying basaltic trap. This trap shows eminently, in particular localities, the blackening, scoriaceous effect of fire; and in some places is to be seen underlying it an earthy formation of an ashy character, and in others a reddish porphyritic rock in beds slightly dipping towards the east. At the mouth of the cañon, on its north side, is a well-defined ash-colored formation of an argillo-silicious character, dispersed in layers, and presenting, with striking and pleasing effect, the appearance of the *facade* of a highly-finished piece of Grecian architecture. This object cannot fail to attract the notice of the traveller.

Debouching from the cañon, an extended plain—upon which I saw some fifty head of cattle grazing—stretches westward about six miles to the Rio Grande; the Jemez mountains appear on the further side of the river, quartering to your right; an extended *mésa* shows itself also beyond the river to your front; and the Sandia mountain lifts itself high and sublime to your left. Not a tree is to be seen until you can look down upon the Rio Grande, and then the cottonwood is noticed sparsely skirting its banks. The bed of the Rio Galisteo, which we crossed just before entering Santo Domingo, indicated only here and there that it was even moistened with water.

Santo Domingo, which lies directly on the Rio Grande, is a pueblo or Indian town, containing about eight hundred inhabitants. It is laid out in streets running perpendicularly to the Rio Grande. The houses are constructed of *adobes*, (blocks of mud, of greater or less dimensions, sun-dried;)

* The word cañon is most generally applied to a deep and narrow valley, enclosed on either side by escarpments. It sometimes, however, means a shallow valley.

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are two stories in height, the upper one set retreatingly on the lower, so as to make the superior covering or ceiling of the lower answer for a terrace or platform for the upper; and have roofs which are nearly flat. These roofs are made first of transverse logs, which pitch very slightly outward, and are sustained at their ends by the side walls of the building; on these, a layer of slabs or brush are laid longitudinally; a layer of bark or straw is then laid on these; and covering the whole is a layer of mud of six or more inches in thickness. The height of the stories is about eight or nine feet. The lower stories have very small windows, and no doors; the lights of the windows, wherever there were any, being of selenite—the crystallized foliated form of gypsum. The mode of access to the building is by exterior ladders, which may be seen leaning against every house.

In the west end of the town is an *estufa*, or public building in which the people hold their religious and political meetings. The structure, which is built of *adobes*, is circular in plan, about nine feet in elevation, and thirty-five feet in diameter, and, with no doors or windows laterally, has a small trap-door in the terrace or flat roof by which admission is gained. Directly below the opening, and detached from the wall, is a fire-place, in plan thus,

its height being about three feet—the opening referred to serving as a vent to the smoke.

The men, I notice, wear generally nothing but a shirt and a breech-cloth; the women, a dark-colored blanket, covering one shoulder, and drawn under the other, a girdle confining the blanket about the waist, and the arms being left free and bare. This appears to be their *ordinary summer dress*. The children run naked.

At the house of the governor, I noticed a woman, probably his wife, going through the process of baking a very thin spieces of corn cake, called, according to Gregg, *guayave*. She was hovering over a fire, upon which lay a flat stone. Near her was a bowl of thin corn paste, into which she thrust her fingers; allowing then the paste to drip sparingly upon the stone, with two or three wipes from the palm of her hand she would spread it entirely and uniformly over the stone; this was no sooner done than she pealed it off, as fit for use; and the process was again and again repeated, until a sufficient quantity was obtained—the necessarily rapid character of the process causing the perspiration to roll from her face in streams. The woman, noticing the interest I took in the operation, handed me a sheet of the food to eat. Like the Mexican *tortilla*, although I was excessively hungry, it did not fail to leave at the stomach a slight sensation of nausea. When folded and rolled together, it does not look unlike (particularly that made from the blue corn) a "hornet's nest"—a name by which it is sometimes called.

The Rio Grande, at the ford, is about three hundred yards wide, is between three and four feet deep, and is full of bars. Its bottom, in spots, is of quicksand character—two of the wagons stalling on this account.

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The soil to day, excepting a very limited area upon the Rio Santa Fe, at Sieneguilla, and for a breadth of about a mile along the Rio Grande, is probably worthless for cultivation, and of but very slight, if of any, value for grazing purposes.

Our camping-ground, which is near some cornfields, is a fine one—the Rio Grande, besides furnishing us with water to drink, affording us a refreshing bath; and the grass in the vicinity being good, and wood sufficiently near.

A series of astronomical observations make the latitude of this camp 35° 30′ 56″; its longitude, 106° 29′ 45″.

*Third camp, Jemez, August* 18.—Not being able last evening, on account of the strong wind, to get satisfactory astronomical observations, I obtained some this morning, before daylight.

Our route to-day, to Jemez, a distance of 26.60 miles, was generally in a northwesterly direction, and, besides being exceedingly heavy on account of sand, and rough and uneven on account of sand hills and *arroyos*, did not furnish us a drop of water throughout its whole extent.

For the first nine miles, it was up a heavy sandy *arroyo*, at the fourth mile of which there was a short steep hill to ascend, and at the ninth a rather long and steep one—which surmounted, brought us to a piece of table land of about three miles in breadth, whence could be seen, almost due west, about thirty five miles off, the remarkable peak called *Cerro de la Cabeza*. This table land traversed, we reached the brow of the valley of the Rio de Jemez, whence, looking down upon and across the valley, a confused mass of sedimentary hills and mésa heights appeared to sight—the escarpment walls of the *mésa* being generally of a well-defined stratified character, and of sensible dip towards the south. To our right, and on *our* side of the Rio de Jemez, were *mésa* heights, crowned with basaltic trap, apparantly fifty feet thick. From the brow of the valley down to the Rio de Jemez, the road is very heavy and rough, on account of sand hills and *arroyos*.

Four miles from our last camp, I noticed on the route an outcrop of silicious limestone, containing, sparsely, some particles of felspar. Near this spot, observing a plateau or *mésa* from two hundred to three hundred feet high, which promised a fine view of the country we had been traversing, I ascended it, to scan the landscape. As I anticipated, a noble view extended itself before me. There lay, far off towards the northeast, the Santa Fe mountains; to the southeast, the Placer mountain and Sandia mountain; intervening between them, and just discoverable, lying beyond the gleaming waters of the Rio Grande, the little town of Santo Domingo; to the north and northwest, stretching far away, were the Jemez mountains; to the south, *mésa* formations, crowned with basaltic trap; and everywhere else, sparsely scattered over mountain and plain, the dwarf cedar.

The Pueblo of Jemez, as its prefix indicates, is an *Indian* town of probably between four and five hundred inhabitants, and, like the Pueblo of Santo Domingo, is built upon two or three parallel streets, the houses being of adobe construction, and having second stories disposed retreatingly on the first, to which access is had by ladders. I notice here, on the outskirts of the village, the usual accompaniment of Mexican and pueblo towns, the ragged-looking picketed goat enclosure—it giving to the suburbs an unsightly appearance. About the premises are probably a dozen of acres covered with apricot and peach trees. An infantry com-

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pany of Mexican volunteers, under command of Captain Henry L. Dodge, is stationed at this place. A sketch of the pueblo and some curious-shaped sandstone hills in the vicinity is given in plate 4.

The Rio de Jemez, upon which the pueblo lies, is an affluent of the Rio Grande, varies from thirty to fifty feet in breadth, is of a rapid current, and tends southwardly. Its bed is a commixture of red sand and gravel. Patches of good corn and wheat skirt it here and there along its banks; and the extent of cultivable land bordering it may be estimated at about a mile in breadth. Its waters are palatable; good grass is found along it, and wood exists in the vicinity. Our encamping-ground, which is just to the north of the town, has, therefore, all the requisites to make it a good one.

The soil along the route to-day, excepting the narrow margin along the Rio de Jemez already mentioned, is utterly worthless for cultivation.

The latitude of this camp, by astronomical observation, is 35° 36′ 7″; its longitude, 106° 51′ 15″.

*Third camp, Jemez, August* 19.—The wagon attached to headquarters breaking down yesterday, on account of the rough state of the road, it did not reach us early enough in the evening to have our tents pitched. The consequence was, that the colonel commanding and his staff bivouacked for the night—a change which we found quite agreeable.

The troops will remain here for a day or two, until the assistant quartermaster, Captain Brent, can perfect his arrangements for a change from wagon to pack-mule transportation, and also for the purpose of giving time for the concentration of the Pueblo and Mexican force, which is to join us at this point.

This afternoon, a dance—called, in the language of the Jemez Indians, *Lou-pel-lay*, or the green-corn dance—having been reported as being about to be enacted in the village, several persons from camp, (among them my assistant, Mr. E. M Kern, from whom I get my information,) went down to witness it. In order the better to see the performance, they took a position on one of the houses in the principal streets. (See plate No. 6.) When the performers first appeared, all of whom were men, they came in a line, slowly walking, and bending and stooping as they approached. They were dressed in a kirt of blanket, the upper portion of their bodies being naked, and painted dark red. Their legs and arms, which were also bare, were variously striped with red, white, and blue colors; and around their arms, above the elbow, they wore a green band, decked with sprigs of *piñon*. A necklace of the same description was worn around the neck. Their heads were decorated with feathers. In one hand they carried a dry gourd, containing some grains of corn, with which they produced a rattling kind of music; in the other, a string, from which were hung several *tortillas*. At the knee were fastened small shells of the ground turtle and antelope's feet; and dangling from the back, at the waist, depended a fox skin. The musicians were habited in the common costume of the village, and made their music in a sitting posture. Their instruments consisted, each, of half a gourd, placed before them, with the convex side up; upon this they placed, with the left hand, a smooth stick, and with their right drew forward and backwards upon it, in a sawing manner, a notched one. This produced a sound much like that of grinding corn upon a matate, (a slightly concave stone.)

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The movements in the dance differed but slightly from those of Indians generally.

The party were accompanied by three elders of the town, whose busi- it was to make a short speech in front of the different houses, and, at particular times, join in the singing of the rest of the party. Thus they went from house to house singing and dancing, the occupants of each awaiting their arrival in front of their respective dwellings.

My second assistant, Mr. R. H. Kern, brother to my first assistant, Mr. E. M Kern, joined me, from Taos, this afternoon.

*Third camp, Jemez, August* 20 — During the past night, we had an unusually heavy rain, attended with sharp thunder and lightning.

This morning, after breakfast, Major Kendrick, Assistant Surgeons Edwards and Hammond, Mr. E. M. Kern, and myself left camp for *Los Ojos Calientes*, (the Hot springs,) said to be twelve miles above, in the valley of the Rio de Jemez. The lieutenant governor of Jemez accompanied us as guide. Our course, which lay directly up the valley called the Cañon of San Diego, was slightly east of north. Soon after leaving camp, we passed some red-colored argillaceous rocks, well stratified, the dip of stratification on either side being anticlinal, and the gorge which we threaded being coincident with the line of strike. An upheave, therefore, must, in all probability, have taken place, the resulting force of which was doubtless normal to the line of strike. A sinking of the two series of stratification at the foot of their respective slo es could indeed have caused the like effect; but, the first mode of accounting for the phenomenon being the simplest, it is most reasonable to suppose it to have occurred.

Two miles from camp, we came to a Mexican settlement, which continued sparsely scattered along the river for about five miles. The most populous portion of it, called *Cañoncito*, we found to be about three miles from camp, at the mouth of the *Cañon de Guadalupe*. Here I saw, within a hundred yards of the village, a small gray wolf shying off very reluctantly from us.

For a distance of six or seven miles, the bottom of the Cañon de San Diego is pretty well cultivated—corn, wheat, and peppers being the chief product of the soil: the corn, which looked well, greatly predominated.

Beyond the settlements, the ruins of old *adobe* buildings were ever and anon to be seen, which, according to our guide, were once inhabited by Mexicans, who had deserted them from fear of the Navajos.

Nine miles up the *cañon* we found an old copper smelting furnace, which looked as if it had been abandoned for some considerable period. It is quite small, is built of stone, and has arched ovens traversing each other at right angles, each oven being furnished with a stone grating. We picked up some fragments of copper ore (probably green malachite) which lay scattered around.

Twelve miles from Jemez, we came to Los Ojos Calientes. Here, desiring to make some examinations, and it being our purpose to regale ourselves with the eatables we had brought with us, we unsaddled our horses and turned them loose to graze.

On examination, we found the springs to be situated within the compass of a few feet of each other, some of them boiling up immediately from the bed of a small bifurcated branch of the Rio de Jemez. The principal one, which is in the branch mentioned, issues from a small knoll or heap of boulder stones, which seem to partake both of a calcareous and



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basaltic character, the vent not being more than a foot above the bed from which it springs. The volume of water which issues from it may be estimated at about a gallon and a half per minute. This spring, as well as all the other principal ones, shows a limited accumulation of a crystalline deposite about its mouth, which, on account of its fine-grained character and hardness, may probably come under the head of travertine. The complexion of the deposite is white, with a shade of greenish yellow.

We put into the jagged cup or bowl of the fountain some eggs and raw venison, both of which were cooked in about twenty minutes. The time required to do this would doubtless have been much less had the bowl been sufficiently concave to have admitted a more perfect immersion of the articles, and the fixture of a cover, by which the heat lost through evaporation could have been retained. As it was, upon an immersion by Major Kendrick of a thermometer, Dr. Edwards assisting him, the highest point to which the mercury would rise was 169°.

These springs are said, in diseases of a cutaneous or rheumatic kind, to possess powers of a highly curative character; and it is doubtless on this account that the arbors which we noticed near the main springs are placed over some basins, scooped out from the ground, into which the hot water finds its way. A view of these springs, with their accessory scenery, and among it the tower of a distant ruined church, may be seen in plate 14.

Observing, about a third of a mile above the springs, the ruins just mentioned, we saddled up for the purpose of visiting them. On reaching the spot, we found them to be the remains of an old Roman Catholic church, in dimensions about fifty feet front by one hundred and twenty deep. The tower, which was octagonal in form, and which rose up from the middle of the rear end of the building, was still standing, as were also the greater portion of the walls of the main building. The height of the tower I estimated at thirty feet. The thickness of the walls of the main edifice at base measured six feet. A good view of these ruins may be seen in plate 15.

It getting late, we were obliged to hasten our return to camp--a drenching rain, which had in the mean time sprung up, adding not a little to our alacrity. A spring, however, which we unexpectedly met with on our route, tempting us by its cool appearance, we could not resist the desire to alight and try its waters, which we found not less grateful than they were unexpected.

The cottonwood, the cedar, and pine, the latter of dwarfish growth, and all rather sparsely scattered, constitute the *sylva* of the valley. The wild currant we found growing in great luxuriance and perfection about the old church.

*Third camp, Jemez, August* 21.—This afternoon, Captain Dodge, the brothers Kern, and myself visited the Roman Catholic church of the village—the governor of the town, Hosta, procuring for us the keys, and acting as *cicerone*. The church, an adobe structure, some one hundred by twenty-eight feet in plan, appeared very old, and was evidently wasting away under the combined influence of neglect and moisture. The swallows, as is to be noticed in the Roman Catholic church at Santa Fe, seemed to be perfectly at home within it, and now, as in the church mentioned, brought home to me the appositeness of those beautiful remarks of the sweet psalmist of Israel to be found in Psalms, 84th, 3d. A pilas-

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ter and arch arrangement, with crosses at intervals, characterized the side walls; and a number of paintings, all daubs, excepting the central one, the wall back of the chancel. Hosta informed us that this central piece was a representation of San Diego bearing the cross. At present it is considerably defaced, but the touches of a genuine artist are yet visible upon it. None but a true son of the muse could have thrown into the countenance the expression of beautiful sadness with which it is radiant. In addition to the objects of garniture already mentioned, I noticed upon a projecting piece of the side pulpit a human skull and some bones, and in a side room, to which I could only peep in, some images and pictures.

Finishing our examination at the church, we visited the *estuffas* of the town, of which there are two. Both are one story high, and, like the one noticed at Santo Domingo, have no doors or windows laterally, and are only accessible from above, through the flat roof. They differ from it, however, in being rectangular—the one we measured being twenty by twenty-seven feet in the clear, and seven and a half feet high. On the walls were representations of plants, birds, and animals—the turkey, the deer, the wolf, the fox, and the dog, being plainly depicted; none of them, however, approaching to exactness, except the deer, the outline of which showed certainly a good eye for proportions. For an exact picture of these, both as regards details of form and color, and also as respects the dingy, smoky complexion of the walls upon which they are painted, I refer the reader to plates 7, 8, 9, 10, and 11.

Upon questioning Hosta in relation to the object of these *estuffas*, he informed us that they were after the custom of Montezuma, and for that reason they were not allowed to give them up. He also called them the churches of Montezuma. In the spring, he says, they go there to chant to him to send them rain; and in the fall they sing to him to obtain any good thing they may want. He further remarked—(and I give what follows to show the superstition of these people, for he narrated it as if he thought it might be true)—he further remarked, there was a tradition among his people, that Montezuma, whenever in his travels he stopped for the night, would make a house in one hour; and that he would plant corn one night, and the next morning it would be fit to be plucked. He went on further to inform us that they worshipped the sun, moon, and fire. The moon he called the captain of the night. The sun, however, when he rises, he remarked, puts away all the children of the night, and therefore he is the great captain.

To the question of the object of the paintings upon the walls of the *estuffa*, he said they were *por bonito*, (for ornament.) The circles represent the sun and moon; the semicircles, clouds; and the barbed, zigzag line, the forked, destructive lightning. The emblem of good lightning he represented in pencil upon my note-book as terminating more bluntly, thus:

The two human figures with trumpets to their mouths, which may be seen illustrated in plate 9, he represents as the adjutants of Montezuma, who are sounding a call to him for rain.

Before the conquest, he says, according to tradition, the Jemez Indians

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were fighting with all the other tribes—those of San Felipe, Santa Anna, and Santo Domingo. At length a Spanish priest appeared among them very mysteriously. This priest, whenever he celebrated mass, made it a condition of his acceptance of them that they should every previous Saturday bring him wood. And it was his habit, whenever he wanted anything, such as skins or blankets, to take them. The people at length, getting enraged at such treatment, determined to kill him. He, hearing of it, however, disappeared as mysteriously as he had come. They then looked for his tracks; but, the snow having covered them up, they concluded he must have gone down the *Ojo Caliente!* (one of the hot springs I have already described.)

He further told us, that, when living upon the *mésa* between the cañons of Guadalupe and San Diego, there came another *padre* among them, whom, whilst on his way to receive the confessions of a sick man, they killed. That, upon another occasion, whilst engaged in their dances, they were told that the Spaniards were below; but they did not believe it, and continued dancing. The consequence was, that, one night, after a dance, and when they had retired for the night, the Spaniards came upon them with all their force, and they, having nothing but their arrows and knives to defend themselves with, closed in with one another, and began to throw each other over the precipice of the *mésa*. Just at this time, there appeared in the direction of the Cañon de Guadalupe *Nuestra Señora de Guadalupe*, (our Lady of Guadalupe,) and in the direction of the Cañon de San Diego the saint of that name! The Indians, noticing this, fled—some to Sandia, some to Isleta, and some settling here at Jemez. All, however, have since come to live at the last-mentioned place.

The *Pecos* Indians, he went on further to inform us, were the only people that speak the same language they do; that, during one of the revolutions of the country, when he was quite a youth, this tribe, being very much harassed by the Spaniards, (Mexicans,) asked permission of the people of Jemez to come and live among them. They not only granted them permission to do this, but sent out persons to help them get in their crops, and bring them and their property to their new abode. When they arrived, they gave them houses and fields. The old man and his daughter, who at the time were tending the sacred fire at Pecos, the enemy, he says, seized and beat—the daughter at length being carried away captive, and the old man escaping by the way of Galisteo to Jemez. This was the reason of the fire of Montezuma ceasing. He went on to state that the Pecos and Jemez Indians, though they speak the same language, differ somewhat in their religious customs. In relation, however, to Montezuma, the different Pueblo Indians, although speaking different languages, have the same belief. Yesterday, in getting some information from a Jemez Indian, I asked him whether they now looked upon God and the sun as the same being. He said they did. The question was then put, whether they still worshipped the sun, as God, with contrition of heart. His reply was, "Why not? He governs the world!" From this Indian I also learned that they worship the sun with most pleasure in the morning, and that they have priests to administer their own religion, which they like better than the Roman Catholic, which he says has been forced upon them, and which they do not understand. He said they were all the children of Montezuma, and a tradition had been current among them that they were to be delivered by a people who would

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come from the east; that, in consequence of the good treatment they were receiving from the Americans, they were beginning to believe that that people had come; that General Kearny had told them they would believe this more and more, because they would continue to be treated well by the Americans, and they were finding it so.

From Hosta I learn there are now living among his people only fifteen Pecos Indians, seven being male adults, seven female, and one a little girl. One Pecos male adult, he says, is living at Cuesta, one at Santo Domingo, and one in the Cañon of Pecos. These eighteen, he states, are all that are now living of this people.

For a portrait of Hosta, in his war costume, as also of his wife, in her best attire, with some of the accessories characteristic of their mode of life, I would refer the reader to plates 4 and 5. Hosta is one of the finest looking and most intelligent Pueblo Indians I have seen, and, on account of his vivacity and off-hand graciousness, is quite a favorite among us. A profile sketch of *Wash-u-how-te*, a Pecos Indian, will also be seen in plate 12.

*Fourth camp, August 22.*—The arrangement for transportation by pack mules being complete, and the Pueblo levies, 55 in number, having joined us, the command also having been increased by Captain Dodge's company of Mexican volunteer infantry,* the whole force took up its line of march to-day for the *Cañon of Chelly*.† At the same time, Brevet Lieutenant Colonel Alexander, on account of indisposition, and Assistant Quartermaster Brent and Assistant Surgeon Edwards, on account of the theatre of their duties being at that post, returned to Santa Fe. Our route lay directly down the valley of the Rio de Jemez, the stream of which we crossed just above San Ysidro, a small Mexican settlement about three miles below Jemez. Three miles more brought us to our present camping-ground, where we find good water, tolerable pasturage, and wood in the vicinity. The valley, as far as San Ysidro, is hemmed in by secondary mountains, and within this extent is but slightly cultivated.

At San Ysidro I called to see Señor Francisco Sandoval, the proprietor of the copper furnace we saw two days since up the Cañon de San Diego. He informs me that the mine near this furnace was worked until about three years since; that one man could get from it ten arrobas‡ of rich ore per day, and that gold was found in association with it. He further stated that he had now *cached* (buried) near the furnace twenty-three *arrobas* of pure copper.

Several times to-day, on the march, a beautiful humming-bird, the first I have seen since I left the States, has been hovering about me. The last time it paid me a visit, I was seated under a tent, where it lit for a moment within a foot or two of my person, and then disappeared, not to be seen again.

The length of the march to-day has been only 5.78 miles—it having been deemed prudent, on the first day's trial with the packs, to go but a short distance.

*Fifth camp, August 23.*—The troops decamped at 8 o'clock this morning—a Mexican, by name Carravahal, whose residence is at *San Ysidro*,

* Lieutenant Lorenzo Flores, a subaltern of the company, accompanied the expedition.

† The orthography of this word I get from Señor Donaciano Vigil, secretary of the province, who informs me that it is of Indian origin. Its pronunciation is easy—se.

‡ A arroba is a weight of 25 pounds.

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accompanying them as guide. Our course lay generally for the day north of west, and for the first 14 miles directly up the Canon de Peñasca—low mountains of a ridgy, primary character skirting it on the right, and mésa heights, of some 300 or 400 feet elevation, bordering it on the left. The formation of these latter is generally an ash-colored sandstone, alternating with a red argillaceous friable rock. A mile further, and we were upon the high land dividing the waters of the *Rio de Jemez* from those of the Rio Puerco—an extensive prospect of the valley of the latter, with the accessories of some high isolated mountain peaks, bursting unexpectedly upon us from this point. Among the peaks are to be noticed the *Cerro de la Cabeza*, the summit of which was an object of interest on our march from the Rio Grande to Jemez. This head mountain, I perceived, resembled very much in contour, though much higher, Cerro Tucumcarri, a prominent landmark about 160 miles east of the Rio Grande, on the Fort Smith route. This mountain I described in my report of that route as resembling very much in shape the dome of the Capitol at Washington; and *Cerro de la Cabeza*, though not so good a representation, yet cannot fail to suggest to the traveller a like resemblance.

The top of the high land referred to being reached, the road commences descending towards the Rio Puerco, two miles further bringing us to the *Rio de Chacoli*, a small affluent of the Puerco, upon which we are encamped.

Two miles from our last camp, and directly on the route, are several springs of a mineral character, the taste of the water sensibly indicating the presence of soda, (probably sulphate of soda,) nitre, and some ferruginous matter. One of these springs has made for itself a basin of an elliptical shape, which is several feet in diameter, and raised about three feet above the argillaceous soil from which it flows. The incrustration about the mouth of the spring appears to be of a calcareous character, and colored with iron. These springs, on account of my having left the road to examine a geological formation, I did not see; and for the information I have given I am indebted to Majors Kendrick and Peck.

In the vicinity of the springs, cropping out from the base of the mésa, forming the south wall of the cañon, I noticed large beds of earthy gypsum and sulphate of lime; and constituting the superior strata of the mésa was a formation, some eighty feet thick, composed of an alternation of crystallized fibrous gypsum and thin layers of argillaceous shale. At the foot of the escarpment, I picked up what appeared to be, from its taste and appearance, common salt, (chloride of sodium.) I afterwards noticed, four miles further on the route, another bed of gypsum.

About nine miles from our last camp, in the cañon, thrown together promiscuously, are some huge specimens of conglomerate boulders, one of them in magnitude probably not being short of twenty-five by twenty-five feet, or containing over fifteen thousand cubic feet. And near our present camp, there is to be seen cropping out of a side hill a red argillaceous rock, in appearance very much like that from which the Indians living on the head-waters of the Mississippi make their pipes.

It is observable that the overlying basaltic formation which I have already, in my journal, noticed as beginning at Sieneguilla, on the Rio de Santa Fe, and extending westward as far as the valley of the Rio de Jemez, has not been seen to-day on either side of the route. The valley, then,

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of the Rio de Jemez may be considered as the limit of this formation westward.

The march to-day has been 16.27 miles. The first half of the road was tolerably good; the last half, very rough—the tongue of the six-pounder's limber having been broken on account of it. Not a particle of cultivable soil did we meet with until we reached the valley of the Rio de Chacoli, where we find it rich and mellow. The *sylva* has been generally the dwarf cedar, sparsely scattered; and some pines were observable on the last portion of the route.

Our camping-ground furnished goood grazing, tolerable water, and a sufficiency of wood. The water, however, cannot be depended upon, except in the wet season.

There have joined us to-day some eighty Mexican mounted militia. Our force, then, as now constituted, consists of fifty-five men of the regular artillery, one hundred and twenty of the regular infantry, fifty of Mexican volunteer infantry, fifty-five of Pueblo or Indian mounted militia, and eighty of Mexican mounted militia—in all aggregating, with the *employés* of the quartermaster's and subsistence departments, about four hundred men. The longitude of this camp, by observation, is 107° 3′ 15″.

*Sixth camp, August 24.*—We had some fine showers of rain last evening and during the night.

Seven men belonging to the Mexican mounted militia are reported to have deserted last evening.

The troops resumed the march at 8 a. m.—our course for the day being generally northwest. One and a half miles from camp, we crossed the *Rio de Chacoli*, a running stream, four feet in breadth and a few inches in depth, with banks six feet high, which had to be cut down to give passage to the artillery. This creek traversed, the route lay up a very shallow valley for about three and a half miles, when we got on the brow of the immediate valley of the Rio Puerco—this valley being hemmed in on its west side by heights, with tableau tops, and precipitous escarpment walls. The Rio Puerco, as far as visible, runs a course west of south, and is slightly fringed with the cottonwood. Cerro de la Cabeza and other mountain peaks to the south and west show well from this point. Close by the route, on its right, just before reaching the bed of the Puerco, is an old circular stone *corral* (enclosure) about thirty feet in width, and three in height, laid in mud mortar.

The Rio Puerco, which, from its great length upon the maps, we had conjectured to be a flowing stream of some importance, we found to contain water only here and there, in pools—the fluid being of a greenish, sickening color, and brackish to the taste. The width of its bottom, which is a commixture of clay and gravel, is about one hundred feet. Its banks, between twenty and thirty feet high, are vertical, and had to be graded down to allow the artillery and pack animals to cross them. The six pounder had to be unlimbered and dragged up on the west side by men at the prolongas. A mule, with one of the howitzers packed on his back, in attempting to traverse the bed of the river, lost his footing and capsized—the howitzer, on account of its great weight, naturally seeking the lowest place, and the legs of the poor animal correspondingly tending upwards. The sight, it may well be conceived, partook both of the painful and the ludicrous.

The valley of the *Rio de Chacoli* and that of the Puerco, both of which,

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on account of the slight elevation of the dividing ridge, may be considered as but one, and which embraces a breadth of about six miles, is, to all appearances, quite a rich body of land, and, if not ordinarily too dry, must be susceptible of productive cultivation. It differs from the other cultivated soil we have passed over, in being argillaceous, instead of felspatic.

A mile beyond the Rio Puerco, we entered the Cañon de la Copa, (Cup Cañon,) so called on account of the cup or vase like appearance of some of the sandstone rocks forming its walls. (See sketch in plate 6.) In the left-hand or south escarpment wall of the cañon may be seen some well-defined and beautiful stratification, its dip being slightly *from* the valley of the Puerco, or westward. The breadth of the cañon is about one hundred and fifty yards. Among the escarpment rocks I noticed some seams of a perfectly white saline pulverulent substance, which, from its taste, I should judge to be soda. We also found, in the same locality, in some crevices, and also attached to the rock, a dark pitchy substance, agglutinated with the excrement of birds, and of animals of the rat species.

Near these rocks are several deep and narrow *arroyos*, which required to be worked to make them practicable for the passage of the artillery.

About half a mile further, just as we emerged from the cañon, noticing on the right of the road what appeared to be bituminous coal, I examined it, and found it to be veritably such, though of an impure, slaty character. It exists in beds a foot thick, which are, in some instances, overlaid by yellowish sandstone, and then again by calcareous rock. I noticed, in some instances, superposing the coal, loose, disintegrated masses or fragments of what appeared to be a species of jasper, the evidences of igneous influence being quite apparent from its baked and blackened aspect. The coal, when fractured, occasionally discovers resinous particles of a beautiful iridescent character, the reflections being those of the garnet.

Getting out of the *Cañon de la Copa*, the country becomes very much broken by low hills of a mound or mésa shape, some of them, on account of the symmetry of their form, creating a degree of interest.

From twelve to fifteen miles off, on our left, have appeared, all day, a chain of pretty high mountains, some of them ridgy, and some of mésa shape.

After a march of 13.27 miles, falling upon an insignificant tributary of the Rio Puerco, which drains the valley called *Canada de Piedra de Lumbre*, we have encamped—the pasturage about our camp being but tolerable, the water (of a high clay color) barely endurable, and fuel being found in the vicinity. The water, however, can only be depended upon during the wet season.

The face of the country to day, as usual, has presented pine and cedar, of a dwarf growth, very thinly scattered; and the *artemisia* has been seen everywhere. The soil, excepting the valley of the Rio Puerco, for purposes of cultivation, may be considered as worthless. Astronomical observations put this camp in latitude 35° 46′ 13″.

*Seventh camp, August 25.*—Three more of the Mexican mounted militia are reported to have deserted yesterday.

The troops took up the line of march at 7 a. m. Our general course for the day has been about northwest. At the start our route lay through a shallow valley—a succession of them, bounded by tableau or rounded hills, crossing each other in every direction, and causing the country to have a broken appearance. A mile or two from camp, looking back, an

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imposing view of *Cerro de la Cabeza* presented itself to us. There was nothing about it to detract from its towering sublimity; and as the morning sun threw its golden light upon its eastern slope, leaving all the other portions in a softened twilight shade, I thought I had never seen anything more beautiful, and at the same time grand. (See plate 17.)

Four miles on the route, to the left of the road, upon a little hillock, another and more extensive view of the country bursts upon you. To the south, some twenty miles off, lay an extensive range of mountains, of a mésa and ridgy character; intermingled with these, and diversifying the scene, were *Cerro de la Cabeza* and half a dozen other peaks, one of them quite sharp; to the east and northeast were still to be seen, stretching from north to south, from forty to fifty miles off, the Jemez mountains; and everywhere else a broken country, made up of low swelling hills, isolated cones, and mésa heights, sprinkled with pine and cedar of a scrub growth, and with the artemisia, in connexion with an everywhere-prevailing dirty yellowish arenaceous soil, completed the picture.

As we proceeded on, the country stretched out more prairie-like and rolling, furnishing an extensive range of view on every hand. Six miles from our last camp, we met some very dirty, clay-colored water, in pools, the permanency of which, however, cannot be depended on. A mile and a half further, we traversed about one-third of a mile of what appeared to be good argillaceous soil. Four miles from this, a very beautifully-shaped tableau mound appears, ranging directly in front of our course. After a march of thirteen and a half miles, coming upon an arroyo containing some water of a highly-charged clay character, as scanty in quantity as unpalatable to the taste; and, the guide who had been sent in advance not returning in time to give the colonel commanding the information needed in respect to water to make it prudent for him to go any further for the day, the order was given to encamp.

The valley through which the *arroyo* runs is called the *Cañon de Torrijon;* and I notice a few cottonwoods skirting the *arroyo*. The pasturage about camp is but tolerable.

The soil to-day, excepting the very narrow belt already alluded to, is worthless. The road was pretty good.

About sundown, Major Kendrick and myself took a stroll about a mile from camp, in a northwest course, to a tableau mound, where we found, horizontally disposed, an outcrop of bituminous coal, of an indifferent character, on account of earthy admixtures. Sandstone both over and underlies it. We also saw an alternation of thin layers of fibrous gypsum and of arenaceous rock overlying it in places.

The latitude of this camp, by astronomical observations, is 35° 50′ 31″; its longitude, 107° 23′ 45″.

*Eighth camp, August 26.*—The nights and mornings at the last two camps have been quite cold. This is doubtless owing to our great elevation. We have been ascending more or less ever since we left the Rio Grande. Indeed, from the appearance of the Jemez mountains and other indications, it is not at all unlikely that the country we have been travelling over to-day is considerably higher, atmospherically, than Santa Fe. But this point, it is to be regretted, I cannot determine, for the want of a barometer, with which it was impossible to supply myself on setting out upon the expedition. Major Emory, in his report, speaks of the absence of dew along the *Rio Gila*, and, on that account, of his scarcely ever finding it

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necessary to wipe his horizon-glass. I, on the contrary, find them so heavy in this region as to make it necessary for me to wipe mine often.

The troops decamped at 7 a. m.—the weather, as it generally has been, being beautiful, clear, and pleasant. Our general course during the day was northwest; and for the first seven miles the route was gradually ascending.

Just after leaving camp, we passed, to the right of the road, the beautifully-shaped mound referred to yesterday. Four miles from camp, on the right of the road, is an oblong mound or hill, about fifty feet high, exhibiting very strikingly the gradual effect of igneous action upon matter, in proportion to its proximity to the source of heat. Highly scoriaceous rocks protruded here and there through argillaceous rocks, burnt to different degrees of calcination; and a dirty yellowish friable sandstone rock crops out all around from underneath the mass. This is the first scoriaceous or lava rock I have noticed since I left the valley of the Jemez. From the mound just adverted to, *Cerro de la Cabeza* and the Jemez mountains could still be seen to our rear.

A mile and a half further on the route we came to a locality where coal crops out of the soil. Near this locality is a very shallow depression or basin, caused by the washing of the rains. In this basin we found some beautiful specimens of petrified wood—in two instances the trunks of the trees still standing erect and *in situ*. One of these trunks was two feet high by two in diameter, and the other three feet high by two and a half in diameter. In another instance, a trunk of a tree, in its petrified state, had fallen over and split open, the parts lying together as if they had but just been cleft with an axe. For a sketch of two of these petrifactions, see plates 18 and 19. Do not these petrifactions show that this country was once better timbered than it now is? All the *sylva* we *now* find—except the cottonwood occasionally to be seen on the water-courses—is a scrub growth of cedar and pine.

Prescott, in his "History of the Conquest of Mexico," speaking of the absence of forest trees in southern Mexico at the present period, remarks: "In the time of the Aztecs, the table land was thickly covered with larch, oak, cyprus, and the other forest trees—the extraordinary dimensions of some of which, remaining to the present day, show that the curse of barrenness in later times is chargeable more on man than nature."*

If by this remark this favorite author means to say that the curse of barrenness may be chargeable to the wickedness of the people who inhabit it, I can assent to it; but if, on the contrary, his idea is that its inhabitants had caused it by their own spontaneous agency, (positive or negative,) either by acts of devastation or neglect of culture, I do not perceive that a sufficient motive could be assigned to the former; and the history of rich, uncultivated lands in other portions of the world does not, in my judgment, justify the belief of the latter. Surely He who, as Revelation declares, and as the countries of the East now, in connexion with sacred and profane history, attest, "turneth rivers into a wilderness, and the water springs into dry ground; a fruitful land into barrenness, for the

* Volume I, page 9.—See Isaiah, chapter 24; also, Psalms, chapter 107, verses 33 and 34; in which the Hebrew word, which in the text is rendered "barrenness," is also, according to the marginal reference, convertible into *saltness*; and it is not a little remarkable that the cause of the barrenness of the soil in Old as well as New Mexico, is, in a very considerable degree, if not mainly, owing to this same condition of the earth—its saltness.

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wickedness of them that dwell therein;" He who "maketh the earth empty and waste;" who "turneth it upside down, and scattereth wide the inhabitants thereof,"—could also, in His sovereignty, not only have cursed, and for a similar cause, the country in question with the barrenness under which we see it languishing, but by this very means have scattered abroad its inhabitants, as the ruins everywhere attest He has done. It is, however, a pleasing thought, that He who inflicteth such judgments upon the land for the wickedness of the people dwelling therein, also, for their righteousness, "turneth the wilderness into a standing water, and dry ground into water springs; and there maketh the hungry to dwell, that they may prepare a city for habitation, and sow the fields, and plant vineyards, which may yield fruits of increase."* But to resume my *journal*:

Seven miles from our last camp, we reached the highest point of the land dividing the tributaries of the Gulf of Mexico from those of the Pacific. This land, on all the maps I have seen, is represented as being either of a ridgy, primary character, or of a *mésa* or *tableau* character, its lateral walls in the latter case being represented steep and deep. On some maps it is designated as the *Sierra de los Mimbres*, or in others as the *Sierra Madre*. Our exploration shows that, instead of its exhibiting in traverse section the sharp angles of the primary mountains, thus , or the flat table-shaped aspect of the mesa formation, thus , it presents more strictly the outline of a formation, thus , the country intervening between the far-distant escarpments being very considerably convex.

The highest point of land just referred to reached, we commenced gradually descending its western slope—three miles more bringing us to the Rio Chaco, a tributary of the *Rio San Juan;* and five miles more to a point whence could be seen in the distance, on a slight elevation, a conspicuous ruin, called, according to some of the Pueblo Indians with us, *Pueblo de Montezuma*, and according to the Mexicans, *Pueblo Colorado*. Hosta calls it *Pueblo de Ratones;* Sandoval, the friendly Navajo chief with us, *Pueblo Grande;* and Carravahal, our Mexican guide, who probably knows more about it than any one else, *Pueblo Pintado*.

After having marched 21.45 miles, coming to a spring of good water in a ravine to the left of the road, about a mile from the ruins, in the vicinity of which we found fuel and good grazing, we encamped.

The superior rock to-day was argillo arenaceous; the soil the same; the

* Psalms, chapter 107, verses 35 and 37. See also, in this connexion, Major Emory's report from California, under date of August 20, 1849, to the chief of the Corps of Topographical Engineers, from which I make this extract: "A very remarkable circumstance has occurred in that portion of the country between the mouth of the Gila river and the mouth of a locality called the 'Desert,' sometimes the 'Jornado.' A river forty feet wide and more than [illegible] deep has appeared in the middle of the desert, affording delicious water to drink, [illegible] an oasis at the most convenient spot for the traveller." Surely, then, here is a [illegible] of the power of the Mighty to turn "a wilderness into a standing water, and dry ground into water springs."

And I will remark here, that I was informed last summer, by a citizen of Santa Fe, who had then recently travelled the Spanish trail route, that the river had broken out very strongly upon that route.

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route smooth and good. About a dozen hares, half a dozen doves, and one curlew, are all the game I have seen since I left Santa Fe. A wolf is seen occasionally. To day I saw four; two of them very large.

After partaking of some refreshments, I started off, with high expectations—my assistants, the Messrs. Kern, accompanying me—to examine the ruins of *Pueblo Pintado*. We found them to more than answer our expectations. (See sketches in plates 20 and 21.) Forming one structure, and built of tabular pieces of hard, fine grained, compact gray sandstone, (a material entirely unknown in the present architecture of New Mexico,) to which the atmosphere has imparted a reddish tinge, the layers or beds being not thicker than three inches, and sometimes as thin as one-fourth of an inch, it discovers in the masonry a combination of science and art which can only be referred to a higher stage of civilization and refinement than is discoverable in the works of Mexicans or Pueblos of the present day. Indeed, so beautifully diminutive and true are the details of the structure as to cause it, at a little distance, to have all the appearance of a magnificent piece of mosaic work. (See plate 41, drawing 1.)

In the outer face of the buildings there are no signs of mortar, the intervals between the beds being chinked with stones of the minutest thinness. The filling and backing are done in rubble masonry, the mortar presenting no indications of the presence of lime. The thickness of the main wall at base is within an inch or two of three feet; higher up, it is less—diminishing every story by retreating jogs on the inside, from bottom to top. Its elevation, at its present highest point, is between twenty-five and thirty feet, the series of floor beams indicating that there must have been originally at least three stories. The ground plan, including the court, in exterior development, is about 103 feet. On the ground floor, exclusive of the outbuildings, are fifty-four apartments, some of them as small as five feet square, and the largest about twelve by six feet. These rooms communicate with each other by very small doors, some of them as contracted as two and a half by two and a half feet; and in the case of the inner suite, the doors communicating with the interior court are as small as three and a half by two feet. The principal rooms, or those most in use, were, on account of their having larger doors and windows, most probably those of the second story. The system of flooring seems to have been large transverse unhewn beams, six inches in diameter, laid transversely from wall to wall, and then a number of smaller ones, about three inches in diameter, laid longitudinally upon them. What was placed on these does not appear, but most probably it was brush, bark, or slabs, covered with a layer of mud mortar. (See plate 41, drawing 5.) The beams show no signs of the saw or axe; on the contrary, they appear to have been hacked off by means of some very imperfect instrument. On the west face of the structure, the windows, which are only in the second story, are three feet two inches by two feet two inches. On the north side, they are only in the second and third stories, and are as small as fourteen by fourteen inches. At different points about the premises were three circular apartments sunk in the ground, the walls being of masonry. These apartments the Pueblo Indians call *estufas*, or places where the people held their political and religious meetings. For further and more detailed information, including the position of the structure with respect to the four cardinal points, I refer to plate 21½.

The site of the ruins is a knoll, some twenty or thirty feet above the

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surrounding plain—the Rio Chaco coursing by it, two or three hundred yards distant, and no wood being visible within the circuit of a mile.

The quarry from which the material was obtained to build the structure seems to have been just back of our camp.

Hosta says this pueblo was built by Montezuma and his people, when they were on their way from the north towards the south; that, after living here and in the vicinity for a while, they dispersed, some of them going east and settling on the Rio Grande, and others south into Old Mexico.

The captain of the Mexican mounted militia informs me that twenty of his men have deserted since they joined us on the 23d. The latitude of this camp is found to be 35° 56′ 27″; its longitude, 107° 46′.

*Ninth camp, August 27.*—Not finishing our examinations at the ruins of *Pueblo Pintado* yesterday afternoon, we again visited them early this morning. On digging about the base of the exterior wall, we find that, for at least two feet, (the depth our time would permit us to go,) the same kind of masonry obtains below as above, except that it appears more compact. We could find no signs of the genuine arch about the premises, the lintels of the doors and windows being generally either a number of pieces of wood laid horizontally side by side, a single stone slab laid in this manner, or occasionally a series of smaller ones so placed horizontally upon each other that, whilst presenting the form of a sharp angle, in vertical longitudinal section, they would support the weight of the fabric above. (See this last indicated in plate 41, drawing 4.) Fragments of pottery lay scattered around, the colors showing taste in their selection and in the style of their arrangement, and being still quite bright. (See plate 22.) We would gladly, had time permitted, have remained longer to dig among the rubbish of the past; but the troops having already got some miles in advance of us, we were reluctantly obliged to quit.

Two miles over a slightly-rolling country, our general course being still northwest, brought us to the commencement of the Cañon de Chaco, its width here being about two hundred yards. Friable sandstone rocks, massive above, stratified below, constitute its enclosing walls. Four miles further, on the right side of the cañon, is a habitation excavated in the rocks, its front wall being of stone and mud masonry. The height of the apartment is four feet; dimensions in plan, fourteen by fourteen feet; and size of doorway, two by two feet. Alongside of it is another small apartment, also excavated in the rocks.

Bituminous coal again makes its appearance, nine miles from our last camp, cropping out from sandstone rocks. A mile further, on the left-hand side of the road, is a stone and mortar enclosure, elliptical in shape, sixteen by eight feet in plan, and having two equal compartments. About a mile further are to be seen a number of very large sandstone boulders, which have tumbled from the rocks above, some of them containing probably as much as fifteen thousand cubic feet. In some instances, I noticed rocks of the same kind *in situ*, and just ready to tumble down. On several of these boulders were found a number of hyeroglyphics—for a representation of which, see plates 23, 24, and 25.

Thirteen miles from our last camp, we came to another old ruin, called by Carravahal *Pueblo Weje-gi*, built, like Pueblo Pintado, of very thin tabular pieces of compact sandstone. The circuit of the structure, including the court, was near seven hundred feet. The number of apartments

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on the ground floor, judging from what was distinguishable, was probably ninety nine. The highest present elevation of the exterior wall is about twenty five feet. The great mass of rubbish below, however, shows that it must have been higher. For a sketch of these ruins, in combination with the magnificent amorphous rocks of the north wall of the cañon back of them, see plate 26; and for their ground plan, see plate 27.

The view from these ruins, both up and down the cañon, is fine. Rocks piled upon rocks present themselves on either side, and in such order as to give the idea of two parallel architectural facades, converging at either extremity, at a remote distance. Another and more splendid view burst upon us as we turned an angle of the cañon, just before reaching camp The chief object in the landscape was *Mésa Fachada*, a circular mound, with tableau top, rising abruptly, midway in the cañon, to a height of from three hundred to four hundred feet. The combination of this striking and beautiful object with the clear sky beyond, against which it was relieved, in connexion with lesser mounds at its base, the serried tents of the command, the busy scene of moving men and animals in the vicinity, and the curling smoke from the camp fires, made up a picture which it has been seldom my lot to witness.

The distance travelled to-day was 14.86 miles. The road was tolerably good. Scrub cedars, very thinly scattered, were to be seen on the heights; and the *artemisia* characterized the *flora*. Some patches of good *gramma* grass could occasionally be seen along the Rio Chaco. The country, as usual, on account, doubtless, of constant drought, presented one wide expanse of barren waste. Frequently since we left the Puerco the soil has given indications of containing all the earthy elements of fertility, but the refreshing shower has been wanting to make it productive. The Rio Chaco, near our camp, has a width of eight feet, and a depth of one and a half. Its waters, which are of a rich clay color, can only be relied upon with certainty during the wet season.

*August* 28.—This morning, the route of the command deviating from the Cañon of Chaco, in which were represented to be some more ruins of an interesting character, I obtained permission from the colonel commanding to visit them—it being my intention to join the command upon the Chaco, which it was said the troops would strike again before halting for the night. I took with me Mr. R. H. Kern and the guide, Carravahal, seven mounted Mexicans accompanying us as an escort. Mr. E. M. Kern was directed to continue with the troops, and keep up the topography of the route.

Proceeding down the cañon one and a half miles, (its general course northwest by west,) we came to an old ruined structure, called by Carravahal *Pueblo Una Vida*. The circuit of this pueblo we found on measurement to be nine hundred and ninety-four feet. The structure has been built, like those I have already described, of very thin tabular fine-grained sandstone—the highest present elevation of the main walls being about fifteen feet. Two stories are now discoverable, but the mass of *debris* at the base of the walls certainly shows that there must originally have been more. The remains of four circular *estufias* are still apparent. For a view of these ruins, with the beautiful *Mésa Fachada* in the distance, see plate 28; and for a view of the plan of the pueblo, so far as it was distinguishable, see plate 29.

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A mile further down the cañon, we came to another pueblo in ruins, called by Carravahal *Hungo Pavie*, which he interprets Crooked Nose. These ruins show the same nicety in the details of their masonry as those I have already described. The ground plan (for which see plate 30) shows an extent of exterior development of eight hundred and seventy two feet, and a number of rooms upon the ground floor equal to seventy-two. The structure shows the existence of but one circular *estufa*, and this is placed in the body of the north portion of the building, midway from either extremity. This *estufa* differs from the others we have seen, in having a number of interior counterforts. The main walls of the building are at base two and three-quarter feet through, and at this time show a height of about thirty feet. The ends of the floor beams, which are still visible, plainly showing that there was originally, at least, a vertical series of four floors, there must then also have been originally at least a series of four stories of rooms; and as the *debris* at the base of the walls is very great, it is reasonable to infer that there may have been even more. The floor beams, which are round, in transverse section, and eleven inches in diameter, as well as the windows, which are as small as twelve by thirteen inches, have been arranged horizontally, with great precision and regularity. Pottery, as usual, was found scattered about the premises — specimens of which are illustrated in plate 32.

Continuing down the cañon one and three quarter miles further, we came to another extensive structure in ruins, the name of which, according to the guide, is *Pueblo Chettro Kettle*, or, as he interprets it, the Rain Pueblo. These ruins have an extent of exterior circuit, inclusive of the court, of about thirteen hundred feet. The material of which the structure has been made, as also the style of the masonry, is the same as that of the ruined pueblos I have already described — the stone a sandstone, and the beams pine and cedar. The number of stories at present discoverable is four —there having been originally a series of windows (four and a half by three and a half feet) in the first story, which are now walled up. The number of rooms on the first floor, all of which were distinguishable, excepting those in the west wing, must have been as many as one hundred and twenty-four. (See ground plan of structure in plate 33.) The circular *estufas*, of which there are six in number, have a greater depth than any we have seen, and differ from them also in exhibiting more stories, one of them showing certainly two, and possibly three, the lowest one appearing to be almost covered up with *debris*. In the northwest corner of these ruins we found a room in an almost perfect state of preservation, a sketch of which can be seen in plate 31. This room is fourteen by seven and a half feet in plan, and ten feet in elevation. It has an outside doorway, three and a-half feet high by two and a quarter wide, and one at its west end, leading into the adjoining room, two feet wide, and at present, on account of rubbish, only two and a half feet high. The stone walls still have their plaster upon them, in a tolerable state of preservation. On the south wall is a recess, or niche, three feet two inches high by four feet five inches wide by four feet deep. Its position and size naturally suggested the idea that it might have been a fireplace; but if so, the smoke must have returned to the room, as there was no chimney outlet for it. In addition to this large recess, there were three smaller ones in the same wall. The ceiling showed two main

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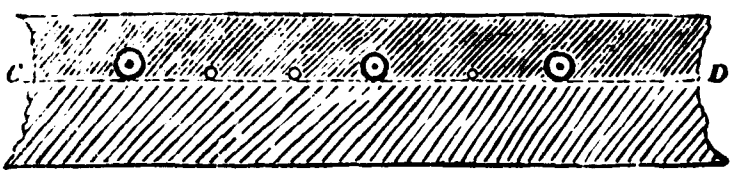
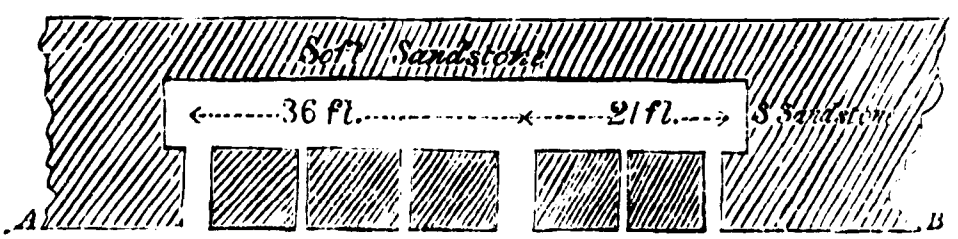
beams, laid transversely; on these, longitudinally, were a number of smaller ones in juxta position, the ends being tied together by a species of wooden fibre, and the interstices chinked in with small stones; on these again, transversely, in close contact, was a kind of lathing of the odor and appearance of cedar—all in a good state of preservation. Depending from the beams were several short pieces of rope, a specimen of which I got. The floor of the room is covered with rubbish. A large quantity of pottery lay strewed about the ruins.

Two hundred yards further down the cañon, in its north wall, are to be seen, about twelve feet from the ground, upon the same level, and within a number of feet of each other, three horizontal perforations, each about two feet in diameter, and having smaller ones between them, on the same line of level. Besides these perforations, there were other small ones arranged in a vertical line from the ground to one of the larger ones. What the object of these perforations may have been, it is difficult to divine, unless, indeed, back of the larger ones, and extending from one to the other, is an excavation which may answer as a hiding-place—the small orifices on the same level serving for light and ventilation, and those extending from the ground to one of the large ones as means of ascent, thus :

*Elevation on C D, or face of wall.*




*Horizontal section on A B, or plan of excavation.*




And this conjecture agrees with the statements made by one of the Mexicans with me, that it was a *casa*, (house.) It is to be regretted, however, that the want of the proper appliances to insert in the holes as steps for ascent, together with the necessity of hurrying on to the other labors of the day, did not permit us to satisfy our minds upon this point. Below the perforations on the face of the rock were a number of hieroglyphics, which are represented in part in plate 35, some fragments of the drawings having become lost.

Two or three hundred yards down the cañon, we met another old pueblo in ruins, called Pueblo Bonito. For a distant view of these ruins, and the magnificent rocks back of them, see plate 36; and for a view of its north elevation, see plate 39. This pueblo, though not so beautiful in

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the arrangement of the details of its masonry as *Pueblo Pintado*, is yet superior to it in point of preservation. The circuit of its walls is about thirteen hundred feet. Its present elevation shows that it has had at least four stories of apartments. The number of rooms on the ground floor at present discernable is one hundred and thirty-nine. In this enumeration, however, are not included the apartments which are not distinguishable in the east portion of the pueblo, and which would probably swell the number to about two hundred. There, then, having been at least four stories of rooms, and supposing the horizontal depth of the edifice to have been uniform from bottom to top, or, in other words, not of a retreating terrace form on the court side, it is not unreasonable to infer that the original number of rooms was as many as eight hundred. But, as the latter supposition (as will be shown presently) is probably the most tenable, there must be a reduction from this number of one range of rooms for every story after the first; and this would lessen the number to six hundred and forty-one. The number of *estufas* is four - the largest being sixty feet in diameter, showing two stories in height, and having a present depth of twelve feet. All these *estufas* are, as in the case of the others I have seen, cylindrical in shape, and nicely walled up with thin tabular stone. Among the ruins are several rooms in a very good state of preservation—one of them (near the northwest corner of the north range) being walled up with alternate beds of large and small stones, the regularity of the combination producing a very pleasing effect. (See drawing No. 2, plate 41.) The ceiling of this room (see plate 38) is also more tasteful than any we have seen—the transverse beams being smaller and more numerous, and the longitudinal pieces which rest upon them only about an inch in diameter, and beautifully regular. These latter have somewhat the appearance of barked willow. The room has a doorway at each end and one at the side, each of them leading into adjacent apartments. The light is let in by a window, two feet by eight inches, on the north side. There was among the ruins another room, which, on account of the lateness of the hour and the consequent despatch of our examination, escaped our scrutiny. This room having been represented by Assistant Surgeon J. H. Hammond and Mr. J. L. Collins (both of whom started from camp with us) as being more perfect in its details than any of the others we had visited, and as indicating the use of *smooth* plank in the flooring, I requested the former to furnish me with a description of it. This description (thanks to the courtesy of the doctor) will be found in the appendix "C."

Besides the ruins of the main structure, there were some others lying just to the northeast of the pueblo, along the wall of the cañon.

A few hundred yards further down the cañon, we fell in with another pueblo in ruins, called by the guide *Pueblo del Arroyo*, the circuit of which was about one hundred feet. The day, however, being far gone, and the camp of the command doubtless many miles in advance of us, we were obliged reluctantly to forego the critical examination of these ruins which we would have been pleased to give them.

About a quarter of a mile further, we came to another small ruined edifice; and half a mile further, to still another—the style and construction of each being the same as of those already described, except that the stones of the walls were a little larger.

All the ruins we have seen to-day, up to this point, have been on the



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north side of the cañon, and within a few feet of its escarpment wall, the sandstone rocks composing it being magnificently amorphous, and running up to a height of about one hundred feet. Two miles further down the canon, but on its left or south bank, we came to another pueblo in ruins, called by the guide *Pueblo de Peñasca Blanca*, the circuit of which I ascertained to be, approximately, one thousand seven hundred feet. This is the largest pueblo in plan we have seen, and differs from others in the arrangement of the stones composing its walls. The walls of the other pueblos were all of one uniform character in the several beds composing it; but in this there is a regular alternation of large and small stones, the effect of which is both unique and beautiful. The largest stones, which are about one foot in length, and one half a foot in thickness, form but a single bed, and then, alternating with these, are three or four beds of very small stones, each about an inch in thickness. (See drawing No. 2, plate 41, for an illustration of this style of masonry.) The general plan of the structure also differs from the others in approximating the form of the circle. The number of rooms at present discoverable upon the first floor is one hundred and twelve; and the existing walls show that there have been at least three stories of apartments. The number of circular estufas we counted was seven.

The question now arises, as we have seen all the ruins in this quarter, What was the form of these buildings?—I mean as regards the continuity or non continuity of its front and rear walls. Were these walls one plain surface from bottom to top, as in the United States, or were they interrupted each story by a terrace, as is the case with the modern pueblo buildings in New Mexico?

The front or exterior walls were evidently one plain surface from bottom to top; because, whenever we found them in their integrity, which we did for as many as four stories in height, we always noticed them to be uninterruptedly plain.

The rear walls, however, were, in no instance that I recollect of, found to extend higher than the commencement of the second story; and the partition walls were, if my memory is not at fault, correspondingly step-like in their respective altitudes. The idea, then, at once unfolds itself, that in elevation the inner wall must have been a series of retreating surfaces, or, what would make this necessary, each story on the inner or court side must have been terraced. This idea also gathers strength from the fact that we saw no indications of any internal mode of ascent from story to story, and therefore that some exterior mode must have been resorted to—such as, probably, ladders, which the terrace form of the several stories would make very convenient. Again, the terrace form of the stories would best conduce to light and ventilation for the interior ranges of apartments. The idea, then, which Mr. R. H. Kern was the first to suggest—that these pueblos were terraced on their inner or court side—is not without strong grounds of probability; and it is in consonance with this idea that, in his *restoration* of the *Pueblo Hungo Pavie*, (see plate 31,) he has given it the form exhibited in the drawing.*

It is a curious fact, that in no single instance did we find in these ruins either a chimney or a fireplace, unless, indeed, the recesses described

*Unwittingly Mr. Kern has fallen one story short of the number the ruins exhibited. In their restored state, four stories should appear.

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as existing in some of the rooms were used as fireplaces, which their slight height, as well as deprivation of chimney flues, would scarcely authorize. Neither were there any indications of the use of iron about the premises.

In regard to the position of the several structures in respect to the four true cardinal points of the heavens, it deviated in every instance more or less from them; but in no instance was the variation from the *magnetic* cardinal points more than five degrees, except in the case of the *Pueblo Una Vida*, where it was as great as fifteen degrees east. The magnetic variation of the needle from the true pole being, at these localities, about thirteen and a half degrees east, the deviation from the four *true* cardinal points, in the case of the *Pueblo Una Vida*, would then be as much as twenty eight and a half degrees. In the case, however, of all the other pueblos, it was but a very few degrees.

In regard to the origin of these remains, there is nothing that I can learn conclusive in relation to it. Hosta, one of the most intelligent Pueblo Indians I have seen, says, as I have before remarked, that they were built by Montezuma and his people, when on their way from the north to the region of the Rio Grande and to Old Mexico. Sandoval, a very intelligent Navajo chief, also says they were built by Montezuma, but further states that the Navajos and all the other Indians were once but one people, and lived in the vicinity of the Silver mountain; that this mountain is about one hundred miles north of the Chaco ruins; that the Pueblo Indians separated from them, (the Navajos,) and built towns on the Rio Grande and its tributaries, but that "their house continues to be the hut made of bushes." Nothing more satisfactory than this have I been able to get from either Indians or Mexicans.

On Colton's map of North America, however, I notice that Humboldt is made to locate the residence of the Aztecs, in the twelfth century, between the thirty-sixth and thirty-seventh parallels of north latitude, and the one hundred and ninth and one hundred and twelfth meridians of west longitude; but upon what ground the great explorer has based this hypothesis, I know not, for I have not his works at hand to consult. This thing, however, is certain: the ruins I have described were found upon the Rio Chaco; they are evidently, from the similarity of their style and mode of construction, of a common origin; they discover in the materials of which they are composed, as well as in the grandeur of their design and superiority of their workmanship, a condition of architectural excellence beyond the power of the Indians or New Mexicans of the present day to exhibit; and they are all situated between the thirty-sixth and thirty seventh parallels of north latitude, and near the one hundred and eighth degree of west longitude. It is, then, not at all improbable that they are the identical ruins to which Humboldt has referred.

But it may be said, "It is true these remains discover a race of men superior to the natives of New Mexico of the present day; but where are the evidences of the very high stage of civilization to which the Aztecs are said by historians to have attained in Anahuac? Where are the evidences of a mechanical knowledge equal to that which must have been exercised in the construction of the temple of Xochicalco, the palaces of Tezcotzinco, and the colossal calender stone in the capital."* But, waiving

* Prescott's Conquest of Mexico, vol. I, pp. 142, 182–185; vol. II, Ap., part I, note 73.

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the question whether these remains are not of Toltec, rather than of Aztec origin, or of an origin yet more remote, is it at all an impossible thing that a people who could show the ingenuity and skill which the ruins of Chaco attest could also, self-instructed, by the time of the Spanish conquest, or within the space of three centuries, (the interval between the twelfth and fifteenth centuries,) have made such advances in the mechanic arts as to be equal to the work in question? And still further, is it not very likely that, as history bases the advanced state of the arts among the Aztecs of Anahuac more upon the superior attainments of their predecessors, the Toltecs, and their contemporaries, the Tezcucans,* than upon their own spontaneous, self instructed efforts—is it not very likely, I say, that, under such favorable auspices, the Aztecs could have attained to the degree of proficiency ascribed to them? The foregoing facts and reflections, it is true, do not with certainty *fix* an Aztec origin to the ruins of the Chaco; but they go to show that, as far as is known, there is nothing to invalidate the hypothesis, but, on the contrary, a great deal to make it probable.

Gregg, in his excellent work upon New Mexico, entitled "Commerce of the Prairies,"† speaking of one of the Chaco ruins, *Pueblo Bonito*, remarks, (most probably from information derived from others,) that it resembles so much those of *Casas Grandes* as to make it probable that they were originally built by the same people; and, as he seems to adopt the idea of the historian *Clavigero*, that these latter *are* of Aztec origin, the inference is, that he also attributes the former to the same source. Wislizenus, on the contrary, in his interesting "Memoir of a Tour to Northern Mexico in 1846 and 1847,"‡ says, (he professes only to speak from report,) that the ruins of *Casas Grandes* are "built of *adobes* and wood squared," and have "a gallery of wood and staircase from the outside." If, then, the information derived by Wislizenus be correct, these ruins cannot be said to resemble those of the Chaco, for the latter are built *entirely of stone*, and, besides, do not discover the *slightest evidences* of ever having had exterior "galleries" or staircases. It is most probable, then, that they are not both of the same, or of Aztec origin; but as, with Mr. Gallatin, I am inclined to doubt the Aztec origin of the former, or those of *Casas Grandes*, so am I equally strong in the opinion that those of the latter, the Chaco ruins, are of that origin.

Major Emory also, in his letter to Mr. Gallatin, (to be found in appendix No. 1 of his "Reconnaissance in New Mexico,") speaking of the ruins on the *Rio Gila*, says: "My own impression is, that the many ruins we saw on the Gila might well be attributed to Indians of the races we saw in New Mexico, and on the Gila itself. I mean by the last the Pinnos, who might easily have lost the art of building *adobe* or mud houses." It would then seem to be very probable that not only were the ruins of the Chaco of Aztec origin, but, as far as has been at present discovered, it is not at all unlikely that they, instead of those on or near the Gila, constituted the last resting place of this people before entering upon the conquest of Anahuac.

The great historian Robertson, it is said, has stated (I have not his works near me to verify the fact,) that "there is not in all the extent of

* Prescott's Conquest of Mexico, vol. 3, pp. 215, 216, 414.
† Vol. 1, pp. 283-285.
‡ Page 59.

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New Spain any monument or vestige of a building more ancient than the conquest; that the temple of *Cholula* is nothing but a mound of solid earth, without any facing, or any steps, covered with grass and shrubs; and that the houses of the people of Mexico are mere huts, built with turf or branches of trees, like those of the rudest Indians."* However applicable this may be to the ancient remains said to have been found in New Spain—and I have no reason, from my reading, to believe it so—it certainly cannot be predicated of those discovered on the Rio Chaco.

But to proceed with the journal of our route: The last ruins passed, we obtained from the same eminence on which they are situated a fine view of the *Tumecha* mountains, some forty miles off, to the west, and their apparent range very nearly perpendicular to our course, and the waters of the Chaco, glittering under the rays of an opposite and declining sun, coursing their way as far as they could be seen towards them. Already it was 5 o'clock p. m., and no signs of the camp of the troops were visible. Thirteen miles more were made by us—the darkness of the night having come upon us—and still the camp was not in view. Just at this moment, a strange horse neighed directly in front of us. I felt assured that we had at last reached the camp. An exclamation of joy from me was the natural consequence; and I cried out loud enough to get a response from it, if such it was. All, however, was as silent as death. The thought then flashed upon me, we have perchance got into a Navajo snare, and I prepared my firearms accordingly. The sergeant, however, soon ascertained that the horse was an American one, and had a *lariat* (a long halter) upon him. This at once gave me the idea that the camp, if not just at hand, could not be far off. I therefore again gave the word, "Forward." We had, however, not gone more than fifty yards before I heard a voice calling out, within but a few yards of me, "Simpson! Simpson! come over here." Over an intermediate stream I went, and who should I find stretched out for a night's repose but Doctor Hammond! It appears that the doctor and Mr. Collins, both of whom had preceded us from the ruins in search of camp, had, up to this point, not fallen in with it; and the former believing that it would be better to wait where he was for the troops, and the latter that it was preferable to strike off south from the river in search of them, they had both acted correspondingly—the doctor spreading out his horse blanket and overcoat as a pallet for the night, and Mr. Collins taking off with him the two or three Pueblo Indians they had had in company with them. Of course, this accidental meeting was congratulatory on both sides; and particularly fortunate was it for the doctor that he was awake to hail us as we were passing; for had it been otherwise, his horse, which one of the escort was taking away with him, would have been found missing in the morning, and he, consequently, in rather a helpless plight.

Judging from the information given me by the guide that the country admitted of the commands striking the Chaco about two miles lower down, (which it will be recollected I was told before leaving camp they would do before encamping,) the doctor consenting to accompany us, we pushed on that distance, but only to be again disappointed. The consequence was, that we were obliged to come to a halt and bivouac for the night. Not anticipating anything of this kind when we left the troops, neither Mr. Kern, the doctor, nor myself had brought with us any provisions or bed

* See Museum of Foreign Literature and Science, Philadelphia, vol. VII, page 166.

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clothing. The Mexicans, however, kindly shared their *atole* (a sort of thin mush) with us; and, clubbing our horse blankets and overcoats together, our saddles serving as pillows, we prepared for ourselves a tolerably comfortable bed.

The whole distance travelled to-day was about twenty-three miles; and, considering the amount of labor we accomplished at the ruins, we look upon our day's work as being considerable.

The soil in the *Cañon de Chaco*, though now very arid, seems to possess the elements of fertility; and, probably, when the ruined pueblos along it were instinct with life, it was cultivated. The water of the Rio Chaco has been gradually increasing in volume in proportion as we descended. The flora and sylva have been, as usual, the artemisia and a stunted growth of cedar, the latter here and there sparsely disposed on the table lands.

*Eleventh camp, August* 30.—All had a good night of it, notwithstanding our untoward circumstances. The Mexicans again, from their little stock, furnished us with a sufficiency to cause us to feel that we had a breakfast. Believing that we were in advance of the troops, and that, therefore, they would meet us, I determined to wait for them where we were. In the mean time, I examined the geological structure of the rocks forming the enclosing walls of the cañon. Beginning at the base and proceeding upwards, I found, first, a bed of impure bituminous coal five feet thick; next, a stratum of argillaceous earth twelve feet thick; next, two feet of argillaceous rock of a reddish ferruginous aspect, presenting evidences of induration by heat; and last, forming the crowning rock of the whole, an amorphous yellow sandstone, interstratified with gray argillaceous shale, of about two feet in thickness. Upon the *talus* of the escarpment I picked up also some fragments of selenite. The formation just described has characterized the country generally ever since we left the *Rio Puerco*.

Between 10 and 11 o'clock a. m., Carravahal, who had gone with my reconnoitring glass up the neighboring *mésa* height to look out for the command, giving a shout, we were at once convinced that some person or persons were approaching. And, sure enough, not many minutes elapsed before we noticed Mr. Collins coming down the cañon with a party of fifteen Indians. He had come to look us up, and supply us with something to eat. Last night, after a hard ride, he had fallen in with the main camp, some ten miles south from the river. *Sandoval*, the Navajo guide with the command, it appeared, had either honestly changed his mind about striking the Rio Chaco, or his intentions had unwittingly been misinterpreted, or he had in view something sinister. But, be this as it may, we again started off to find the troops at their next camp—our course continuing to be, for the first ten miles, as yesterday, northwest by west, and immediately down the canon. Having proceeded five and a half miles, we passed a mound, which, the Indians perceiving, they rushed towards in a mass, to provide themselves with some of the red paint which crops out near its summit. It was not many minutes before they came dashing upon us again, their faces totally coated with paint, and with them a Mexican, having, not only his face, but the sleeves of his shirt, of a deep red color; and soon after I noticed, not only this fellow's entire clothing, but even his mule's head, of this barbarous complexion—the object being, doubtless, to give him the ferocious, bloody look which, in his soul, probably, he felt he could testify in no other way. About this locality were some fresh

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foot tracks visible, supposed to be those of Navajo spies who had been dogging us. A mile further, we came to a hemispherical mound, fifteen feet high, and of about fifty feet base. At the base, coal crops out. Immediately above is a blue rock, apparently argillo-calcareous, two feet thick, blackened as if by fire. Above this, and forming the chief covering, is a grayish white pulverulent mass, intermingled with fragments of red argillaceous rock, also showing marks of heat; and immediately at the apex, or summit, are fragments of the same kind of rock, highly scoriaceous. Is it not reasonable to presume that here has been a slight upheave from below, attended with fusion—indeed, a volcano on a small scale?

Leaving the cañon at a point about ten miles from our place of bivouac, we struck a general course south of west—the country for the next ten miles being a barren waste of broken hills and arid plains, and some of the hills being so steep as to require us to lead our horses down them, and even then at the risk of their limbs—the soil of the plains presenting very much the levity and color of ashes, and looking, if possible, more under a *curse* than the generality of that we have passed over. This distance traversed, we got in the midst of a most singular profusion and confusion of deep, rugged ravines, and high sandstone rocks, of almost every shape and character imaginable. Here were at once to be seen domes, pillars, turrets, pinnacles, spires, castles, vases, tables, pitched roofs, and a number of other objects of a well-defined figurative character, specimens of two of which will be seen in plate 12. The base of these formations is an argillaceous friable rock.

At length, reaching the brow of the Tumecha valley, much to our joy, we could see in a direction south of west the camp of the troops, some seven or eight miles off, the tents appearing at times like white specks, and cheering us by the peaceful blue smoke with which they were canopied. The intermediate plain, of an ash-colored, herbless, forbidding character, rapidly traversed, it was not long before we were entering camp, much to the gratification of our comrades, who, it appeared, had felt no little anxiety on our account, and greatly to our own satisfaction.

Our day's travel has been about twenty-nine miles. The water at this camp, of a highly alkaline character, is obtained from dug pits. Wood of a shrub or bush character is used for fuel. There being no grass near, fodder is obtained from the green cornfields of the Navajos in the vicinity.

Mr. E. M. Kern having been directed, on my diverging from the route of the troops, to keep up the topography of the country through which they would pass, the following is his journal for the two days we have been separated:

"*Tenth camp, August* 28.—Raised camp at 7 o'clock. General course west. About nine miles from our camp of last night, on our left, about three miles distant, appeared the ruins of an old pueblo. The *mésa* that formed the left side of the Cañon de Chaco turns off square opposite the Mésa Fachada, and runs in a southerly direction, leaving on our left a plain, slightly broken by gullies and isolated hills.

"The road to day has been very interesting on account of the curious sandstone formations, having much the appearance of a large ruined city. These places rendered the road somewhat difficult. Camped to-night at some pools of water, sufficient for the camp. Petrified wood along the river. Made 24.50 miles.

"*Eleventh camp, August* 29.—Moved at 7 o'clock. The artillery, at

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about three-fourths of a mile, turned a short distance to the left to avoid a bad ascent of the mesa. The country of the same character as of yesterday, but road better. A few uninteresting ruins of old houses in the rocks. Broken bluffs on the right. Camped at some Indian wells. Made 14.60 miles. No vegetation to speak of for the past two days."

Astronomical observations give for the latitude of this camp 36° 01′ 35″; for the longitude, 108° 39′ 30″.

*Twelfth camp, August* 30.—Several Navajo men and women were yesterday afternoon and this morning in our last camp. They said the troops had come over sooner than they had expected; that their people were yet living on their cornfields near by; and that they had collected some fifteen horses and mules, and a number of sheep, to deliver up, according to the requirements which the colonel commanding had made of them, through Brevet Major Grier, some weeks previous, at Jemez; that they would conform to the treaty which Colonel Nuby had made with them: did not want to fight, &c.

The women I noticed wore blankets, leggins, and moccasins—the blankets being confined about the waist by a girdle. They bestride their horses *a la mode des hommes*. One of them, on horseback, had a child at her breast, confined on its back to a board, the upper portion canopied by a frame of willow work, to protect its head from the weather.

The troops decamped this morning at seven—their course, which was up the valley of the Tumecha, being generally about northwest. Having proceeded five and a half miles, a most splendid view of the peaks of the Ojos Calientes (Warm springs) presented itself to our front. This view may be seen in plate 43—several Navajos, in costume, being exhibited in the foreground, gazing at the troops in the distance beyond. These splendid peaks first appeared to view yesterday, from the brow of the Tumecha valley. Two miles further, another body of Navajos appeared in front of us, about a mile distant, who, as we approached, discovered themselves to be mounted. Soon the Pueblo Indians, who were in the advance, were scampering off to commingle with them; and, dressed as they all were in their costumes, they formed quite an interesting and formidable group. Several of the Navajos, I noticed, wore helmet shaped caps, which were in some instances heightened in picturesque effect by being set off with a bunch of eagles' feathers.

One of them, I observed, had hair approaching to red, and looked, as was observed by several, very much like a white man painted. Another man, who was quite old, and of very large frame, had a grave and contemplative countenance, not unlike, as many of the officers remarked, (I hope the comparison will be pardoned,) that of General Washington. Some of them were almost naked—one of them entirely so, excepting his breech cloth, his whole person at the same time looking ghastly, on account of a kind of whitewash with which it was covered.

Colonel Washington and his staff having remained among the group sufficiently long to enable the main body of the troops to come up, the word was given by him, "Tell Sandoval to direct these people to go forward!" Soon I could see the whole body of Indians (Pueblos and Navajos) moving in a cloud of dust in advance of us. A dark, portentous cloud was hovering at the time over the Tumecha mountains beyond, the forked lightning ever and anon darting vividly athwart it; the beautiful peaks of the Ojos Calientes lay quartering to the right; and in rear

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could be seen the main command—first the packs, then the infantry, and last the artillery, (which, on account of some obstacle, had for the moment got behind,) coming forward.

Fifteen miles on our route, we came to a hill, about fifty feet high, up which the artillery was drawn with some difficulty. Six miles further brought us to the Rio Tunecha, (a primary or secondary tributary of the San Juan,) upon which we are now encamped.

The peaks of the Ojos Calientes, as we approached them to-day, appeared very much like ships under full sail—two of them looking very rakish, and the other more upright, as if moved by a gentle breeze.

We passed along the route some very extensive and luxuriant cornfields, the plant looking finer than any I have seen in this country; and what makes it more remarkable, at least in this part of the world, is, there were no evidences of a resort having been had to irrigation. The soil was arenaceous and light, the ears of the plant springing low down from the stalk, and looking sometimes as if they came directly from the soil. Colonel Washington informs me that the latter is probably owing to the deep planting, which the Navajos practice more than other Indians. They plant as deep as a foot or a foot and a half, and he has been assured that they never fail in their crops. This kind of planting, however, I suppose, can only be successful in light, porous soils.

The water in the Rio Tunecha we find amply sufficient and good, and doubtless its constancy may be relied on. The pasture along the stream, however, is but scant, and therefore the cornfields of the Navajos in the vicinity have to be drawn upon. It having been represented that the Navajos would resist the troops in cutting the corn, Captain Dodge, with a command, was sent to enforce the order.

This afternoon, several of the head-men of the Navajo tribe have been in camp, and had a talk with Colonel Washington and the Indian agent, Mr. Calhoun—the object of these gentlemen being to inform them that the troops were there in accordance with the determination made known to them some weeks since at Jemez; that, if they did not comply with the treaty made with them by Colonel Nuby, which required that they should give up all Mexican captives, all murderers of Mexicans who had secreted themselves among them, and all Mexican stock they had driven off since the establishment of the government of the United States over them, the United States would send among them a body of troops to enforce it. The result of the conference was, that the chiefs present promised to send word out to all the other chiefs, who, they said, would be in camp to morrow at noon, to hold a council with the United States, and have matters settled.

The latitude of this camp, by observation, is 36° 12′ 59″; the longitude, 108° 50′ 45″.

*Thirteenth camp, August* 31.—To-day, about noon, at our last camp, three Navajo chiefs appeared in council—Narbona, José Largo, and Archuletie—when something l the following colloquy took place, the interpreter, Mr. Conkling, of Santa Fe, delivering the several points *seriatim*, as they were expressed by Colonel Washington and Mr. Calhoun:

*Colonel Washington.* Tell them that I wish them to go to Chelly, so that a treaty may be made with the whole nation.

Tell them the treaty I wish to make with them is to establish the conditions they promised yesterday to comply with.

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Tell them the treaty I propose to make with them will be based upon the demands I have already made; and the object, in addition, will be a permanent peace.

*Mr. Calhoun.* Tell them they are lawfully in the jurisdiction of the United States, and they must respect that jurisdiction.

*Interpreter.* They say they understand it.

*Mr. Calhoun.* Tell them that, after the treaty is made, their friends will be the friends of the United States, and their enemies the enemies of the United States.

Tell them, when any difficulty occurs between them and any other nation, by appealing to the United States they may get redress.

Are they willing to be at peace with all the friends of the United States?

*Interpreter.* They say they are willing.

*Mr. Calhoun.* Tell them that, by the treaty which it is proposed to make with them, all trade between themselves and other nations will be recognised as under regulations to be prescribed by the United States.

*Colonel Washington.* And the object of this is to prevent their being imposed upon by bad men.

*Interpreter.* They understand it, and are content.

*Mr. Calhoun.* Tell them, if any wrong is done them by a citizen of the United States, or by a Mexican, he or they shall be punished by the United States as if the wrong had been done by a citizen of the United States, and on a citizen of the United States.

*Interpreter.* They say they understand it, and it is all right.

*Mr. Calhoun.* That the people of the United States shall go in and out of their country without molestation, under such regulations as shall be prescribed by the United States.

*Interpreter.* They say, very well.

*Mr. Calhoun.* Tell them that, by this treaty, the government of the United States are to be recognised as having the right to establish military posts in their country wherever they may think it necessary, in order to the protection of them and their rights.

That the government of the United States claim the right to have their boundaries fixed and marked, so as to prevent any misunderstanding on this point between them and their neighbors.

*Interpreter.* They say they are very glad.

*Mr. Calhoun.* For and in consideration of all this, and a faithful performance of the treaty, the government of the United States will, from time to time, make them presents, such as axes, hoes, and other farming utensils; blankets, &c.

*Interpreter.* They say it is all right.

The several points of the proposed treaty having been explained to the chiefs to their satisfaction, Narbona, the head chief, and José Largo, both very aged—the former about eighty, and the latter about seventy—voluntarily signed powers of attorney, by which full authority was granted to Armijo and Pedro José, two younger chiefs, to act for them at Chelly in the proposed council, in the same manner and to the same extent as they would do were they present.

The council breaking up, Sandoval harangued some two or three hundred Navajos, ranged before him on horseback—the object, as it occurred to me, being to explain to them the views and purposes of the government of the United States. Sandoval himself habited in his gorgeously colored dress, and all the Navajos as gorgeously decked in red, blue, and white, with

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rifle erect in hand, the spectacle was very imposing. But soon I perceived there was likely to be some more serious work than mere talking. It appears that it was ascertained very satisfactorily that there was then among the horses in the possession of the Navajos present one which belonged to a Mexican, a member of Colonel Washington's command. The colonel, particularly as the possessor of it acknowledged it to be stolen, demanded its immediate restoration. The Navajos demurred. He then told them that, unless they restored it immediately, they would be fired into. They replied that the man in whose possession the horse was had fled. Colonel Washington then directed Lieutenant Tores to sieze one in reprisal. The Navajos, immediately perceiving it, scampered off at the top of their speed. The guard present were then ordered to fire upon them—the result of which was, that their head chief, Narbona, was shot dead on the spot, and six others (as the Navajos subsequently told us) were mortally wounded. Major Peck also threw among them, very handsomely—much to their terror, when they were afar off, and thought they could with safety relax their flight—a couple of round shot. (See plate 31 for a sketch of Nabona, taken just before his death—the scourge of the Mexicans, doubtless, for the last half century.)

These people evidently gave signs of being tricky and unreliable, and probably never will be chastened into perfect subjection *until troops are stationed immediately among them.*

They had, previous to the affray, during the day, brought in about one hundred head of sheep, and four horses and mules; and immediately after it, some thirty or forty more head of sheep were driven in by the troops.

It is to be regretted that, in the hurry-skurry movement of the enemy, some of the pack animals, which were at the time ready to accompany the troops to the next camping ground, should have been frightened off.

Immediately after the affair alluded to, at about 5 p. m., the command resumed the line of march. We had not proceeded more than a mile before a Navajo appeared ahead of us, as if anxious to hold a parley. Mr. Conkling was sent forward to see what he wanted. He said he wished to talk to the commanding officer. Colonel Washington told him to come forward. He did so; and, with tears in his eyes, (I do not know how easily these fellows may cry,) he said he did not wish to live any longer among these people; that he wanted peace; that he was related to Sandoval, and wished to convey his mother to Sandoval's people,* among whom he desired to live. The colonel told him to go home and keep the peace; that he was at liberty to convey away his mother.

Our march this afternoon was only 4.32 miles. The soil of the valley we have been threading for the last two days, it occurs to me, is (a great deal of it) good, and could doubtless be cultivated much more extensively than it is.

*General character of the country traversed east of the Sierra de Tunecha.*

And now, as we shall commence the ascent to-morrow of the *Sierra de Tunecha*, which traversed, according to the report of one of the guides, is to introduce us into a more fertile region, the opportunity seems to be a

* Sandoval is the recognized chief of a small number of friendly Navajos, living near Ceboletta, on the head-waters of the San José. (See map.)

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favorable one for summing up, in *one general view*, the several characteristics of the country we have been passing through since we left Santa Fe.

The geological features of the country have been, from Santa Fe to the Rio Jemez, an intermixture of primary and secondary mountains, and mesa or table heights—the latter for the most part being overlaid with basaltic trap. From the valley of the Rio de Jemez to where we now are, (or to the Sierra de Tumecha,) the formation is entirely of a secondary character, the superior rocks being generally finely (in contradistinction to coarse grained) argillo arenaceous—in a few localities exposing outcrops of massive gypsum, selenitic gypsum being found pervading, but sparingly, and bituminous coal, but of an impure, slaty character, characterizing almost continuously this whole section. And, commensurate with this section, *arroyos*, *cañons*, *mesas*, with their well-defined crest and escarpments; plateau and hemispherical mounds, intermitting dirty, clay-colored rills, dignified with the name of *rios*, (rivers;) and an all-pervading dull, yellow, dirty, buff-colored soil,—have, in their respective magnitudes and relations, characterized the face of the landscape.

In regard to the fertility or productive qualities of the soil for the whole area traversed this side of Santa Fe, saving the inconsiderable exceptions which have from time to time been noted in my journal, the country is one extended *naked*, *barren* waste, sparsely covered with cedar and pine of a scrub growth, and thickly sprinkled with the wild sage, or artemisia, the color of the domestic sage, suggesting very appropriately the dead, lifeless color of the wild.

Our camp for the night is on a very small rill of good water, in the vicinity of some cornfields, whence, on account of the absence of pasture, we are obliged to draw our forage.

A party of Mexicans and Pueblo Indians, who, under the command of Major Kendrick, assisted by Captain Dodge, left camp this morning to reconnoitre the pass of the Tumecha mountains, are still out; and some fears are entertained lest, on account of their being ignorant of the affray this afternoon, they may be surprised, and possibly be taken, at a disadvantage. Sandoval and a party of Mexicans started off this evening to meet them and direct them to camp.

*Fourteenth camp, September* 1.—Major Kendrick got in with a portion of his party late last evening, the horses of the Pueblo Indians being too much broken down to permit them to return with him. We all have some apprehension lest their ignorance of our present relations with the Navajos may unwittingly lead them to give the enemy an advantage over them.

Major Kendrick reports that the Navajo guide who accompanied him was called aside on the way by another Navajo, and doubtless informed of the affair of yesterday. He thinks he must have been made acquainted with it; for on two occasions he endeavored to lead the major and his command aside, to give battle to a bear, which, he said, another Navajo had at bay, aside of the route. The major, however, was not to be diverted from his course; and probably it is very well he was not, for, the guide making his escape soon after, the chances were that his object was to lead them into an ambush.

The major knew nothing of the commencement of hostilities till he arrived in camp. And, what liked to have proved a very serious affair, he and his party, last night, whilst approaching the camp, were fired upon

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by the Mexican picket guard. Captain Dodge was so near one of these valiant fellows as to become unhorsed by his animal suddenly starting aside from the flash of the fellow's musket; and, what was still more unacceptable, a ball came whizzing by him nearer than he had ever had one before; and, to cap the climax, he afterwards learned that the shot had been made by one of his own company, who happened to be on guard! A soldier was also thrown from his horse for the same cause; and the guide, Carravahal, had his arm grazed by a ball. This vigilant Mexican guard, it seems, had mistaken the major and his party for a body of the enemy! Twice last evening they gave a false alarm!

The troops decamped at 7 a. m.—our course west of south, and the route commencing the ascent of the Tunecha mountains. One mile and a half from camp, we came to a very steep hill, probably about seventy or eighty feet high. The artillery, to overcome this, had to be unlimbered, and all hands were required at the bricoles. The slope of the hill approaching quite nearly the vertical, it would seem that no obstacle, no matter how steep, can obstruct the passage of artillery, where, with adequate human power, and sufficiently strong bricoles, there is present in the officers commanding (as there was here) the necessary energy to secure success. A mile further, we crossed an *arroyo*, coming in from the mountain, from the banks of which bituminous coal, apparently of an excellent quality, exists, in beds of from two to three feet in thickness, with argillaceous shale intervening.

About 10 o'clock, the command was cheered with the sight of Hosta and Sandoval, returning with the Pueblo Indians, who had not been able to get into camp last night. They were received with cheers, and Hosta—the handsome, magnanimous Hosta, apparently unconscious of anything distinguishing about him—was greeted with a most cordial welcome. (See him, in his war costume, in plate 4.) They reported that three of their mules had been stolen by the enemy, but no attack had been made upon them.

Scarcely had the Pueblos joined us, before a couple of the enemy showed themselves, a great distance off, to our front, and, in the *peculiar far-reaching tone* of the Swiss mountain peasant, in which the Navajos seem to be proficients, they made known to us that they wished to have a talk with Sandoval. Sandoval, with Mr. Collins, approaching them, one of them said it was to be regretted that, for so trifling a thing as a horse, so much damage had been done; that by it they had lost one of their greatest warriors, (Narbona;) that the people wanted peace; and that they would come in to-day or to-morrow to obtain it. He further remarked that, in the affair of yesterday, he had had a relative shot in the thigh, who might probably die from the wound.

The road to-day up the slope of the Sierra de Tunecha has been very rocky. A few Navajo huts have been seen. These huts are of conical shape, about eight feet high, eighteen feet in diameter at base, and constructed of poles, which, laid against each other at the apex, are spread out to the required diameter at the base, the whole being covered with bark or brush and mud. Yellow pine, about eighty feet high, and twelve feet in circumference at the trunk, as also some scrub oak—the first we have seen—grow along the route.

Flankers were thrown out to day on either side, to flush any way-layers that might be along the route. Our day's march has been about ten

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miles. Our encampment is near a pond of excellent water, margined with fine grass, and being shaded by some noble pines, and a very pretty wide spreading oak adding its variety to the landscape: the combination makes up the most refreshing picture we have seen during the expedition.

This camp is found to be in latitude 36° 7′ 42″; in longitude 105° 54′ 15″.

*Fifteenth camp, September* 2.—A sentinel fired during the night at an Indian, as he says, prowling about camp on horseback. The troops resumed the march at 7 a. m.—the general course west of south. Three miles on the route, we passed on our right a fine pond of water, bordered by a margin of good grass. A mile further brought us to a small streamlet, which, taking its rise in the pass of the mountain, flows eastwardly, doubtless to join the Rio de Tumecha. At this stream the troops were commanded to halt, in order to make the proper preparations for a successful passage through the gorge or gate of the mountain.

Major Kendrick, who, day before yesterday, with a party, had reconnoitered the pass, having represented it as being very difficult, both on account of the obstacles in the way to the passage of artillery and the commanding heights on either side of it, it was believed that here, if anywhere, the enemy would, in a body, make a stand to dispute our advance. The artillery were accordingly placed in a position to cover the passage of our troops; and forty Pueblos, under their elected chief *Ow-te-wa*, (see plate 13,) Captain Dodge voluntarily offering to lead them, were pushed forward in advance, with directions to scale and take post on the heights to the right of the defile. I had noticed with my reconnoitring-glass several of the enemy upon the heights, to the left of the defile; and it was not at all improbable that they were strongly posted on the still more commanding heights on the right. The Pueblo Indians having gallantly gained the heights, and met no enemy, a preconcerted signal, the firing of a rifle, was given, to inform the commanding colonel of the fact. The infantry were then ordered to move forward, a portion of them being at the same time directed to scour the more accessible heights commanding the pass on the left. Soon after, the whole command was put in motion—the packs in the centre, and the artillery bringing up the rear.

The pass at the most dangerous point we found extraordinarily formidable. On the north side is a wall of trap, capped with sandstone, running perpendicularly up from the bottom of the defile to a height of about six hundred feet; and, in addition to this, there are two others, but further removed. On the left side is another height, running up from the defile, with an accessible slope, to a height of probably about three hundred feet. The width of the pass at this point is probably not more than fifty feet, and barely furnishes a passage-way (a sidling one at this) for the artillery. This, the most difficult portion of the pass, is probably about three hundred yards long. Colonel Washington informs me it is the most formidable defile he has ever seen. The artillery were three hours in getting through it. In honor of the colonel commanding, I have, on my map, called it Pass Washington. (See plate 45 for a view of it, looking back.)

The narrow portion of the pass got through, it immediately expands into one of about a quarter of a mile in breadth, and which, for this country, is of extraordinary beauty. The soil here is of a very rich quality. The pines are tall and large, the grass luxuriant, and the surface of the ground, which is sweetly undulating, is covered with a profusion of the most

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beautiful and delicate flowers—the wild rose, the first I have seen during the expedition, being among them. A stream of pure, wholesome water, trickling along through this scene, westward, adds its beauty to the picture. It is in the midst of a landscape like this, about three-fourths of a mile from the narrowest portion of the gorge, we are encamped.

The rocks about the pass are at base a dark green trap, overlaid by sandstone. A late work, entitled "Domphan's Expedition," represents the Sierra de Tumecha as "the grandest of mountains, consisting of large masses of granite piled on granite, and penetrating into the region of clouds and permanent snows."* In crossing the ridge, we discovered no granite; and neither remotely, when observing the heights from the plains, nor when near by them, could we perceive the slightest indications of snow.

It is observable that troops attempting to pass the defile from the *east* side of the mountain will find a subordinate eminence, to the west of the point where it was stated the battery was established to cover the movement, upon which a battery could be placed which would be in effective range of the heights commanding the pass on either side.

Captain Dodge informs me that, before the Pueblos reached the heights they were ordered to scale, they halted on the way to receive from their chiefs some medicine from the medicine-bags which each of them carried about his person. This they rubbed upon their heart, as they said, to make it big and brave; and they also rubbed it on other parts of their bodies, and upon their rifles, for the same purpose.

The distance marched to-day is estimated at six miles. For the past two days, on account of the roughness of the route and consequent fear of damage, the viameter has been detached from the wheel of the six-pounder. It was quite apparent that the route we have come is practicable for wagons only as *as far as the east base of these mountains.*

A very pretty stone, between the jasper and chalcedony, has been found strewed over the ground at this and our last encampment. A grizzly bear, it is reported, has been seen near our present camp. The whole command has been in the most buoyant spirits ever since we commenced the ascent of the Sierra de Tumecha—the air, the water, and the scenery all doubtlessly contributing their joint influence.

*Sixteenth camp, September 3.*—Carravahal representing that there yet remained a very narrow and difficult defile to pass through before we should be entirely extricated from the natural defiles of the route, I was ordered this morning by the colonel commanding in advance, (thirty Pueblos and Lieutenant Tores accompanying me,) to reconnoitre the defile. After getting about half a mile from the camp, we entered a gorge, which, for about a mile, we found very narrow, and commanded by heights on either side. These heights, however, are easily accessible, and can be swept by troops thrown out as flankers. The very narrowest portion of the gorge extends only for about one-third of a mile. The artillery were detained here, on account of obstacles, three-quarters of an hour, and also slightly in crossing the *Rio Negro*, which they did twice subsequently. This stream, which is the one spoken of as passing through our camp of yesterday, and taking its rise in the pass, is a beautiful mountain brook, and, coursing generally south of west, probably runs into the Cañon de Chelly.

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The gorge we found to-day, as yesterday, surpassingly beautiful. Primary mountain heights extend on either hand for the first three miles, and then the secondary commence. Four miles further, the gorge expands indefinitely to the right and left, the greatest elevation of the heights on either side being probably about eight hundred feet.

The soil of the valley of the Rio Negro is exceedingly rich. Among the *sylva*, I noticed towering pines and firs, also the oak, the aspen, and the willow; and bordering the stream was a great variety of shrubbery, the hop vine, loaded with its fruit, being intertwined among them. Flowers of rich profusion, and of every hue and delicacy, were also constantly before the eye—upwards of ninety varieties having been picked up since we entered the gorge yesterday. Indeed, we are all in hopes that, yesterday and to-day, we have been having an earnest of what we may yet behold in this part of the world—a rich, well-timbered, and sufficiently-watered country, *a thing I have not seen since I left the confines of the United States.*

Our march to-day is estimated at twelve miles, and we are encamped upon the Sieneguilla Chicita, (Little Meadow,) near the Rio Negro, a locality which furnishes good water and grass; and near at hand is an abundance of the *artemisia*, which answers very well for fuel. For a view of the Sieneguilla from the west face of the mountain, see plate 46. Its soil is very rich.

Carravahal informs me that the governor of New Mexico, some years since, attempted to make his way into the Navajo country through the pass we have been threading, and was driven back.

Gregg also, in his "Commerce of the Prairies," probably refers to the same pass in the following passage:

"Towards the close of 1835, a volunteer corps, which most of the leading men in New Mexico joined, was raised for the purpose of carrying war into the territory of the Navajos. The latter, hearing of their approach, and anxious no doubt to save them the trouble of so long a journey, mustered a select band of their warriors, who went forth to intercept the invaders in a mountain pass, where they lay concealed in an ambuscade. The valiant corps, utterly unconscious of the reception that awaited them, soon came jogging along, in scattered groups, indulging in every kind of boisterous mirth; when the war-whoop, loud and shrill, followed by several shots, threw them all into a state of speechless consternation. Some tumbled off their horses with fright; others fired their muskets at random; a terrific panic had seized everybody; and some minutes elapsed before they could recover their senses sufficiently to betake themselves to their heels. Two or three persons were killed in this ridiculous engagement—the most conspicuous of whom was a Captain Hinófos, who commanded the regular troops."—(Pages 288, 289.)

Hosta, to-day, has been treating us again with some more of his traditionary lore. The French (so he says) once attempted to subdue the aboriginal Mexicans, and failed. The Spaniards then came, and succeeded. The latter began to brag of their guns, by which they had accomplished the conquest. Montezuma, hearing of it, said they had no reason to do this, for he could bring a bigger gun than they could. "Why, what can your gun do?" remarked he to the Spaniards. "It can make a hole through a tree," was the reply. "Well," says Montezuma, "mine can split a tree from top to bottom. Now, show me what yours can do?" So

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the Spaniards shot at a tree and made a hole in it. Montezuma, seeing this, then called down his thunder from the clouds and shivered it from top to bottom!

A series of astronomical observations make the latitude of this camp 36° 2′ 7″; its longitude, 109° 5′ 45″.

*Seventeenth camp, September* 4.—The weather, during the nights, ever since we left the Puerco, has been quite cold; during the day, on the contrary, it has been generally pleasantly warm—occasionally very warm.

Four Navajos had a talk with Sandoval outside the line of sentinels this morning. Subsequently, four more came to the conference. They all, however, being unimportant men, nothing came out of it.

Our route to-day, more winding than usual, has been generally west of north. The distance marched was 13.43 miles. For the first half of the distance, the *Sierra Rayada* was immediately on our left; and throughout the whole of it, the *Sierra de Sieneguilla* was immediately on our right. These mountains are of a basaltic trap character, in some instances resembling very much the palisades on the Hudson river. This trap is apparently the effect of protrusion, rather than of overflow, and is more irregular in its outlines than that I have already notice ' as characterizing the country west of the Rio de Jemez.

At about six miles from our last camp, immediately on the right of the road, I observed a well-marked dike of trap rock, its course being north o east and it leaning slightly towards the north. It exhibits itself in an outcrop of detatched blades, some of them being from thirty to forty feet above the plain, and about three feet thick. (See sketch in plate 47.) The soil from which it projects is of a reddish argillaceous character. This outcrop, it is obvious, must have been the effect of protrusion from below, and at a time when there were rocks against it to prevent an overflow; and these adjacent formations must since have been either decomposed or have sunk.

About half a mile further, we crossed a shallow stream of very good water, running southwestwardly, good grazing being apparent along it. Seven and a half miles from our last camp, we passed on our left a very rich field of wheat, the stalks averaging five and a half feet high, the heads very full, and the grains plump and large. A mile and a half further, another streamlet comes in from the northeast and crosses the route. I noticed, also, in the vicinity of this stream, some good grazing.

Ten miles from our last camp, we met a very steep rocky ascent of about fifty feet in altitude, where the men had to assist at the guns. A mile further brought us to the *Sieneguilla de Juanita*, (Little John's Meadow,) the soil of which, of considerable area, and of a rich mellow calcareo-argillaceous character, looks as if it might produce well. Ligneous petrifactions, and carbonate of lime, in lamellar pieces, of a satin aspect, in fracture, probably the result of tufaceous deposite, lie scattered over the surface. I noticed, also, a great deal of horse ordure lying about, it indicating that the *Sieneguilla* is a favorite resort for these animals. Running through the *Sieneguilla*, in a southerly direction, and probably in the Cañon de Chelly, is the *Rio de Juanito*, a stream, of a sandy bottom, fifty feet wide, and of a few inches in depth, upon which we are encamped. The water of this stream, which is probably constant, is good; and the neighborhood furnishes proper grass and fuel.

The *sylva*, to-day, has been the large yellow pine and the piñon—wil-



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lows fringing, in places, the streams. Signs of large droves of sheep have been noticed. Prairie dog towns, and rattlesnakes, their concomitants, though not so common as on the great plains intermediate between the United States and this country, are occasionally to be met with. Just before reaching camp, we crossed a well-beaten Navajo trail, running north and south.

It is very interesting to see the picket-guard, composed entirely of *Pueblos*, gathered around the commanding officer's tent every evening, to receive from him their instructions for the night. Habited as they are, with their blankets thrown around them, their *white* turbans (assumed to distinguish them from the enemy, who generally wear *red*) encircling their heads, their rifles lying in their arms, or their bows and quivers slung to their backs, their attitude that of respectful attention, they present a group of a very interesting character. These people possess a great deal of native ease and dignity; and in their calm, reflective countenances, I think I can perceive a latent energy and power, which it requires only a proper political and social condition to develop and make useful.

Some more Navajes (uninfluential men) have had a talk this afternoon with Sandoval, outside the line of sentinels. The word is, as usual, that they want peace; but the official persons, the chiefs, not presenting themselves to obtain it, the colonel commanding is determined to push on to Chelly, the heart of their country, and dictate the terms there. Besides, according to his original design, he is anxious to meet Captain Ker, who, with his command, from information obtained from a chief at the last council, he is disposed to think must have pushed on to that place.

The resulting latitude of this camp, from a series of observations, is 36° 10′ 36″; the longitude, 109° 12′ 15″.

*Eighteenth camp, September 5.*—This morning, a party, composed of Colonel Washington, Mr. Calhoun, Mr. Collins, Major Kendrick, Lieutenant Dickerson, the two brothers Kern, and myself, visited the head of the renowned Cañon of Chelly, lying southwest about five miles distant from our last camp. This cañon has been for a long time of distinguished reputation among the Mexicans, on account of its great depth and impregnability—the latter being not more due to its inaccessibility than to the fort which it is said to contain. This fort, according to Carravahal, is so high as to require fifteen ladders to scale it, seven of which, as he says, on one occasion, he ascended, but, not being permitted to go higher, he did not see the top of it.

On reaching the cañon, we found it to more than meet our expectations—so deep did it appear, so precipitous its rocks, and so beautiful and regular the stratification. Its probable depth I estimate at about eight hundred feet. At its bottom a stream of water could be seen winding its way along it, the great depth causing it to appear like a mere riband. (See sketch in plate 48.)

As far as time would permit an examination, for a depth of about three hundred feet—I could descend no further, on account of the wall becoming vertical—the formation appeared to be sandstone, horizontally stratified with drift conglomerate. At this depth I found protruding horizontally from the wall, its end only sticking out, a petrified tree of about a foot in diameter, a fragment of which I broke off as a specimen. How did this tree get there? I also picked up at this point, upon the shelf on which I was standing, a species of iron ore, probably red hematite. The colonel

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commanding returning to camp, after a cursory look at the cañon, in order to put the troops in motion for the day's march, I had not the time necessary to make the full examination which I would have liked. I saw, however, enough to assure me that this cañon is not more worthy of the attention of the lover of nature than it is of the mineralogist and geologist. The whole party returned to camp greatly pleased with this offset excursion, and promise themselves still greater delight when, on their reaching the mouth of the cañon, they will have more time to examine it.

In consequence of the excursion this morning, the troops did not move till about 9. Our course for the day was generally west of north. Two and a half miles from our last camp, we passed on our right a cylindrical mass of trap rock protruding from the summit of the mountain ridge, the outcrop being probably as much as one hundred and fifty feet high. This singular landmark was seen yesterday before reaching camp. Two and a half miles further can be seen, also, immediately on the right of the road, a dike of trap rock ranging very nearly east and west, its eastern terminus of the form of a semi-conical abutment, about five hundred feet in protrusion from the plain below. A portion of this dike is perfectly columnar in its details.

Five and a half miles on our route, we reached the brow of a valley running generally north and south, it being apparently hemmed in at the north, nearest to us, by a range of secondary mountains, and further off by *mésa* heights. The former are of rounded form, and, on account of their white ground being sprinkled with the evergreen cedar, have a motley aspect. The latter present a beautiful facade-like appearance, and are of a deep red color. The intervening valley, on account of the copse-like character of its *sylva*, in contrast with the barren wastes which we traversed on the east side of the Tunecha ridge, was very refreshing to us.

Having marched 7.39 miles, we came to the creek upon which we are encamped. This creek is a clear stream of good water, ten feet wide by half a foot deep, coursing west of south, over a clean and pebbly bottom, and presenting here and there rapids and cascades as delightful to the eye as they are rare in the country. Upon its margin we find a sufficiency of grass for our animals.

The road to-day has been generally good, there having been but two steep hills, which detained the artillery but a short while. The soil has been of an argillaceous character, and in the valleys always appeared to be fertile; the timber, which has been pine and cedar, of a large growth; a few large oaks were also seen. The *artemisia*, as usual, has been the chief, and almost the only, plant, especially upon the uplands.

Twenty-five Mexicans were sent out this afternoon to examine, with Carravajal, the river ahead for a few miles. They had not proceeded, however, more than a mile, when, seeing three or four of the enemy, their hearts failed them, and they returned to camp. Some Pueblos were then added to the party, and the whole put under the charge of Lieutenant Torres. The party returned at about dusk, and report the road good for eight miles, excepting one steep hill, which, however, Lieutenant T. thinks practicable.

*Nineteenth camp, Chelly, September* 6.—The troops decamped at 6 this morning—an hour earlier than usual, on account of an anticipated long march without water. Our route, though curving considerably towards the north, has been generally a little south of west.

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At the respective distances of six and a half, twelve, thirteen, thirteen and a half, sixteen and a half, sixteen and three-quarters, and eighteen miles, we crossed some deep rocky *arroyos*, the first detaining the artillery three-quarters of an hour, the fourth three-quarters of an hour, and the last an hour. The artillery to-day have been obliged to work harder than they have done any day since they started on the expedition. They, however, appear to be equal to any emergency, and, though detained, at times, necessarily, on account of difficulties, they are always sure to be getting along in due time. The infantry, under Captain Sykes, from the commencement of the march, have constantly preserved a compact, effective form, and have ever appeared as a *unit*, to be wielded by their leaders with precision and power.

The country to-day has been rolling—almost, indeed, broken—belts and clusters of trees, and sometimes solitary ones, diversifying its face. Piñon, yellow pine, and cedar have been the sylva—acres of the latter occasionally being dead; the cause not obvious. The artemisia has been the chief *flora*. The cactus, which hitherto has been seen but seldom, to-day was more prevalent.

When two miles on our route, looking back, a fine view presented itself, made up of mountains, beautifully variant in outline, prominent peaks here and there in the background, and, intermediate between them and myself, the troops—horsemen, footmen, and artillery—their arms glittering under the glancing rays of a morning sun, and a cloud of dust betokening their approach.

A mile and a half further, some beautiful red bastion-like rocks appeared, two miles distant, on our right, capped with a whitish armorphous formation. Fifteen miles from our last camp, on our right, we noticed two very singular mesa formations, one of them looking like a high square fort, and discovering, by the daylight which could be seen through it, the appearance of a tunnel running horizontally through and through.

Though not expecting to find water along the way, thirteen and a half miles from our last camp we met some, in deep pools, in a rocky *arroyo* which we crossed. Here may be seen some singular-shaped basins and arches, all the effect of the erosive influence of water upon sandstone formation.

Innumerable signs of stock, principally of sheep, have been seen along the route; and the road we have been travelling looks as if it might be one of the great thoroughfares of the nation.

One of the pack animals to-day falling too far in rear of the main body of the command, the soldier in charge, seeing a Navajo near, and at the same time a dust in rear, as if made by a host of the enemy approaching, thought that discretion was the better part of valor, and, leaving his pack, fled. The force in rear, however, proving to be the Mexican cavalry, and Lieutenant Dickerson happening at the time to be with them, he directed a chase after the Navajo, who by this time had got possession of the pack animal, and was appropriating the contents of its pack to himself. Lieutenant Dickerson informs me that he got five distinct shots at the fellow with his revolver, and, though he was not able to bring him to a surrender, was, nevertheless, successful in causing him to leave the animal and his pack.

It was somewhat exciting to observe, as we approached the valley of *Chelly*, the huts of the enemy, one after another, springing up into smoke and flame, and their owners scampering off in flight.

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Just after dark, after crossing an extensive *down* or sand drift, we reached our camping-ground, in the valley of Chelly; and, much to our disappointment, after a hard day's march of 26.45 miles, we are obliged to spend the night without water. The cornfields among which we are encamped furnish, however, an abundance of forage for the animals, and fine roasting ears for the men; but the great beverage of the soldier in his marches—coffee—will, in most instances, have to be dispensed with.

*Nineteenth camp, Chelly, September 7.*—The fires of our camp were all, yesterday, at dark, from motives of military expediency, extinguished—a phenomenon which doubtless was not without its moral effect upon the enemy, who are hovering around us.

This morning, a couple of Navajos—one of them a chief—were brought into camp by Sandoval, both of them embracing Colonel Washington and Mr. Calhoun, apparently, with a great deal of good will. The chief, whose name is *Mariano Martinez*—habited as he was in a sky-blue-blanket greatcoat, apparently of American manufacture, and not unlike my own; a tarpaulin hat, of rather narrow brim, and semispherical crown; buckskin leggins and moccasins; bow and quiver slung about him; a pouch and knife at his side; and possessing a sombre cast of countenance, which seemed to indicate energy and perseverance combined—appeared like a man who had naturally risen up by virtue of the energy of his character, and, from the effects of a marauding life upon a civilized community, had become impressed with the jacobin look which he at the time discovered. (See a sketch of this chief in plate 49.) The conversation which passed between these chiefs and the colonel commanding was as follows:

*Colonel Washington.* Who is this man? (referring to Martinez.)

*Interpreter.* He is the principal chief of the Navajos.

*Colonel Washington.* Tell him, when a chief wishes to talk with me, by making known his intentions by a white flag, he will be conducted safely into camp; but that everybody else must keep a mile off, or else be liable to be shot.

Are he and his people desirous of peace?

*Interpreter.* He says they are.

*Colonel Washington.* Tell them, if they are, they can easily obtain it by complying with the terms of the treaty which they have made, and that the sooner they do comply with them the better it will be for them, as less of their property will be wasted and destroyed.

*Interpreter.* His reply is, that they will bring in all they have stolen, and comply with the treaty.

*Colonel Washington.* Mr. Collins, where is the list of the property to be restored under the treaty?

*Mr. Collins.* Here it is, sir.

*Colonel Washington.* Add to it that which has been stolen from us on the march.

*Mr. Collins.* Here it is, sir, with the additions made.

*Colonel Washington.* Tell the chief the stolen property which the nation is required to restore is 1,070 head of sheep, 34 head of mules, 19 head of horses, and 78 head of cattle.

*Interpreter.* The cattle, the chief says, he knows nothing about; the Apaches must have stolen *them.*

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*Colonel Washington.* Tell him that, if this should afterwards prove to be true, the cattle will be paid for.

*Interpreter.* He says, if he cannot bring in the same cattle, he will bring in others to supply their place.

*Colonel Washington.* When can the chiefs collect here to make a treaty with me?

*Interpreter.* He says the day after to-morrow.

*Colonel Washington.* Tell him that will do; and that, when the treaty is made with them, all the property the troops have taken, they will be compensated for. And there was one more thing he would say: that, if they now entered into a treaty with him in good faith, it would result in blessings upon him and his people; but if they did not, it would result in their destruction.

*Interpreter.* The chief replies that his people will do all he has promised.

*Colonel Washington.* Tell him the talk is good.

The conference ended, the chief and his attendant, *a la mode Mexicaine*, again embraced Colonel Washington and Mr. Calhoun very impressively, and apparently with much *endearment*.

To day, by digging several pits five feet deep in the arroyo of the valley, a sufficient supply of good water has been obtained for the camp.

The latitude of this camp, by a series of astronomical observations, is found to be 36° 9′ 4″; its longitude, 109° 42′ 30″.

*Nineteenth camp, Chelly, September* 8.—Early this morning, a Mexican captive, of about 30 years of age, came into camp to see the colonel commanding. He represented that he was stolen by the Navajos seventeen years ago, and that he did not now wish to be restored to his people again. Indeed, he did not as much as ask about his friends, who, I am informed, are now living at Santa Fe—from the vicinity of which he was stolen, whilst tending sheep. He is a very active, intelligent-looking fellow, and speaks like a native born Navajo—having all their characteristics, in dress, conversation, and manners.

Agreeably to the orders of the colonel commanding, I left camp at 7½ o'clock this morning to make a *reconnaissance* of the renowned Cañon of Chelly. In addition to my assistants, the two Kerns and Mr Champlin, there were in company an escort of about 60 men—Brevet Major Kendrick being in command, assisted by Captain Dodge. Lieutenants Ward, Dickerson, Jackson, and Brown, as also Assistant Surgeon Hammond and Mr. Collins, accompanied the party. Our course for nearly two miles, as far as the mouth of the cañon, was east of south, and up the valley of Chelly. The soil of this valley, which is generally very sandy, is in spots quite fertile—on an average, a belt of probably half a mile in breadth being planted in corn. The cane, also, I noticed growing very luxuriantly in places. The whole breadth of this valley is about three miles.

Reaching the mouth of the Cañon of Chelly, we turned to the left to go up it. Its escarpment walls at the mouth we found low. Its bottom, which in places is as little as one hundred and fifty feet wide, though generally as wide as three or four hundred feet, is a heavy sand. The escarpment walls, which are a red amorphous sandstone, are rather friable, and show imperfect seams of stratification—the dip being slight, and towards the west.

Proceeding up the *cañon*, the walls gradually attain a higher altitude,

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till, at about three miles from the mouth, they begin to assume a stupendous appearance. Almost perfectly vertical, they look as if they had been chiselled by the hand of art; and occasionally cizous marks, apparently the effect of the rotary attrition of contiguous masses, could be seen on their faces.

At the point mentioned, we followed up a left-hand branch of the cañon—this branch being from one hundred and fifty to two hundred yards wide, and the enclosing walls continuing stupendous. Two or three patches of corn, intermingled with melons, pumpkins, and squashes, were met with on the way.

Half a mile up this branch, we turned to the right, up a secondary branch, the width of which was rather narrow. This branch shows rocks, probably as high as three hundred feet, almost perfectly vertical, and in some instances not discovering a seam in their faces from top to bottom. About half a mile up this branch, in the right-hand escarpment wall, is a hemispherical cave, canopied by some stupendous rocks, a small, cool, acceptable spring being sheltered by it. A few yards further, this branch terminates in an almost vertical wall, affording no pathway for the ascent or descent of troops. At the head of this branch I noticed two or three hackberry trees, and also the *stramonium*, the first plant of the kind we have seen.

Retracing our steps to the primary branch we had left, we followed it up to its head, which we found but two or three hundred yards above the fork - the side walls still continuing stupendous, and some fine caves being visible here and there within them. I also noticed here some small habitations, made up of natural overhanging rock, and artificial walls, laid in stone and mortar—the latter forming the front portion of the dwelling.

Having got as far up the lateral branches as we could go, and not yet having seen the *famous* fort, we began to believe that, in all probability, it would turn out to be a fable. But still we did not know what the main cañon might yet unfold, and so we returned to explore it above the point or fork at which we had left it. Starting from this point, our general course lay about southeast by east. Half a mile further, or three and a half miles from the mouth of the cañon, on its left escarpment, I noticed a shelving place where troops (but not pack animals) could ascend and descend. Less than a mile further, I observed, upon a shelf in the left-hand wall, some fifty feet above the bottom of the cañon—unapproachable except by ladders, the wall below being very nearly vertical - a small pueblo ruin, of a style of structure similar, to all appearances, to that found in the ruins on the Chaco. I also noticed in it a circular wall, which, in all probability, has been an estuffa. The width of the cañon at this point is probably from two to three hundred yards wide, the bottom continuing sandy and level. And, what appears to be singular, the sides of the lateral walls are not only as vertical as natural walls can well be conceived to be, but they are perfectly free from a talus of debris, the usual concomitant of rocks of this description. Does not this point to a crack or natural fissure as having given origin to the cañon, rather than to aqueous agents, which, at least at the present period, show an utter inadequacy as a producing cause?

About five miles from the mouth, we passed another collection of uninhabited houses, perched on a shelf in the left-hand wall Near this place, in the bed of the canon, I noticed the ordinary Navajo hut, (a conical lodge,) and close by it a peach orchard. A mile further, observing several Nava-

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jos, high above us, on the verge of the north wall, shouting and gesticulating as if they were very glad to see us, what was our astonishment when they commenced tripping down the almost vertical wall before them as nimbly and dexterously as minuet dancers! Indeed, the force of gravity, and their descent upon a steep inclined plane, made such a kind of performance absolutely necessary to insure their equilibrium. All seemed to allow that this was one of the most wonderful feats they had ever witnessed.

Seven miles from the mouth, we fell in with some considerable pueblo ruins. These ruins are on the left or north side of the cañon, a portion of them being situated at the foot of the escarpment wall, and the other portion upon a shelf in the wall immediately back of the other portion, some fifty feet above the bed of the cañon. The wall in front of this latter portion being vertical, access to it could only have been obtained by means of ladders. The front of these ruins measures one hundred and forty five feet, and their depth forty five. The style of structure is similar to that of the pueblos found on the Chaco—the building material being of small, thin sandstones, from two to four inches thick, imbedded in mud mortar, and chinked in the facade with smaller stones. The present height of its walls is about eighteen feet. Its rooms are exceedingly small, and the windows only a foot square. One circular estuffa was all that was visible. For a sketch of these ruins, with the stupendous rocks in rear and overhanging them, see plate 53; and for a sketch of the pottery picked up about them, see plate 54.

Half a mile above these ruins, in a re-entering angle of the cañon, on its left side, are a peach orchard and some Navajo lodges. Proceeding still further up the cañon, the walls, which yet preserve their red sandstone character, but which have increased in the magnificence of their proportions, at intervals present *facades* hundreds of feet in length, and three or four hundred in height, and which are beautifully smooth and vertical. These walls look as if they had been erected by the hand of art—the blocks of stone composing them not unfrequently discovering a length in the wall of hundreds of feet, and a thickness of as much as ten feet, and laid with as much precision, and showing as handsome and well-pointed and regular horizontal joints, as can be seen in the custom-house of the city of New York.

About eight miles from the mouth of the cañon, a small rill, which below this point had lost itself in the sandy bottom of the cañon, appears above ground; and about five hundred yards further, on the right-hand side, is a lateral cañon, in which we saw another peach orchard.

Having ascended the cañon nine and a half miles, the horses of the Pueblos in company with us not being strong enough for a further exploration, there being no prospect of our seeing the much-talked-of *presidio* or fort of the Navajos, which had all along been represented to us as being near the mouth of the cañon, and the *reconnaissance* having already been conducted further than Colonel Washington had anticipated would be found necessary, the expedition returned to camp, highly delighted with what they had seen. We found, however, the further we ascended the greater became the altitude of its enclosing walls—this altitude, at our point of returning, being (as I ascertained by an indirect measurement) five hundred and two feet. The length of the cañon is probably about twenty-five miles. Its average width, as far as we ascended it, may be estimated at two hundred yards. For a view of the cañon, as seen from the lateral branch eight miles above its mouth, see plate 55.

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Both in going up and returning through the cañon, groups of Navajos and single persons were seen by us, high above our heads, gazing upon us from its walls. A fellow upon horseback, relieved as he was sharply against the sky, and scanning us from his elevation, appeared particularly picturesque. Whenever we met them in the cañon, they appeared very friendly—the principal chief, Martinez, joining and accompanying us in our exploration, and the proprietors of the peach orchards bringing out blanket-loads of the fruit (at best but of ordinary quality) for distribution among the troops. Indeed, the chief admonished his people, as they stood gazing upon us from the heights above, to go to their homes and give us no trouble.

I noticed the cross, the usual emblem of the Roman Catholic faith, stuck up but in one instance in the cañon; and this is the only one I have seen in the Navajo country.

Should it ever be necessary to send troops up this cañon, no obstruction would be found to prevent the passage of artillery along its bottom. And should it at the same time, which is not at all unlikely, be necessary that a force should skirt the heights above to drive off assailants from that quarter, the south bank should be preferred, because less interrupted by lateral branch cañons.

The mystery of the Cañon of Chelly is now, in all probability, solved. This cañon is, indeed, a wonderful exhibition of nature, and will always command the admiration of its votaries, as it will the attention of geologists. But the hitherto-entertained notion that it contained a high insulated plateau fort near its mouth, to which the Navajos resorted in times of danger, is exploded. That they may have had heights upon the side walls of the cañon, to scale which would require a series of *fourteen ladders*, is indeed probable; for it would require more than this number to surmount the height we measured.

I did expect, in ascending the cañon, to find that the Navajos had other and better habitations than the conical pole, brush, and mud lodge which, up to this time, we had only seen. But none other than these, excepting ruined ones, the origin of which they say they know nothing about, did we notice. Indeed, a Mexican who is a member of the command, and who was a captive among them, says they have no other habitation. In the summer, he informs us, they live wherever the cornfields and stock are. In the winter, they take to the mountains, where they can get plenty of wood. As yet, we have not met a single village of them—it appearing to be their habit to live scatteringly, wherever they can find a spot to plant corn or graze stock. The necessity of living more densely, probably, has not heretofore existed, from the feeling which they doubtless have had up to this period that the inaccessibility of their country was a sufficient barrier to the intrusion of an enemy.

It seems anomalous to me that a nation living in such miserably-constructed mud lodges should, at the same time, be capable of making, probably, the best blankets in the world!

Gregg, in introducing his remarks relative to their skill in this kind of manufacture, holds the following language:

"They (the Navajos) reside in the main range of the Cordilleras, one hundred and fifty to two hundred miles west of Santa Fe, on the waters of Rio Colorado of California, not far from the region, according to historians, from whence the Aztecs emigrated to Mexico; and there are many reasons to suppose them direct descendants from the remnant,

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which remained in the north, of this celebrated nation of antiquity. Although they live in rude *jacales*, somewhat resembling the wigwams of the Pawnees, yet, from time immemorial, they have excelled all others in their original manufactures; and, as well as the Moquies, they are still distinguished for some exquisite styles of cotton textures, and display considerable ingenuity in embroidering with feathers, the skins of animals, according to their primitive practice. They now, also, manufacture a singular species of blanket, known as the Sarape Navajo, which is of so close and dense a texture that it will frequently hold water almost equal to gum-elastic cloth. It is therefore highly prized for protection against the rains. Some of the finer qualities are often sold among the Mexicans as high as fifty or sixty dollars each." *

As regards the hypothesis which Gregg advances in the above, that the Navajos are the direct descendants of the Aztecs, it is possible they may be. But if, as is likely, and as Gregg also supposes, this ancient people once inhabited the pueblos, now in ruins, on the Chaco, how is it that they have retrograded in civilization in respect to their habitations, when they have preserved it in their manufactures?

I know of but two ways to account for it. Either the Navajos are descended from a cognate stock, *prior* to that which built the Chaco pueblos, which stock lived, as the Navajos do now, in lodges—and this agrees with the tradition given by Sandoval†—or, in process of time, the cultivable and pastoral portion of the country becoming more and more reduced in area, and scattered in locality, the people of necessity became correspondingly scattered and locomotive, and thus gradually adopted the habitation most suitable for such a state of things—the lodge they now inhabit.

In regard to the manufacture of *cotton* fabrics, in which, according to Gregg, they excel, we observed no evidences at all of this species of manufacture among them, nor any signs of the domestic culture of the plant from which, rather than from a foreign source, they would be most likely to draw the raw material.‡

In regard to the manufacture of *plumage*, or feather-work, they certainly display a greater fondness for decorations of this sort than any Indians we have seen; but, though they exhibit taste in the selection and disposition of this kind of ornament about their persons, I saw no exhibition of it in the way of embroidery.

In respect to the population of the Navajo nation, it has been impossible for me to arrive at anything like an approximation of it. Indeed, if the few we have seen bear a proper proportion to the whole number contained in the country, the extent of this population has been greatly exaggerated. But I prefer to believe that, as a nation, they live much scattered, and that those through whose precincts we have passed have studiously avoided us. All things considered, then, I would estimate the population from eight thousand to ten thousand souls: this last number is Gregg's estimate.

As regards their stock, so far as I could observe, and from what the reclaimed Mexican captive before referred to has told me, I should say that it consisted mainly of sheep and horses—mules and cattle forming but an

* Commerce of the Prairies, vol I, pages 285 and 286

† *Ante*, August 28.—Discussion of the origin of the Chaco ruins.

‡ Since writing the above, on inquiry, I learn from Señor Vigil, secretary of the province, that the Navajos (he has been in their country) formerly manufactured a few cotton fabrics from the raw material, which they were in the habit of importing from Santa Fe and other places; but that this species of manufacture has now almost, if not entirely, ceased.

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inconsiderable portion of it. We have as yet, however, not fallen upon a drove of either of these animals—which the Mexican explains by saying that they have, the better to conceal them from the troops, been driven to the mountains. Innumerabls signs of sheep, however, have been seen by us. Their horses, though generally better than those to be seen among the New Mexicans, and capable of long and rapid journeys under the saddle, are not, in my judgment, near as fine as what I have seen among the Comanches; and in all these cases they are far inferior to our own, in point of bulk and power.

*Nineteenth camp, Chelly, September* 9.—To-day, the two chiefs, Mariano Martinez and Chapaton, the latter the chief of the San Juan Navajos, (see his portrait in plate 50,) have been in, on the part of the nation, to deliver up some of the captives, stock, and other property required to be delivered according to the treaty made by Colonel Nuby, and also to enter into a more comprehensive and complete treaty. A large portion of this property not being immediately available, as they said, on account of the distance whence it had to be brought, the colonel commanding, with their consent, appointed a limited period—thirty days—in which all that yet remained outstanding was to be delivered up at Jemez. The murderer of a citizen of Jemez was, as soon as he could be apprehended, to be turned over to the governor at Santa Fe.

The parties there entered into a treaty, by which the government of the United States assumed the paternal control it has been in the habit of exercising over the tribes of Indians within or bordering upon its domain; and the Navajo nation, on its part, through its head chiefs, Martinez and Chapaton, who represented that what they did was binding on the whole nation, gave their full and unequivocal assent to all its terms. Particular care was taken, both by the colonel commanding and the Indian commissioner, to make the chiefs comprehend the full import of the treaty to which they were invited to give their assent. And, to be certain that all was done that could be done to insure this, each and every officer present was appealed to to know whether he considered the treaty had been sufficiently explained; to which they all, without exception, responded in the affirmative.

All that could be accomplished by the expedition, then, may be considered as having been accomplished. A full and complete treaty has been made with the Navajos, by which they have put themselves under the jurisdiction and control of the government of the United States, in the same manner and to the same extent as the tribes bordering the United States. The portion of the captives and stolen property near enough to be made available have been given up, and the remainder has been promised to be restored within a determinate period. Added to this, what is of no inconsiderable value, the troops have been enabled to penetrate into the very heart of their country, and thus a geographical knowledge has been obtained which cannot but be of the highest value in any future military demonstration it may be necessary to make.

It is true the Navajos may fail to comply with the terms of the treaty. But, whether they comply or not, the fact still remains the same, that a treaty *covering the whole ground* of their fealty, (the former covered but a few points,) as well in the general as the particular, was necessary, in order to satify the public mind, as well as testify to the whole world that, should any future coercion become necessary, it would be but a just retribution, and, in a manner, their own act.

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In the afternoon, after the treaty was concluded, quite a number of Navojo warriors, at least a hundred, came within the vicinity of the camp to trade with the troops, seemingly happy that so peaceful a termination had been given to affairs. They were generally armed with bows and lances, and carried also shields. Very few of them had rifles. In some instances they were very handsomely dressed, an appendage of eagle feathers to their helmet-shaped cap adding not a little to the picturesqueness of their appearance. (For a sketch of a Navajo in costume, see plate 52.)

Their principal articles of traffic consisted of blankets of their peculiar and superior handiwork, dressed skins, and peaches.

The blankets, though not purchasable with money, as it is not used as a tender among them, were sold, in some instances, for the most trifling article of ornament or clothing—it being their manner, if they saw anything about your dress which they fancied, and wanted to buy, to point to it, and then to the article for which they were willing to barter it.

There was a Moqui Indian present at the council this morning as a spectator; and a more intelligent, frank-hearted looking fellow, I have seldom beheld. (See a sketch of him in plate 51.) Indeed, it occurred to me that he had all the air and manner of a well-bred, vivacious American gentleman; and the only thing Indian in his appearance was his complexion. His people, whom he represents as living three days' travel from this place, have the *reputation* of being quite intelligent and orderly—it being one of the articles of their political as well as religious creed, that they are at liberty under no circumstances to take human life; and in regard to infidelity on the part of their women, their laws are said to be very stringent. These people, I am informed, herd stock, grow corn, and live in pueblos, of which there are, according to the Moqui present at this time, but three. It is reported that originally they had a greater number of towns; but, one or more of them becoming guilty of shedding human blood, they were on that account exscinded. Does not this article of their creed, if true, point to a civilized origin? At all events, there is nothing in the features, manners, and general appearance of the Moqui I have seen to belie such an hypothesis, but, on the contrary, a great deal to make it probable.*

Martinez, the principal Navajo chief, brought in a beautiful mule this morning to present to the colonel commanding. The colonel, however, with the remark that it was neither customary nor proper on the part of public officers to receive such presents, graciously declined it.

There having been various contradictory reports among us relative to other American troops having visited Chelly besides Colonel Washington's command, I to-day inquired of Martinez whether such was the fact. His reply was, that the first American troops that had visited Chelly were those at present there.

The climate of this valley we find much milder during the night than that we have heretofore experienced since leaving Jemez.

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*It is proper, however, to state, that Señor Vigil, who has twice visited these people, says he knows nothing of this peculiar article of their faith. He knows, however, that, though they are a docile people, they once were in a defensive war with the Navajos, against whom they used the bow and arrow. I suspect, when the exact truth is known with regard to these people, it will be found that, though inclined to a state of peace, they are not so disinclined to war as not, under coercive circumstances, to stand up, even at the risk of bloodshed, to defend their lives and property.

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*Twentieth camp, September* 10.—Colonel Washington learning yesterday from Chapaton that Captain Ker was not on his way to meet him at this place, as he was led at Tumecha, through information from a chief, to believe might be the case, and a report having been received that the Apaches had within a few days made an attack upon the friendly Pueblo Indians of Zuñi, and killed a number of them, the programme of operations has accordingly been altered, and our destination is now Santa Fe, by the way of Zuñi—the object being to afford this people all the necessary aid which their reported situation demands.

The troops accordingly took up their line of march from Chelly at 7 a. m., the general course for the day being southeast. For the first two miles our route lay up the valley of Chelly, and then turned more eastwardly, it at this point commencing the ascent of a species of *méson*, or rather upland. Three miles further, the road approximates within a few yards of the Cañon of Chelly. To this point the road is exceedingly rocky and hilly; but these hills can in all probability be avoided by continuing up the valley of Chelly as far as the opposite point mentioned, and then turning to the left up the mésa. (See map.) The country at the point referred to begins to be rolling—scrub pine and a species of spruce, thickly interspersed, constituting the *sylva*. Four miles further, a protrusion of trap rock, looking for all the world like the square tower of a church, with windows, could be seen, bearing northeast, some twelve miles off. Eighteen miles from our last camp, we commenced the ascent of the *Sierra de Laguna*, the slope of which wagons would find some difficulty in overcoming, unless one more easy could be found—a thing not at all improbable—or some labor be expended. The ascent we found to be two miles long—which accomplished, we were on a plateau; a mile more bringing us to our camp-ground for the night, where we find an abundance of wood, a sufficiency of pasturage, but no water.

The soil to-day has been principally of an arid, argillaceous character—the scrub pine and cedar characterizing this portion of the route. Since commencing the ascent of the *Sierra de Laguna*, scrub oak and yellow pine of a large growth have been the *sylva*. *Cacti* have been frequently seen.. We crossed a number of heavy Navajo trails; and signs of large droves of sheep were observable. The day's march has been 20.50 miles.

*Twenty first camp, September* 11.—The troops raised camp at a quarter after 6 a. m., and followed, as yesterday, a well beaten trail—the general course for the day continuing about southeast. Having proceeded two and a half miles, one of the guards sent in advance yesterday to find water returning and informing the colonel commanding that there was some in a cañon to the left, about five miles off, a detour to the northeast was made by the troops in order to reach it. This cañon is *said* to be a branch of the Cañon de Chelly; and its banks were so steep as to make it necessary for the animals to be disburdened of their packs to enable them to reach the water at its bottom. The supply we found ample, and it doubtless is constant.

After halting for about an hour, the troops resumed the march, the remaining portion of the day's route continuing slightly more southwardly.

For the first fourteen and a half miles the country is a pine barren, resembling very much in appearance, and in the arenaceous character of its soil, the pine barrens of Florida, excepting that the former is more compact. For the remaining portion of the route, it is a rolling prairie, variegated

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with copses of piñon—the soil being of a reddish color, argillaceous in character, and doubtless fertile, if sufficiently watered. Five miles before reaching our present camp, a *mésa* escarpment comes in from the left, and skirts the road on that side for the balance of the way. The walls of this mésa are probably from three to four hundred feet in height. Just before reaching camp, a most singular-looking column appears on the left of the road—resembling, when viewed near by, a vase; when remotely, a statue. It is of sandstone formation, and has an altitude of from thirty to forty feet. (See sketch in plate 56.)

Our camp for the night is more pleasant than usual—a small pond or lake, bordered by a margin of green luxuriant grass, being directly in front of us, to gladden our sight; and the beautiful stratified walls of the Cañoncito Bonito, down which we are to turn to morrow, adding its beauty to the scene. Some ducks, I notice, are constantly hovering around this spot.

The road to-day has been good. The distance marched is 24.83 miles. Several showers of rain have passed around us.

Astronomical observations put this camp in longitude 109° 15′ 30″.

*Twenty-second camp, September* 12.—Failing, on account of a hazy atmosphere, to get my usual astronomical observations last evening, I succeeded, after the exercise of a great deal of patience, to get a few barely tolerable ones after midnight.

The command left this excellent camp-ground at seven a. m.—its general course for the day being a trifle west of south. Immediately on resuming the march, we turned short to the left, or eastwardly, to thread the *Cañoncito Bonito*, (Beautiful Little Cañon.) This cañon, which is about a quarter of a mile in length, is, on account of its high enclosing walls, and the well-defined character of their stratification, beautiful. The walls, which are nearly vertical, are probably from three to four hundred feet high. Their formation is a red friable sandstone—the stratification, which discloses a dip of about ten degrees towards the east, as also the line of clearage, being very distinctly marked. The width of the cañon is about one hundred feet, a small stream finding its way through its bottom. This cañon differs from that of Chelly, in the face of its walls not being so smooth, in not presenting as large unstratified masses, and in having a *talus* of *debris* at the foot of the walls.

This cañon passed through, the route turned almost due south—following, for the remaining portion of the day, a succession of wide, shallow, fertile valleys, which are generally bordered on their eastern side by escarpment walls of a white and red sandstone formation.

Just after we debouched from the *Cañoncito Bonito*, a most singular prospect of detached turret-like rocks appeared skirting the valley just referred to on its eastern side. And down the valley, in a more southerly direction, a trap dike of a striking character presented itself, a short distance to our front. For a sketch of this view, see plate 37. This dyke, on examination, I found to present a most interesting exhibition of igneous action and vertical protrusion. Its height above the plain is some three or four hundred feet; its breadth, one hundred and fifty; and its length, about two hundred yards. Its strike is nearly due east. Here can be seen, in the same formation, rocks that have been once perfectly fused, and then cooled under pressure, the effect being to make them more dense; rocks that have been fused, and then cooled under the pressure only of the atmosphere, the effect being to make them scoriaceous; and

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rocks that look as if they had not been fused, but merely baked. I noticed also here, in a sort of cave, a large mass of the same kind of black, agglutinated, pitchy substance I have already described as having been seen, August 21, in the rocks of the *Cañon de la Copa*. It was here, as there, intermingled with bits of straw, &c. These are the only trap rocks we have seen near our route since we left our eighteenth camp.

About nine miles from our last camp, on the route, is *Sieneguilla de Maria*, where we found some very cold water, and grass of an excellent quality. The supply of water here is probably perennial. Three miles further, some very singular whitish abutment rocks, probably of sandstone, are to be seen on the left, jutting out from among rocks of a sandstone character and red color. The difference in the complexion and shape of the former of these rocks indicates a superior hardness, in the formation of which there are prominences. Four miles further, just to the right of the road, appears a beautiful exhibition of horizontal stratification, terminating in one of a bent, semicircular character—the strata (red stone) in the last case being concentric, like the coatings of an onion, and disclosing themselves both by a side and end view. Eighteen miles from our last camp, we crossed a rough, bad place, where some little labor would be required to make it practicable for wagons. Two miles further, immediately on the left of the road, are two enormous hemispherical masses of solid sandstone rock, the radius of one of them being about one hundred feet.

After a march of 23.02 miles, reaching a babbling streamlet of excellent water, which heads in a spring not far distant, and the vicinity affording fine pasturage and plenty of fuel, we encamped.

The soil to-day along the route has been of an argillaceous character, and looks as if it might produce well. As usual, pine and cedar, of rather a scrub growth, have constituted the timber. A deer was killed by a soldier this morning, after running the gauntlet of numerous shots from the command—myself, among the number, throwing away a pistol shot. This is the first deer which has been killed by any of the party. The scarcity of this kind of game may therefore readily be inferred. Indeed, a more wretched country for game of every kind I have never seen than that we have been traversing since we left Santa Fe. A rattlesnake was also killed to-day, and a wildcat is reported to have been seen. I noticed to-day, for the first time on the march, a flock of blackbirds. I have also seen along the route a species of swallow different from anything of the kind I have ever before met with. It is peculiar in being, a large portion of it, both on its back and its belly, white. It probably is a bank swallow.

It is reported that there is a wagon-route from *Cañoncito Bonito* to the Pueblo of Jemez; but, as I have no certain knowledge of its existence, and none at all of its location, I cannot even trace it generally on my map.

The longitude of this camp, by observation, is found to be 109° 18′ 30″.

*Twenty-third camp, September* 13.—In consequence of a settled, steady rain, nearly all last night—a thing uncommon in this country—the troops did not raise camp to-day till about noon. Our route to day has been a little east of south, through a narrow valley, skirted on the left by a red sandstone escarpment, and on the right by a height, sloping gently towards the valley.

Two miles on the way, to the right of the road, a canon comes in from

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the southwest, exhibiting some red sandstone rocks, beautifully stratified in curves, very similar to those of the cycloid reversed.

Just before reaching camp, we noticed to the left of the road a singular combination of swelling buttresses, vertical piers, and caves, and surmounting the whole a natural sandstone formation, having very much the appearance of a tankard. The cover, as well as the handle, was perfect in outline—the latter appearing not a little like the imbodiment of William Penn. (See sketch in plate 58.)

A few hundred yards from this, in the direction of our progress, a beautiful view opened upon us, made up of finely-stratified and variegated rocks, and a refreshing green valley, interspersed with copses of cedar.

The soil to-day has been argillaceous, and looks productive. The *sylva* has been large yellow pine, cedar of a medium size, and a few scrub oaks. The *artemisia* has been very common. Limestone boulders have been seen to-day for the first time since we left the valley of the *Rio de Jemez*. Fragments of pottery are found about our present encampment, as they have been about others; and, what seems strange, and has occurred at other points, is, that you not unfrequently find it in localities where you would not suppose anybody would ever think of having a habitation.

Our encampment to-night appears peculiarly beautiful. The heavens are deeply blue; the stars shine resplendently bright; the bivouac fires mark well the form and extent of the camp; and peacefully ascending can be seen the blue smoke—the whole forming, in combination with the general cheerfulness which pervades all nature, both animate and inanimate, a most pleasing picture. Indeed, this cheerfulness has been a general characteristic of our encampments ever since we began the march.

The water near our camp, which is in small pools, can only be relied on after showers. The grazing is good, and wood abundant.

Some cutting of cedars along the route to-day would probably be required to make it practicable for wagons.

*Twenty-fourth camp, September* 14 —The march was resumed at 7 o'clock a. m., the course for the day being about southeast. Two miles on the route, we crossed an *arroyo*, coming in from the north, and coursing through a valley half a mile wide, this valley being skirted on either side by *mèsa* heights of red sandstone. The arroyo, I noticed, had a few cotton trees bordering it. Five miles more brought us to a steep hill, about eighty feet high—ascending which, we got out of the valley we had been traversing since we left camp. Wagons, to overcome this hill, would require a slope of easier ascent than the one we followed; and this could be attained by making a road, half excavation and half embankment, along the side of the hill, or, what is very probable, by finding a natural grade at some other locality. Three miles further, another very steep hill, of about one hundred feet in altitude, was surmounted. Here, as at the other hill, a better locality could doubtless be found for a wagon-road, or this one be made practicable, as suggested in relation to the other. The ascent of this hill accomplished, we again descended and crossed another valley, and then a succession of shallow ones, until we reached a canebrake pond, where, finding a bare sufficiency of water and some good grass, we encamped. The taste of the water, as well as its discoloring effect upon the soil through which it oozes, shows it to be decidedly of a chalybeate character.

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Fragments of painted pottery were seen to-day for miles strewed along the road.

The soil, for the first two-thirds of the route, has been argillaceous and fertile; the last third was arenaceous and arid. The *sylva* has been pinon, yellow pine, and cedar. Artemisia, as usual, has been very common. Nodules of compact limestone are found on the road eight miles from our last camp, in an argillaceous soil. More labor would be required on the route to day to make it practicable for wagons than upon any portion since we left Chelly; but still it can be done without a very considerable expenditure of labor.

Our march to-day, though but 12.08 miles, has been, on account of the heat, more exhausting to the men than any day's march we have had.

I find this camp, by astronomical observation, to be in latitude 35° 11′ 56″, and longitude 109° 6′ 45″.

*Twenty fifth camp, September* 15.—The troops decamped at 7 o'clock a. m.—the general course for the day being, as yesterday, about south-east. They immediately commenced ascending a hill, which would require a little labor to make it practicable for wagons. Having proceeded four and a half miles, we reached the brow of a long gradual slope, whence an extended prospect of distant mountains, mountain peaks, *mesas*, and valleys burst upon us, some of these peaks being probably as much as one hundred miles off. Three and a half miles further, we crossed an *arroyo*, which would require some little labor to make it traversable by wagons. Half a mile further, an old rubble stone wall, without mortar, of an inferior character, was passed on our left. Two miles further, a couple of *mésa* mounds, with a very singular-looking pinnacle standing isolated between them, were also to be seen on the left.

Thirteen miles from our last camp, we entered the valley of the *Rio del Pescado*, (or, as some call the stream, the Rio de Zuñi,) which we find extensively cultivated in corn. There are indications also of there having been an abundant harvest of wheat. The Pueblo of Zuñi, when first seen, about three miles off, appeared like a low ridge of brownish rocks—not a tree being visible (a general characteristic of Mexican and pueblo towns) to relieve the nakedness of its appearance. We had not more than begun to get sight of the pueblo, when we noticed a body of Indians approaching us from it. This party purported to be a deputation, headed by the governor (*cacique*) and *alcalde*, who had come out for the purpose of escorting the governor of New Mexico (Colonel Washington) into town. Their reception of the governor and his suite was very cordial. The *alcalde*, I noticed, was habited in the undress frock of the officers of the army, garnished with the white metallic button.

After proceeding in company about a mile, we were unexpectedly saluted, at a preconcerted signal from a chief, with an exhibition of a sham fight, in which men, young and old, and boys entered with great spirit. Guns were fired, dust was thrown in the air, men on foot and on horseback could be seen running hurry-skurry hither and thither, the war-whoop was yelled, and altogether quite an exciting scene was exhibited. Just as we reached the town, quite an interesting scene occurred. All the male inhabitants of the place, including gray-headed old men, the middle aged, and the youthful portion of the population, came out to see the governor and shake hands with him. It was particularly interesting to see the juvenile portion of the community engaged in this refined act



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of courtesy. The governor and suite were then conducted to the *casa* (house) of the governor of the pueblo, where bread, in every variety of form, (loaf, *tortilla*, and *guayave*,) watermelons, muskmelons, and peaches, were laid in profusion before us.

Governor Washington took this occasion to make known to the chief men of the pueblo the cause of his coming among them, (the report, now found to be false, of the Apaches having killed some of their people,) and expressed to them the great satisfaction he felt in seeing their people in so flourishing a condition. He also represented to them the care which the government of the United States had for their welfare. The talk over, the governor and suite, after bidding their hospitable entertainers *adios*, continued their journey a couple of miles further to the camp for the night.

Zuñi is a pueblo or Indian town situated on the Rio de Zuñi. This river, at the town, has a bed of about one hundred and fifty yards wide; the stream, however, at the time we saw it, only showed a breadth of about six feet, and a depth of a few inches. It is represented as running into the Colorado of the West. The town, like Santo Domingo, is built terrace-shaped—each story, of which there are generally three, being smaller, laterally, so that one story answers in part for the platform of the one above it. It, however, is far more compact than Santo Domingo—its streets being narrow, and in places presenting the appearance of tunnels, or covered ways, on account of the houses extending at these places over them. The houses are generally built of stone, plastered with mud. It has a Roman Catholic church, in dimensions about one hundred feet by twenty-seven, built of *adobes*. A miserable painting of *Nuestra Señora de Guadalupe* and a couple of statues garnish the walls back of the chancel. The walls elsewhere are perfectly bare. This is by far the best-built and neatest-looking pueblo I have yet seen, though, as usual, the ragged picketed sheep and goat pens detract not a little from its appearance. The population of the place, based upon the number the governor has given me of persons capable of bearing arms, I estimate at 2,000. But, judging from the size of the town and the number of its inhabitants I saw, I should not place it above 1,200. Gregg, I notice, puts it at between 1,000 and 1,500.* And the author of Doniphan's Expedition (page 195) states that it is upwards of 6.000.

These people seem further advanced in the arts of civilization than any Indians I have seen. They have large herds of sheep and horses, and extensively cultivate the soil. Being far off from any mercantile population, they will sell nothing for money, but dispose of their commodities entirely in barter. Some of our command thought, from their apparent closeness in business transactions, they were the most contracted people they had met. But to my mind, in view of the treatment which they represent themselves to have received from a party of California emigrants which had but a week or two previously passed through their town, their conduct discovered only a proper degree of caution—a caution founded on the principles of self-conservation, and which it was wise only to allow to be removed in proportion as they discovered us to be different from that party, or, in other words, more worthy of their confidence.

In Doniphan's Expedition, (pages 194, 195, 196,) I notice that this

* Commerce of the Prairies, note, page 269.

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pueblo is represented as having been *discovered* by that expedition; and the author, after calling it "one of the most extraordinary cities in the world," adds, "that perhaps it is the only one now known resembling those of the ancient Aztecs."

As regards the fact of its remaining undiscovered until the expedition of Colonel Doniphan brought it to light, I have only to remark, that the archives of the State Department of New Mexico show, from 1692, the year when these people were reconquered by the governor and captain-general of the State, Curro Diego de Bargas Zapata, until the present time, they have been a recognised and loyal portion of said territory.*

And as respects its claim to be regarded as "one of the most extraordinary cities in the world," and as undoubtedly resembling, and as probably being the only one now known to resemble, the cities of the ancient Aztecs, the only marked difference I can perceive between it and the pueblos I have visited in New Mexico is, that the town is rather more compactly built, and its streets at some points have the houses built over them. In the habits and dress of the people, so far as they exhibited themselves to us, excepting that they appeared to be somewhat more advanced in refinement, I could observe no difference between them and the other pueblos. So that one pueblo seems to have as good a claim to the Aztec descent, as far as appears to be known, as another. And who can say positively, or even with any *satisfactory* basis of hypothecation, that any of them are descended from that remarkable people.

It is true that these people, as did the Aztecs, possess the art of taming birds; and some might reason from this that they are probably, on that account, from the same stock. But the people of the *Pueblo of Tesuque* also possess the same art. And Abert says it is an art common to the "Pueblos" generally.† The Tesuques then, as also all the other Pueblos, on the ground mentioned, (taming of birds,) have equal claims to the same descent. But the languages of the Tesuques and the Zuñis, as will be seen by referring to appendix B, are radically different. They cannot then have descended from a common stock. In other words, they cannot both be of Aztec origin, though both resemble the Aztecs in the practice

* For the following extract from the official journal of Don Diego de Bargas Zapata, now filed among the archives of the State Department at Santa Fe, I am indebted to Mr. Samuel Ellison, the official interpreter for that department. As it fixes the date of the reconquering of Zuñi by New Mexico, and discovers incidentally the previous Spanish Roman Catholic rule which obtained over the pueblo, it will not be without interest. The literal translation furnished me by Mr. Ellison I have freely turned into the following:

"Tuesday, 11th November, 1692: I, the said governor and captain-general, on this day entered the Pueblo of Zuñi, and received the submission of its people. On the same day, the Reverend Fathers Corbera and Banoso baptized two hundred and ninety-four children, male and female. This concluded, I was conducted to a room, and shown an altar, on which were burning two large tallow candles. Removing a piece of ornament, I found the following articles of religious worship: two brass images of Christ, four inches in length, set in wooden crosses; also another image of Christ, eighteen inches long; a portrait of John the Baptist, beautifully executed; one consecrated vase, gilded with gold; a small box with two plates of glass, in which the host is exposed to public view; four chalices, all of silver, and of different patterns; one ancient mass-book, very well preserved; one confession-book, in the Spanish and Mexican language, &c., &c.

D. Diego de Bargas Zapata, Roque Macbred,
Lugan Ponce de Lion, Juan de Dios,
Martin de Alday, Cucero de Godoy.
Juan Paie Hurtada,

"Before me: ALONZO RAIL DE AGUILAR,
*Secretary of State and of War.*"

† Report of Lieut. J. W. Abert of his examination of New Mexico, 1846–'47, October 20.

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mentioned. And so with all the other Pueblos. The different languages they speak are all resolvable (see appendix B) into six distinct tongues. If, then, either of them is to be regarded as of the Aztec descent, on the ground stated, all the others, on the ground of a radical difference of language, must be thrown out of the pale of that descent. And yet they all alike practice the same Aztec art, from report. The idea has also been entertained that the people of Zuñi "live in houses scooped from the solid rock." The description of their habitations which I have already given will show this to be a fallacy.

The governor of Zuñi paid us a visit this evening; and a very interesting man we found him to be—about six feet high, athletic in structure, uncommonly graceful and energetic in action, fluent in language, and intelligent—in fact, he actually charmed me with his elocution. From him I learned that his people, a long time ago, lived on a high *mésa* directly in front of our camp, the ruins of which, he says, are still visible, (see a sketch of Zuñi, with the *mésa* referred to in the background, in plate 59;) that, according to tradition, the cause of their quitting it for their present location was as follows: The waters of the valley on one occasion came up higher and higher, until at last they threatened to sweep them all away in the flood. Seeing this, they resorted to this expedient to save themselves: they let down into the waters, from the *mésa*, a man and a woman who had never known each other, and the result was their immediate subsidence. But why they should go down from a *mésa* height into a valley to protect themselves from another possible rise of water, is not apparent. I, however, give the narration just as it was interpreted to me by the official interpreter. The waters, the chief said, came from the Rio Grande and other rivers, and spouted up all around. If this rise of water is not altogether a fable, I know no other way to account for it than by supposing it to have been the result of an earthquake. He further represents that they came originally from the setting sun. To the question, whence the origin of the Albinos among them, he replied that they were all of pure Zuñi blood, (and I have since learned from him, at Santa Fe, that there are *but seven* of them among his people.) In regard to the ruins on the Chaco, he says he has seen them, but knows nothing of their origin.

Two Navajos came into camp this afternoon and delivered up a captive Mexican boy. They represent they are from *Chusca*, and that their people are collecting the stolen property for the purpose of surrendering it, agreeably to treaty.

The services of the Pueblo Indians being no longer required, they were this evening, after a complimentary notice of their conduct by the colonel commanding, discharged.

The soil to-day along the route, for the first eight miles, was arenaceous; for the balance of the way, it was argillo-arenaceous. For the first ten miles, the *sylva* was cedar and piñon; for the balance of the way, there was no wood to speak of. The distance marched was 17.45 miles. The road was heavy, but, with some little labor upon the *arroyos*, can be made practicable for wagons.

Just before reaching Zuñi, we passed the dead body of an Indian lying perfectly exposed upon the ground. We afterwards learned from the governor of the pueblo that the body was that of a Navajo prisoner, whom

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they had killed five days since, by direction of a California emigrant. Competent authority, surely!

*Twenty-sixth camp, September* 16.—I left this morning in advance of the troops, to visit the ruins of Old Zuñi spoken of by the governor of the pueblo last evening. To reach the *mésa* on which they are represented to be situated, I passed a large number of cornfields. On reaching the foot of the *mésa*, I found the ascent so difficult as not to be able, with the time I had at my disposal, to reach its summit. I therefore struck off diagonally to meet the command, which I noticed had, in the mean time, at the usual hour—7 a. m.—resumed its march. I paused, however, sufficiently long near the *mésa* to contemplate the figure of a woman seated high up upon a pedestal, from which, with face turned towards the probable locality of the ruins, she presented the appearance of one overcome with grief at the sad picture which lay before her. The formation was probably of sandstone; and it is not at all unlikely that the narrative made by the governor last evening had a great deal to do with the conceit.

The route to-day, which has been slightly north of east, up the valley of the *Rio de Zuñi*, after getting a mile and a half from camp, passed between a couple of low mésas, capped with basaltic trap—that on the left being surmounted with the remains of some old but comparatively recent buildings and *corral* enclosures. These structures have been built of basaltic boulders, coarsely held together with mud mortar. The circuit of the pueblo, in plan, is about five hundred by one hundred feet. I noticed here, for the first time on the march, a beautiful exhibition of lava, which had been fixed in its wavy, undulating state by sudden refrigeration. This locality is the commencement, eastward, of the evidences of a basaltic, if not of a comparatively recent volcanic overflow, and on that account was regarded by me with considerable interest. The thickness of the overflow was as much as thirty feet above the soil, and seemed also to extend below it.

A mile and a half further, we crossed the Rio de Zuñi—its bed at this point being about thirty feet wide, and very miry. We then threaded a cañon of about three hundred yards in breadth, bounded by mésa walls of sandstone.

Twelve miles from our last camp, we passed, on our left, the ruins of another old pueblo, the plan of which was about three hundred by four hundred feet. The houses, I noticed, were continuous in structure, originally two stories in height; had been built of flat stones, cemented by mud mortar; and were arranged on the sides of a rectangle, thus making a large interior court. In the centre of the court, I noticed what appeared to have been a square estuffa, eighteen by twelve feet in plan, and ten feet in height—its flat roof, or *azotea*, still remaining quite perfect. The floor joists of the houses could still be seen protruding from the walls, in a very good state of preservation; and fireplaces and chimneys were yet apparent. This pueblo, like those on the Chaco, ranges about north and south, but in the details of its masonry it is far inferior; and in the style of its architecture it resembles not a little that of the Mexicans of the present day. Indeed, the evidences are that it is of a comparatively modern origin. The court-yard, I noticed, had been recently cut into corrals for stock. Fragments of pottery, as usual, lay scattered around. In Doniphan's Expedition, pages 197, 198, I read as follows: "On the head-waters

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of the *Piscao*, and high up in the mountains, Colonel Doniphan relates that he came to the ruins of an ancient city. Near the ruins are immense beds of vitreous deposite and blackened scoriæ, presenting the appearance of an immense molten lake in the valleys, and other volcanic remains, with chasms and apertures opening down through this stratum of lava to an unknown depth. This vitreous surface, with its sharp asperities, was exceedingly severe on the feet of the mules and horses, wearing them to the quick in a short time. The figure of the city was that of an exact square, set north and south, so that its four sides corresponded with the four cardinal points. In the centre was a large square, or plaza, which, from its appearance, might have been used for military parade-grounds, and for corralling stock in the night time." Query? As the ruins I have just described are the only ones we saw on the head-waters of the *Pescado* (which we followed up to its source) approaching the form of a square, are they not the same as those referred to in the above extract? But we saw nothing of the "extensive molten lake in the valleys, with chasms and apertures opening down through lava to an unknown depth," spoken of as being near the ruins; neither did our animals have their hoofs "worn to the quick in a short time" by travelling over any vitreous surfaces.*

But to proceed with my journal: There are about the ruins just adverted to some fine springs; and the waters of the *Rio del Pescado* course directly by it, clear and bubbling. The soil in the vicinity exhibits signs of recent cultivation, and appearances indicate that the valley in this quarter was once yet more extensively cultivated. Two miles further brought us to a couple of noble springs, bubbling up, pure and cold, from the foot of some basaltic rocks. These springs seem to be the main sources of the Rio del Pescado, (Rio de Zuñi,) and are called *Los Ojos del Pescado*. Near these springs we are encamped.

Within a few yards of us are several heaps of pueblo ruins. Two of them, on examination, I found to be of elliptical shape, and approximating a thousand feet in circuit. The buildings seem to have been chiefly built on the periphery of the ellipsis, leaving a large interior court; but their style and the details of their construction, except that they were built of stone and mud mortar, are not distinguishable in the general mass. The areas of each are now so overgrown with bushes, and so much commingled with mother earth, as, except upon critical examination, to be scarcely distinguishable from natural mounds. The usual quantum of pottery lies scattered around.

The governor of Zuñi, who is again on a visit to us, informs us that the ruins I have just described, as also those seen a couple of miles back, are the remains of pueblos which his people formerly inhabited. He has brought to Colonel Washington a finished specimen of the wicker-ware which, both among the Navajos and the Zuñis, I have noticed, in the shape of large bowls and vases. This species of vegetable ware is of so closely-compacted a texture as to hold water, and is superior to anything of the kind I have ever seen in the States. The Zuñi give the *Coystero* Indians the credit of making them.

* Some fifty miles east of this locality, on our route to Laguna, we met *acres* of lava, and extensive fissures; but this was on the head-waters of the Rio San José, a tributary of the Rio Puerco. I never heard, however, that our animals suffered from sore feet.

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The day's march has been 13.71 miles. The route, which has been of a gradual ascent, excepting for an inconsiderable portion of it, among some basaltic rocks, and at the crossing of the Rio de Zuñi—neither of these places presenting any formidable impediments—is excellent for wagons. The soil of the valley, which is of an argillo-arenaceous character, is exceedingly fertile. Scrub cedars have dotted the hills, and the artemisia the valleys.

We have met to-day, as we did yesterday, a number of Zuñi Indians carrying bags of wheat upon horses and *burros* (asses) to their pueblo. These people seem to have discovered the principle of industrial accumulation, and therefore of social progress, more than any Indians I have seen.

My astronomical observations place this camp in latitude 35° 5′ 12″, and longitude 108° 41′ 45″.

*Bivouac, Inscription rock, September* 17.—The incidents of to-day have been peculiarly interesting, as the narration of them in their natural order will show:

The troops resumed their march at 7 a. m., the course for the day being generally nearly due east, and, for the first three or four miles, up the valley of the Rio de Zuñi. This distance travelled, an extended and beautiful view of handsomely-rounded blue hills, or mountain peaks, presents itself to the front, low distant hills being seen on the right, and exhibiting itself a champaign country intermediate.

A couple of miles further, meeting in the road Mr. Lewis, who was waiting for me to offer his services as guide to a rock upon the face of which were, according to his repeated assertions, half an acre of inscriptions, many of them very beautiful, and upon its summit some ruins of a very extraordinary character, I at once fell in with the project, and obtained from the colonel commanding the necessary permission. Taking with me one of my assistants, Mr. R. H. Kern, ever zealous in an enterprise of this kind; the faithful Bird, an *employé* who had been with me ever since I left Fort Smith—Mr. Lewis being the guide—and a single pack animal, loaded with a few articles of bedding, a few cooking utensils, and some provisions,—we diverged from the command, (see map,) with the expectation of not again meeting it until we should reach the Pueblo of Laguna, from seventy to eighty miles distant. There were many in the command who were inclined to the belief that Lewis's representations were all gammon. In regard to the *extent* of the inscriptions, I could not but believe so too; but as respects the fact of there being some tolerable basis for so grandiloquent a description, I could not, reasoning upon general principles of human nature, reject it. Mr. Lewis had been a trader among the Navajos, and, according to his statement, had seen these inscriptions in his journeyings to and from their country. And now he was ready to conduct me to the spot. How could I doubt his sincerity? I could not; and my faith was rewarded by the result.

Bearing off slightly to the right from the route of the troops, we traversed for eight miles a country varied, in places, by low *mésas*, blackened along their crests by outcrops of basalt, and on our left by fantastic white and red sandstone rocks, some of them looking like steamboats, and others presenting very much the appearance of facades of heavy Egyptian architecture. This distance traversed, we came to a quadrangular mass of sandstone rock, of a pearly whitish aspect, from two hun-

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dred to two hundred and fifty feet in height, and strikingly peculiar on account of its massive character and the Egyptian style of its natural buttresses and domes. Skirting this stupendous mass of rock, on its left or north side, for about a mile, the guide, just as we had reached its eastern *terminus*, was noticed to leave us, and ascend a low mound or ramp at its base, the better, as it appeared, to scan the face of the rock, which he had scarcely reached before he cried out to us to come up. We immediately went up, and, sure enough, here were inscriptions, and some of them very beautiful; and, although, with those which we afterwards examined on the south face of the rock, there could not be said to be half an acre of them, yet the hyperbole was not near as extravagant as I was prepared to find it. The fact then being certain that here were indeed inscriptions of interest, if not of value, one of them dating as far back as 1606, all of them very ancient, and several of them very deeply as well as beautifully engraven, I gave directions for a halt—Bird at once proceeding to get up a meal, and Mr. Kern and myself to the work of making *fac similes* of the inscriptions.

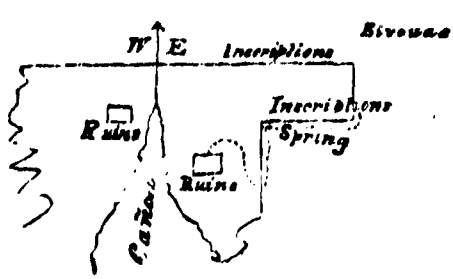
These inscriptions are, a part of them, on the north face of the rock, (see plate 60,) and a part on the south face, (see plate 61.) *Fac similes* of those on the north face, drawn to a given scale, will be found in plates 65, 66, and 67, the order of enumeration being that of their relative position from east to west, and the strength or weakness of the letters in the drawing, as well as the complexion of the rock, being an imitation of them as we found them on the rock. *Fac similes* of the inscriptions on the south face will be found in plates 68, 69, 70, 71, 72, 73, and 74.

It will be noticed that the greater portion of these inscriptions are in Spanish, with some little sprinkling of what appeared to be an attempt at Latin, and the remainder in hyeroglyphics, doubtless of Indian origin.

The face of the rock, wherever these inscriptions are found, is of a fair plain surface, and vertical in position. The inscriptions, in most instances, have been engraved by persons standing at the base of the rock, and are, therefore, generally not higher than a man's head.

The labor of copying the inscriptions having employed us from about noon till near sunset, and there yet being more than enough to keep us at work for the balance of the day, we suspended copying the remainder till the morrow, in order that before dark we might visit the "wonderful ruins" Lewis had assured us we would find on the summit of the rock. So, taking him as our guide, we went around to the south face of the wall, along which we continued until we came to an angle, thus:

*Plan of rock.*

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where, canopied by some magnificent rocks, and shaded by a few pine trees, the whole forming an exquisite picture, see sketch in plate 62,) we found a cool and capacious spring—an accessory not more grateful to the lover of the beautiful than refreshing to the way-worn traveller. Continuing along the east face of the rear projection or spur of the rock a few yards further, we came to an accessible escarpment, up which we commenced our ascent, the guide taking off his shoes to enable him to accomplish it safely. After slipping several times, with some little apprehension of an absolute slide off, and a pause to take breath, we at last reached the summit, to be regaled with a most extensive and pleasing prospect. On the north and east lay stretching from northwest to southeast the *Sierra de Zuñi*, richly covered with pine and cedar; to the south could be seen gracefully-swelling mounds and distant peaks, beautifully blue on account of remoteness; to the west appeared the horizontal outline of mésa heights, with here and there a break, denoting an intervening cañon or valley; and lying between all these objects and my point of view was a circuit of prairie, beautifully tasty on account of solitary and clustered trees, or sombrously dark on account of low mésas and oblong ridges covered with cedars.

This extensive scene sufficiently scanned, we proceeded to examine the ruins which the guide, true to his word, pointed out immediately before us. These ruins present, in plan, a rectangle two hundred and six by three hundred and seven feet, the sides conforming to the four cardinal points. The apartments seem to have been chiefly upon the contour of the rectangle, the heaps of rubbish within the court indicating that here there had been some also. (See ground plan in plate 63.) There appear to have been two ranges of rooms on the north side, and two on the west. The other two sides are in so ruinous a condition as to make the partition-walls indistinguishable. On the north side was found traceable a room seven feet four inches by eight and a half feet; and on the east side, one eight and a half by seven feet. There was one circular *estufa* apparent, thirty-one feet in diameter, just in rear of the middle of the north face. The main walls, which, except for a length of about twenty feet, were indistinguishable, appear from this remnant to have been originally well laid—the facing exposing a compact tabular sandstone varying from three to eight inches in thickness, and the backing a rubble kind of masonry, cemented with mud mortar. (See facing depicted in drawing No. 3, plate 41.) The style of the masonry, though *next*, as far as our observation has extended, to that of the pueblos of Chaco, in the beauty of its details is far inferior. Here, as usual, immense quantities of broken pottery lay scattered around, and of patterns different from any we have hitherto seen. (See plate 64.) Indeed, it seems to me that, to have caused so much broken pottery, there must have been, at some time or other, a regular sacking of the place; and this, also, may account for this singular phenomenon being a characteristic of the ancient ruins generally in this country. At all events, we see nothing of this kind around the inhabited pueblos of the present day, in which pottery is still much used; and I can see no reason why, if their inhabitants were of their own accord to desert them, they should go to work and destroy the vessels made of this kind of material.

To the north of west, about three hundred yards distant, a deep cañon intervening, (see plan of rock, &c., above,) on the summit of the same

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massive rock upon which the inscriptions are found, we could see another ruined pueblo, in plan and size apparently similar to that I have just described. These ruins, on account of the intervening chasm, and want of time, we were not enabled to visit.

What could have possessed the occupants of these villages to perch themselves so high up, and in such inaccessible localities, I cannot conceive, unless it were, as it probably was, from motives of security and defence.

The idea has been generally entertained, and I notice Gregg gives currency to it, that a portion of the ruins of this country are "at a great distance from any water, so that the inhabitants must have entirely depended upon rain, as is the case with the *Pueblo of Acoma* at the present day."*

Near all the ruins I have yet seen in this country, I have most generally found water; and in those cases where there was none, the dry bed of a stream, in convenient proximity, gave sufficient evidence that even here, in times past, there was a supply. Besides, there are at the present day Mexican ruins to which the inhabitants now point as having been deserted on account of the creeks near them failing. Such, for instance, is the Mexican village called *Rito*, (which we subsequently passed,) on the San José—its Roman Catholic church and other buildings conclusively attesting that it had been deserted not many years back.

As regards the inhabitants of Acoma at the present day relying, as Gregg states, for water upon the rains, his information must have been from report; for Abert expressly tells us the contrary. His language is, (he is speaking of Acoma and its vicinage,) "We had encamped by the side of some holes that the Indians had dug; these, they said, yielded a constant supply of water; and between our camp and the city there was some water that ran along the bed of a stream for a few yards, when it disappeared beneath the sand. This furnished the inhabitants with drinking water."† Besides, I doubt very much if in this country the water that could be collected from rains by any artificial process would be near sufficient to answer the wants of the people. I doubt it, for the reason that the chief sources of supply to the streams appear not to be from the rains —few and scant—which fall upon the plains, but from the rains which are produced by and break upon the mountains.

But to continue my journal: The shades of evening falling upon us in our labors, we were constrained to retrace our way down to the plain; and it was not long before we were at the base of the rock, hovering over a bivouac fire, eating our suppers, and talking over the events of the day—the grim visage of the stupendous mass behind us occasionally fastening our attention by the sublimity of its appearance in the dim twilight.

*Twenty-eighth camp, Ojo del Gallo, September* 18.—The excitement of yesterday's discovery, together with rather a hard pallet, and the howling of the wolves, prevented my having as comfortable a night's rest as I would have liked. Often did I gaze, in my restlessness, *au ciel*, to witness the culmination of that beautiful consteliation, Orion, the precursor, at this season of the year, of the approach of day; and as often did I find myself obliged to exercise that most difficult of virtues, patience—the sure key, with the proper application of subordinate means, to success.

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*Commerce of the Prairies, vol. I, p 284.
†Lieutenant Abert's Report on New Mexico, 1846-'47, October 21.

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The dawn of day at 3 o'clock appearing, we got up, for the purpose of hastening breakfast, in order, that by daylight we might be ready to continue our labors upon the inscriptions. Besides, finding that, to reach the rock yesterday, our divergence from the route of the troops had been but about three miles, and being anxious to join the command to-night, in order that I might keep up the proper succession of astronomical positions, (my instruments being with the troops,) I felt desirous to hasten our work, so that I might effect the object.

Our breakfast over, the day opening beautifully, and the feathered race regaling us—an unusual treat—with their gay twittering, we hastened to the work of finishing the *fac similes*. These completed, and Mr. Kern having engraved as follows upon the rock: "Lt. J. H. Simpson, U. S. A., and R. H. Kern, artist, visited and copied these inscriptions, September 17, 1849," we found ourselves ready by 8 o'clock to commence our journey to overtake the command.

A large number of the hieroglyphics, (on the south side of the rock,) and many names and dates, are evidently—from the in some cases faint, and in others interrupted or broken, appearance of the inscriptions—gone; and for this cause, as well as from an occasional failure in the perfect engravement of a letter, and therefore its assimilation in appearance to others nearly resembling it in form, the *fac similes*, though, as a whole, generally transcriptive of the letters or words intended by the inscribers, in some few instances are, doubtlessly, variant from the exact orthography intended, and therefore difficult to be deciphered. A *literal* rendering of them into English, so far as I have been able to have it accomplished, by the conjoint assistance of Chief Justice J. Houghton, Señor Donaciano Vigil, secretary of the province, and Mr. Samuel Ellison, the official translator, will be found below. I prefer to give them literally, because it is the most faithful mode of translation; and though the sense, in some instances, might be given in better English, yet, for the sake of accuracy, and because the meaning is apparent under a literal translation, I think it best to present them in this form, beginning with—

PLATE 65.

"Augustin de Hinojos."

"In the year 1641, Bartolome Romelo," (here words not decipherable.)

"In the year 1716, upon the 26th day of August, passed by this place Don Feliz Martinez, Governor and Captain General of this kingdom, for the purpose of reducing and uniting Moqui," (a couple of words here not decipherable.)

"Licentiate Chaplain Friar Antonio Camargo, Custodiari, and Ecclesiastical Judge."

"Simon de Salas."

"Antonio Nomoya."

PLATE 66.

"On the 28th day of September, of the year 1737, arrived at this place Batchelor Don Juan Ignacio de Arrasain."

"Passed by this place Diego Belasques."

"On the 28th day of September, of the year 1737, arrived at this place

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the Illustrious Doctor Don Martin De Liza Cochea, Bishop of Durango, and on the 29th left for Zuñi."

"Joseph Domingnez passed by this place in October, and others September 28, with much caution and some apprehension."

"Juan de San Esteban."

"Philancics."

"The Father Ezquerr."

"Antonio B***," (this name not decipherable.)

(Here a word or two not decipherable.) "Don Francisco, (a word or two not decipherable,) for the impossibility—*Jene*—there to subject; his arm undoubted, and his valor, with the wagons of our Lord the King, a thing which he alone did—*E' fecio de Abiosio G*—six hundred and twenty nine, (probably intended for 1629.) *Quesby Eu Acuni Pase y la Felleue.*"

PLATE 67.

"Juan Garica de la Revâs, Chief Alcalde, and the first elected of the town of Santa Fe, in the year 1716, on the 26th of August. By the hand of Bartolo Fernandez Antonio Fernandez Moro."

"Augustin de Minojos."

"Juan Gonzalos, year 1629."

(The characters in the double rectangle seem to be literally a sign-*manual*, and may possibly be symbolical of Francisco Manuel, though the double thumb would appear to indicate something more.)

"On the 14th day of July, of the year 1736, passed by this place General Juan Paez Hurtador, Inspector. And in his company Corporal Joseph Armenta, Antonio Sandobal Martines, F. Guapo, Alonzo Barela, Marcus Duran, Francisco Barela, Louis Pacheco, Antonio de Salas, Roque Gomas."

"Vicente de Senorgorta and (name not decipherable) fought on account of these questions," (the remainder not intelligible, except that *lecor*—probably intended for *licor*, liquor—seems to have had something to do with the quarrel.)

"Joseph Ramos."

"Diego Nunez Bellido."

"Diego."

"Friar Zapata."

"Bartolome Narrso, Governor and Captain General of the Provinces of New Mexico, for our Lord the King, passed by this place, on his return from the Pueblo of Zuñi, on the 29th of July, of the year 1620, and put them in peace, at their petition, asking the favor to become subjects of his Majesty, and anew they gave obedience; all which they did with free consent, knowing it prudent, as well as very christian, (a word or two effaced,) to so distinguished and gallant a soldier, indomitable and famed; we love" (the remainder effaced.)

PLATE 68.

"Antonio Gon Salez, in the year 1667. (Some characters not decipherable.) Country of Mexico, in the year 1632, folio (some characters no intelligible,) Rengoso, by order of Father Liebado Lugan."

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PLATE 69.

"Passed by this place with despatch, (a word or two not decipherable,) 16th day of April, 1606."
"Cayudo, 1727."
"I. Aparela, 1619." (Hieroglyphics not decipherable.)

PLATE 70.

"Passed by this place Sergeant Major and Captain Juan Archutela, and the traveller Diego Martin Barba and Second Lieutenant Juan Ynes Josano, in the year 1936." (Hieroglyphics not decipherable.)

PLATE 71.

"Here served General Don Diego de Bargas, to conquer to Santa Fe, for the royal crown, New Mexico, by his own cost, in the year 1692."
"By this place passed Second Lieutenant Joseph de Payba Basconzelos, in the year in which the council of the kingdom bore the cost, on the 18th of February, in the year 1726."

PLATE 72.

"In the year 1696 passed D. M."—(hieroglyphics not decipherable.)

PLATE 73.

"P. Joseph de la Candelaria."
"O. R., March 19, 1836." (These are the only initials with an English date before Mr. Kern engraved ours. The hieroglyphics not decipherable.)

PLATE 74.

"Pero Vacu (possibly intended for *vaca*—cow) ye Jarde."
"Alma."
"Leo."
"Captain Jude Vubarri, in the year of our Lord 1," (probably meaning 1701. The hieroglyphics, excepting what appears to designate a buffalo, not decipherable.)

The translations of the several inscriptions, so far as it has been possible to have them effected, having now been given, I introduce, in this connexion, a letter from the secretary of the province, (received since the expedition,) by which it will be perceived that two of the persons whose names are inscribed—General Don Diego de Bargas, and General Juan Paez Hurtador—have been governors of New Mexico. This letter is also interesting on account of the other historical facts which it divulges. For its translation I am indebted to Chief Justice Houghton:

"SANTA FE, *October* 19, 1849.

"SIR: The engravings which are sculptured on the rock of Fish spring, near the Pueblo of Zuñi, copies of which you have taken, were made in

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the epochs to which they refer. I have an indistinct idea of their existence; but, although I have passed the place some three times, I never availed myself of the opportunity to observe them. The other signs or characters noticed are traditional remembrances, by means of which the Indians transmit historical accounts of all their remarkable successes. To discover these sets by themselves, is very difficult. Some of the Indians make trifling indications, which divulge, with a great deal of reserve, something of the history, to persons in whom they have entire confidence.

"The people who inhabited this country before its discovery by the Spaniards were superstitious, and worshipped the sun.

"I would be glad to relate to you, with exactness, events which are passed; but I am deprived of this satisfaction from the want of certain information in regard to the particulars, because some of them occurred a very few years after the conquest made by Juan de Oñate, in the year 1595, and all records preceding the year 1680 are lost, as the Indians burnt the archives in their insurrection against the conquerors who then occupied the country.

"In 1681, Governor Antonio de Otermin received orders from the viceroy to return and conquer. He made his entrance to the Pueblo of Cochiti, encountered resistance, and, on account of the small force he brought, retired to El Paso in the same year. Gerbaceo de Cruzat y Gongora succeeded him in command, who also remained established at El Paso.

"In the following year, Cruzat made an expedition against New Mexico, took possession of the capital, and extended his conquests a little more effectually, until the following year, when, it being impossible for him to sustain himself longer, he returned to El Paso.

"In the year 1693,* Curro Diego de Bargas Zapata penetrated as far as the Pueblo of Zuñi, and, without proceeding further, returned to El Paso. In the year 1695, he obtained the entire pacification of the country.

"There were afterwards a succession of governors, among whom are numbered Feliz Martinez, Juan Paez Hurtado, and many others, of whom can be produced exact information by referring to the time of the administration of each, according to the registry in the ancient archives of the government. The short time before your departure does not afford the necessary opportunity to register and give to you an historical relation of these events. This account, therefore, should not be regarded by you as one which should direct your idea entirely, for my limited capacity does not permit me to search into all the particulars necessary; but it may serve you as a certain guide to direct the history, the events being marked in chronological order.

"Should these remarks prove useful to you, and I have facility of access to the archives, as I have now, I will with pleasure undertake the task of making the relation, and will despatch it to the point you may direct me.

"With nothing, more, I am, señor, your obedient servant,

"DONACIANO VIGIL.

"Lieut. J. H. SIMPSON,

"*Topographical Corps, U. S. A.*"

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*According to the extract from De Barga's journal already given in a note under the head of the twenty-fifth camp, his conquest of Zuñi bears date November 11, 1692, and in this year corresponds with that inscribed on the rock.

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But to proceed with our journey: Lewis thinks the road to Laguna by the way of the *Moro*, or Inscription rock, and the Pueblo of Acoma, is better for wagons than that which the troops have taken. He says it has only one bad place, and that can be avoided by making a detour of two miles. Water and grass, according to his representation, are ample along it. Carravahal, however, (and a most excellent guide he has proved himself to be,) thinks the other the best, and, according to the map, it would appear to be quite as direct.

As has been already remarked, by 8 o'clock a. m. we were ready to commence our journey—it being our intention to join the main command, if possible, before night. For the first three miles our route lay east of north, when, getting again into the road taken by the troops, we immediately turned to the right upon it—our course thence for the day being nearly due east. This road, we find, gives indications of having been considerably more travelled than that passing by the Inscription rock. A mile and a half more traversed, over a heavy sandy soil, upon which I noticed the flax growing in its wild state, we found ourselves commencing the ascent of the *Sierra de Zuñi*. This ascent, for a few miles, is quite gradual, the road leading up a beautiful narrow valley, clothed with a rich black loamy soil, and interspersed with large pines. Six and a half miles on the route, I noticed some massive limestone, in large quantities, cropping out from either side of the valley. Some of it is a coarse-grained marble. Two miles further, the ascent becomes quite steep and difficult on account of loose rocks. The route, however, continues practicable for wagons; and no doubt an easier grade could be found, possibly, to the right.

A mile further traversed, we found ourselves on the summit of the pass of the *sierra*, from which, bearing north of east, some thirty miles off, we caught sight, for the first time, of one of the finest mountain peaks I have seen in this country. This peak I have, in honor of the President of the United States, called *Mount Taylor*. Erecting itself high above the plain below, an object of vision at a remote distance,* standing within the domain which has been so recently the theatre of his sagacity and prowess, it exists, not inappropriately, an ever-enduring monument to his patriotism and integrity. (See plate 75.)

Descending the eastern slope of the *Sierra de Zuñi*, after a ride of two miles, we reached the *Ojo de Gallinas*, where the still smoking embers of recent fires, in connexion with their relative positions, showed very plainly the *locale* of the last night's encampment of the troops. Finding some good water and grass here, and being considerably fatigued, we gladly halted for an hour to take a lunch and let our animals graze. Resuming our journey, we passed two miles of very hilly pine-barren country—a mile further bringing us to a locality where, immediately on the right of the road, for the first time, some unseemly piles of blackened scoriaceous volcanic rocks make their appearance. Three miles further, in a kind of basin, we met another series of piles of lava debris, covering an area of at least one hundred acres. These piles look like so many irregular heaps of stone coal. A mile further brought us to the entrance of the *Cañon de Gallo*, down which the route continued its course. This ca-

* Since my return to Santa Fe, I find it can be seen from Fort Marcy and other surrounding heights, the air-line distance being as great as one hundred miles.

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tion, which is a rather narrow one, and walled on either side by sandstone rocks some three hundred feet high, is quite interesting, both as an object of vision and because of the blackened volcanic scoriaceous rocks which crop out from its bottom. Did this cañon exist before the development of these volcanic rocks, or was it the result of that development? Is it not possible that the incalescent mass below, and the gases generated by the heat, in connexion with the ruptures of the superincumbent sedimentary strata which such a condition of things would be like to produce—I say, is it not possible that such a combination of circumstances could have given rise first to the cañon, and then to the volcanic matter cropping from its bottom?

This cañon is quite rapid in the descent of its bottom—more so than any we have seen. Four miles from its entrance, it is almost choked up with large masses of rock, threading which, however, I subsequently learned, the artillery found little or no difficulty. Three miles further, we debouched from the cañon into the broad, beautiful, and fertile valley of the *Ojo de Gallo*. Bearing thence gradually to the right, four miles further brought us, much to our gratification, just after dark, to the camp of the troops, where we found them all rejoicing in the possession of a fine spring, abundant pasture, and the feelings consequent upon the exhilirating effect of a beautiful and far-extended expanse.

We noticed along the road several rattlesnakes which the troops had killed. One of them was very large.

Our day's travel I estimate at thirty-two miles. The march of the troops yesterday, I learn, was 27.14 miles; to-day, 18.49 miles. The latitude of this camp, by observation, is 35° 5′ 17″.

*Twenty-ninth camp near Pueblo of Laguna, September* 19.—The troops decamped at 8 . . m., the course, as yesterday, continuing for the day nearly due east. The first six miles was directly across the valley of the Gallo, and then down the valley of the *Rio de San José*. The valley of the Gallo is one of the richest I have seen, its soil being a rich black loam. A great deal of scoriaceous matter, in black angular fragments, lies scattered over the surface of this valley in piles and ridges: and it is doubtless owing to this source that its soil is so fertile; for wherever this igneous product is observable, there have I noticed the soil in proximity to it to be of this character.

Just before entering the valley of the San José, about seven miles from our morning's camp, are hundreds of acres of volcanic rock, a great deal of it exhibiting, with marked distinctness, the undulations of the wave in its oscillatory motion. I endeavored, by the curvature of these waves, to find, by a normal or rather an applicable radius, the crater or source of the outflow, but it resulted in nothing satifactory. I ascended an adjoining hill to overlook the whole field, and found the lava to exist in ridges ranging generally north and south, the curvature being thus:

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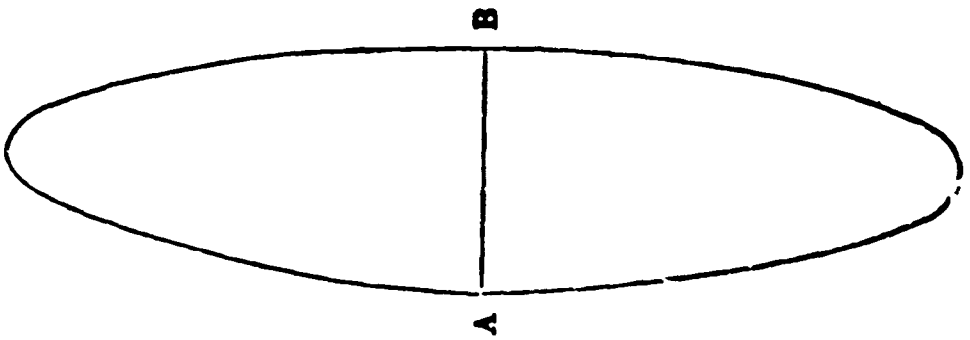
by a cross section on A B of the ridge or pile, thus:




This seems to point to a swelling or intumescence of the fluid mass, longitudinally—a partial overflow—and a fixedness of condition, caused by refrigeration, before it could spread laterally to any considerable extent, and subsequently a tumbling in at the sides, from disintegrating causes, and the want of subjacent support.

Near this very large field of volcanic matter, the road takes up a long, steep, rocky hill—two miles further bringing us again to the valley of the San José. This hill could probably be avoided by not leaving the valley of the San José at all. Ten miles from our last camp, for about a quarter of a mile, we traversed a sliding rocky hill, where a few picks, crowbars, and spades could, with no great labor, in a short time, make it practicable for wagons. Along this portion of the route, a dense growth of bushes, intertwined with vines, bearing a most delicious grape—in size, that of our winter grape—skirts the stream, and cheered us with its rich luxuriance. The stream here also came tumbling down in a small but beautiful cascade, the din of its waters not being more delightful to the ear than its appearance was to the sight. A mile further, the volcanic rocks which, as far down as this point, have lain along the valley in scattered oblong heaps, terminate. About a mile from this, we crossed the San José, at this point a clear stream, fifteen feet wide and one deep, running swiftly over a gravelly bottom. Willows, I noticed, lined the stream.

The valley, thus far, has been bounded on its left or north side by mésas of a sedimentary character, overlaid by basaltic trap; on the right, or south side, by sedimentary rocks, the superior formation of which is sandstone.

Three miles from our last crossing of the San José, we crossed it again—the valley, from this point, gradually unfolding itself more uninterruptedly, and continuing so down to Laguna, a distance of fourteen miles, within two miles of which we are encamped. All along the valley, for this distance, the land is cultivated in corn and melons, the luxuriance of their growth attesting the good quality of the soil. I also noticed, at different points, a number of circular places upon the ground where wheat had been trodden out by horses. This is the usual mode in this country of separating it from the husk. The cultivators of the soil are Pueblo Indians, and belong to the villages of *Laguna* and *Acoma*. They were very liberal to us in their donations of muskmelons, of which they seem to have a great abundance. I notice that, to preserve them for winter, they peal them, take out the seeds, and then hang them in the sun to



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day. A dry cedar tree covered with them, for this purpose, presented a very singular appearance.

Within about a couple of miles, the San José expands into a small lake, which is the resort of large flocks of cranes.

This day's march, 25.93 miles, has been the most fatiguing one we have had—the artillery not getting in, on account of the horses giving out, until after dark. The regular infantry, whether the march is short or long, uniformly preserve the same compact form and rate of travel, and, in this respect, are superior to any troops I have ever served with.

The soil along the route has been arenaceous, and a great deal of it good. No *sylva* to speak of, except near the head of the san José, has been seen in the valley, though scrub cedar has dotted the heights. Bunch and gramma grasses have been seen in patches along the way. The cactus has been quite common.

A flock of two thousand head of sheep was seen by us before reaching camp.

This camp, which observation places in latitude 35° 0′ 49,″ has all the requisites of wood, water, and grass.

The *alcalde* of the *Pueblo de Laguna* called to pay his respects to Governor Washington this evening; and a very respectable man he appears to be. He is more at home in American garb than was the alcalde of *Zuñi*.

*Thirtieth camp, September* 20.—The alcalde of Laguna was again in our camp this morning. He represents to Governor Washington that some persons belonging to the party of California emigrants who passed through his village two or three weeks since, on their way west, tied and forced off one of his people to Zuñi, against his will, and then gave him no compensation; that they drove off eight mules belonging to his people, and even tied the governor, because he would not do an impossibility which they wished to exact of him. He also represented that some Mexicans were endeavoring to get from him a pistol which an emigrant had given him in remuneration for his care of him during his illness. Governor Washington told him that he and his people should defend their property, if necessary, even to the taking of life; and that, no matter how many were sacrificed in this way, the government would sustain them in it; that this was a rule of the government under which he was now living. He also gave him a paper, calling on all persons to respect the rights of his people.

This morning I preceded the troops a short while for the purpose of visiting the Pueblo of Laguna. The houses of this pueblo, I find, are built like the others—terrace fashion, each story forming by its roof a platform or sill for entrance to that above, and the ascent from story to story—of which there are, in some instances, as many as three—being by ladders upon the outside. They are built of stone, roughly laid in mortar, and, on account of the color of the mortar, with which they are also faced, they present a dirty yellowish clay aspect.* They have windows in the base-

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*The idea which has been entertained that this pueblo is situated on a rocky promontory, *inaccessible* to a savage foe, is incorrect, as wagons find no difficulty in getting up to and passing directly through the town.

Equally incorrect is the idea that the towns of Pojuate, Cebolleta, Covero, and Moquino are made up of houses *four stories* high, built upon *inaccessible* rocky heights. I have, since the Navajo expedition, made a military reconnaissance of the country in which these towns are situated, and therefore speak from personal observation. It is also a mistake to regard the three last-mentioned towns as Indian pueblos; they are *ordinary* Mexican villages.

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ment as well as upper stories; selenite, as usual, answers the purpose of window-lights. The pueblo has one Roman Catholic edifice, which, on account of the key not being immediately available, I did not enter. I noticed in its belfry a couple of bells, and on its roof a sort of dial—probably a mock one. Corn in the shuck, after having been boiled, as also strings of red pepper, could be seen hanging up in front of nearly every house to dry. Indeed, the evidences are that these people are quite industrious and thrifty. Their cattle—of which, probably on account of the good pasturage in the vicinity, they seem to have more than any other pueblo—look fine; and their sheep and goat folds—which, as usual, encroach upon the circuit of the towns, much to the annoyance of both sight and smell—show also that they are well supplied with this species of stock. I noticed also about the place a number of carts, of the ordinary lumbering Mexican make. The population of the town is probably about eight hundred.

A large portion of the inhabitants are at this time away, gathering *piñones*, an edible fruit of the piñon, the common scrub pine of the country. The dress of these people is like that of the other Pueblo Indians—the women, as usual, having the calves of their legs wrapped or stuffed in such a manner as to give them a swelled or dropsical appearance. They, like the Zunis, regard us with considerable reserve; but how could it be otherwise, when they have been so shamefully treated as they have been recently by persons bearing the name of Americans, like ourselves? Common prudence certainly dictates a proper reserve until they can learn by experience that we are not extortioners like some of our forerunners; and this they are begining to learn, for the longer we were among them the more frank and liberal they became.

The troops passing through the pueblo about 11 o'clock, I left the place to accompany them. The course to-day is south of east, and, as yesterday, the road runs along—though not so near—the San José, which it crosses at Laguna. Just as I got out of the town, observing a Mexican packer appropriating to himself a watermelon, right in the face of an old woman who was guarding the patch, in my indignation I rushed upon him full tilt, and the consequence was an instantaneous disgorgement. The many signs which the old woman made to express her gratitude amply testified how deeply she felt the slight act of humanity. Two miles from Laguna, we descended a rocky shelving-place, to get into the valley of the San José. Wagons will find no insuperable difficulty here. This hill descended, and some basaltic trap passed, lying in a short cañon through which the road runs, the Rio de San José is again crossed—the water, which heretofore has been quite clear, now becoming of a clay color. The river at this point is about twenty feet wide, one deep, and has a muddy bottom. The San José crossed, some old ruins appear, perched upon a mesa some one hundred and thirty feet high, immediately on your right. To clamber up to them, I had no little difficulty; and on reaching them, I found they scarcely compensated me for the exertion. They consisted of a few old stone and mortar structures, and some stone *corrals*, (enclosures,) the latter showing signs of having been recently used as sheep-pens. What a barbarous state of things these ruins, which are occasionally seen on almost inaccessible heights, show to have once existed; and how much more glorious their condition now, when the inhabitants

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can live upon the plains below in comparative ease and quiet, convenient to their fields, water, and stock!

Shortly after passing the ruins, basaltic trap again appears in the valley; and on the left, immediately by the road, gypsum crops out from overlying sandstone. Eight miles from Laguna, an extensive view unfolded itself to our front, of distant blue mountains, *mésa* heights, tableau and conical mounds—a broad expanse of green valley intervening. Just beyond this point appears, on your left, an almost perfect natural *fac simile* of a house, with its chimney-top. About a mile further, to our right, on the far side of the Rio San José, could be seen the remains of a Mexican village called *Rito*, which is represented, and no doubt truthfully, to have been deserted on account of the water of the San José failing at this point. This is the village before referred to as illustrating the fact that at the present day, as in more remote periods, towns are deserted on account of the water near them giving out. (*Ante*, September 17.) A few miles beyond this spot, the colonel commanding noticing a very large herd of sheep moving very hastily away from the command, as if all were not right, I rode off to see how the matter stood. I soon discovered, however, that the flock was under Mexican and not Navajo control, and, from my conversation with the *pastor*, became assured that our apprehensions were groundless. It was beautiful to see the young shepherd carrying in his bosom a little lamb; and it at once suggested to me the force and appropriateness of the sentiment to be found in Isaiah, (chapter 40, verse 11,) expressive of the care of the Saviour for the tender ones of his flock: "He shall feed his flock like a shepherd; he shall gather the lambs with his arm, and carry them in his bosom."

About fifteen miles from Laguna, it being represented by Carravahal that we could get water in the San José, about a mile and a half to the right, we turned off the beaten track to encamp upon the stream. The water of this stream at this point is scarcely an inch in depth, and of a bright red color. Its constancy cannot be depended upon. Good bunch grass is found in the vicinity, and wood about half a mile off.

The road to-day has been generally quite good. Gypsum crops out on the left all along the way for the last six miles. The soil has been argillaceous, and, in spots of limited extent, looks as if it might produce pretty well. The sylva has been the dwarf cedar, sparsely scattered.

The Mexican mounted militia were discharged this evening, the colonel commanding tendering them his thanks for their services, and strongly reprobating the conduct of those who had deserted the command, and whom, he hoped, they would, on their return to their homes, hold up to the just ignominy which they deserved.

*Thirty-first camp, Atrisco, opposite Albuquerque, September* 21.—The wolves, last night, in the vicinity of our camp, were more uproarious than usual.

The troops resumed the march at 7 a. m., the course for the day being about north of east. The country to day has been generally rolling in the direction of our progress—for the first six or seven miles, *mésa* heights, with intervening areas of prairie land, being seen on our left. Soon after leaving camp, we could see ahead of us the serrated mountains of the Rio Grande stretching from north to south, looking blue and beautiful, and further to the south a couple of twin peaks lifting themselves high and conspicuously. Between four and five miles on our route, the highest points

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of the Santa Fe mountains showed themselves for the first time, bearing northeast, the prospect suggesting the pleasing thought that our labors would soon terminate. Eight miles further brought us to the Rio Puerco, in the bed of which not a drop of water could be seen. The broad bed of this so-called river is about one hundred feet across, the narrower about twenty feet. A few cottonwood trees skirt the banks. Between three and four miles beyond the Puerco, earthy limestone crops out from the soil. Proceeding a few hundred yards further, we reached the summit of a swell of land, whence could be seen the broad valley of the Rio Grande, the mountains just back of Albuquerque now showing themselves in all the magnificence of their proportions. Shortly after, much to our relief, we met a wagon loaded with barrels of water which had been sent out by Major Howe, from Albuquerque, agreeably to the instructions of the colonel commanding, forwarded by express. The men were exceedingly thirsty, and drank correspondingly. When within seven miles of the Rio Grande, we caught, much to our delight, the first sight of its glimmering waters. A mile further, we fell in with a couple more of wagons from Albuquerque, loaded with water and forage for the troops. The river, however, being but five or six miles ahead, the order was given to continue forward. Two miles more brought us to where we could see the town of Albuquerque quartering on our left; houses could also be seen lying scattered for miles up and down the river, the cottonwood very sparsely dotting its banks. Just at dusk, we were winding our way through the little village of *Atrisco*, situated on the Rio Grande, opposite Albuquerque—our camp for the night being to the north of the town, in the midst of a fine plot of pasturage, convenient to the river.

The soil to day has been alternately argillaceous and arenaceous. The face of the country presented one expanse of barren waste, thinly sprinkled with dwarf cedar. The last half of the road was, a good portion of it, very heavy on account of sand, and in places quite hilly. The day's march has been 28.33 miles.

We met on the road to-day three Mexican men on horseback, two of them each with a woman behind him, and the third with a very pretty child in his arms. This is a common mode of travelling among them—the woman, however, most generally sitting in front. These women had their faces plastered with a sort of whitewash, also a very common fashion—the object being, as I am told, to protect them from the weather. Not unfrequently they are covered with a red pigment—but for what purpose, unless for the same reason the whitewash is used, I cannot divine. The fact, however, of their more frequently putting it on in blotches, would seem to point to some other object. But, whatever be the purpose, they in both instances give to the face a frightful and disgusting appearance.

Sad news has reached us to-night. The mail from the States, for which we all have been looking with so much anxiety, is reported to have been cut off by the Navajos, on its way out to us, at *Chelly*. This is a serious disappointment to us all.

*Algadones, September 22.*—The expedition, in its *integrity*, terminated at *Atrisco*. The different commands, artillery and infantry, are to march independently, each under the head of their respective chiefs, to Santa Fe, as soon as practicable. Colonel Washington and staff crossed over to Albuquerque this morning at the ford. The river at this point is probably about three hundred yards wide, the stream rapid, its depth four feet, and

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its bottom of a somewhat quicksand character. During the higher stages of the water, the river is too deep to be forded; but, though this is the case at the several fords along its course, boats seem never to be resorted to by the Mexicans. Indeed, I have not seen a single one since I have been in the country.

Albuquerque, for a Mexican town, is tolerably well built. Its buildings, like all I have seen inhabited by Mexicans, are of a right parallelopipedon shape, constructed of adobes, (blocks of sun-dried mud,) and arranged generally on the four sides of a rectangle, thus creating an interior court (*pateo*) upon which nearly every one of the apartments opens. There is generally but one exterior or street entrance; and this is generally quite wide and high, the usual width being about six feet, and the height seven. They appear to be made thus wide, at least as far as I have been able to discover, to enable the burros (asses) and other animals to go through with their packs. They are generally secured by double doors. There are two or three buildings in the town with extensive fronts and *portales*, (porches,) which look, for this country, very well—one of them being the house formerly occupied by Governor Armijo. There is a military post at this place, garrisoned by a couple of companies of dragoons, the commanding officer being Major M. S. Howe, of the 2d dragoons. The population of the town and its immediate suburbs is probably about one thousand. Wood for fuel has to be drawn a distance of twenty-five miles.

Colonel Washington and myself, after partaking of the generous hospitality of Major Howe and his lady, left at two o'clock for Sante Fe, it being our intention to tarry all night at Algadones, the usual stopping-place for travellers either way between Albuquerque and the former place. Mr. Calhoun and Captain Ker were in company, the latter having kindly provided the vehicle which conveys us hither. On our left was the Rio Grande, and on our right, some eight or nine miles off, the lofty mountains of Albuquerque and Sandia. The valley of the Rio Grande for a number of miles above Albuquerque presents the finest agricultural and pastoral country I have yet seen in New Mexico. The breadth of the valley under cultivation is, probably, not quite a mile. The clemency of the climate—it is some two thousand feet lower in altitude than Santa Fe—is such as to cause the grape and peach, as well as the melon, to grow to perfection. The corn also looks luxuriant and productive.

About six miles from Albuquerque, we passed the inconsiderable village of *Alameda*, the most conspicuous building in it being the Roman Catholic church. Six miles further, we passed by the pueblo of *Sandia*, a town similar in the style of its buildings to the other pueblo villages—the usual quantum of ladders and ragged-looking sheep and goat-pens discovering themselves about the premises. Just after leaving Sandia, within the space of about a mile along the road, are between sixty and seventy piles of stones, which are said to designate the localities where as many Navajos fell in a battle which the Pueblo Indians had with that people, some years since. Six miles more brought us to the small village of *Bernalillo*, its vicinage presenting some respectable-looking *rancho* residences, surrounded by well-cultivated grounds, which are fenced by *adobe* walls. Some of these walls are twelve feet high, and crowned with the cactus, to prevent their being scaled. Another six miles traversed, we found ourselves at Algadones, our stopping place for the night. This miserable looking village contains about forty houses, and has a population

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of some two or three hundred souls. Subsistence, such as it is, and forage, can be obtained here. The inn, kept by a Mexican, is far from being such as it should be, either as respects cleanliness or the character of the *cuisine*. Miserable muddy coffee, a stew made of mutton smothered in onions, half-baked *tortillas*, (thin corn-cakes,) and a few boiled eggs, constitute the best meal it pretends to furnish. I do not know why it is, but I have not yet drunk a cup of coffee or eaten a *tortilla* of Mexican preparation, without its creating in some degree a sensation of nausea at the stomach. There is certainly great room for improvement in the cuisine of this country. The only eatable I have yet partaken of which does not become tainted by their cookery is the egg in its boiled state, and this is doubtless owing to its being protected by the shell.

The road from Albuquerque to Algadones is generally sandy, and in some places, on account of it, quite heavy.

*Santa Fe, September 23.*—Having, by a few moments of experience, last evening, become convinced that if I lay within doors all night I should not only have a fight with rabid insects, but have also great violence done to my *olfactories*, Lieutenant Ward and myself slept in the wagon; and a pretty comfortable night we have had of it.

We left Algadones for Santa Fe at half-past 7 a. m., our general course for the day being about northeast, and we taking the road *via* Delgado's *rancho*, (farm,) the usual wagon-route between the two places.

Basaltic trap, I noticed, crowned the *mésa* heights on the west side of the Rio Grande between Algadones and San Felipe, the inferior formation appearing to be sandstone, horizontally stratified.

Six miles above Algadones, we passed the pueblo of *San Felipe*. This town is situated at the foot of the *mésa*, on the west side of the Rio Grande, the river contracting at this point to a width of probably less than one hundred yards. This pueblo, like the others, has its two storied houses, accessible by ladders; but neither it nor Sandia is as purely Indian in the style of its buildings as the other pueblos we have visited. It is, however, rather a neat-looking village, the Roman Catholic church, as usual, showing conspicuously. The ruins of what is usually called *Old San Felipe* are plainly visible, perched on the edge of the mésa, about a mile above the present town, on the west side of the river. These ruins are generally, I believe, regarded as indeed the remains of Old San Felipe; but a very intelligent Indian residing in the present town of that name has informed me that they are the remains of a people who have long since passed away, and of whom they know nothing. Half a mile above San Felipe, the road branches off—one branch extending to Santa Fe by the way of Santo Domingo, and the other to the same place by the way of Delgado's rancho, (farm.) The former branch is, probably, three or four miles shorter than the latter, and is on that account generally preferred for pack animals. The latter, however, is so much the better wagon-road as to cause it to be preferred for wheeled vehicles.

About twenty miles from Algadones, we crossed the Rio Galisteo, the road following it up for some distance. Where we first met it, not a particle of water could be seen in its bed; but at the point where we left it, about half a mile above, it was a running stream. Colonel Washington informs me that in Chihuahua he traversed the bed of a river which was perfectly dry when the head of the column commenced crossing, but

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within half an hour, before the whole column had passed over, it was scarcely fordable.

Some fine specimens of trap dike are discoverable just after crossing the Rio Galisteo—one of them resembling, as nearly as may be, an artificial wall; another, the dark-colored remains of an old pueblo. About six miles further, we crossed the small affluent of the Rio de Santa Fe, on which Delgado's *rancho* is situated. Travellers sometimes make this rancho a stopping-place for the night between Santa Fe and Albuquerque. Sixteen miles more traversed, at half-past three in the afternoon, much to the gratification of the whole party, we reached Santa Fe.

The road from Algadones to Santa Fe is generally very good, the only exception being a few short steep hills.

The face of the country to-day has presented, with some trifling exceptions—along the Rio Grande, at Delgado's, and between Agua Fria and Santa Fe—one extended barren waste of uncultivable soil.

*Santa Fe, September* 26.—The artillery, under Major Kendrick, reached this place yesterday; the infantry, under Captain Sykes, to-day.

*Character of the soil from the eastern base of the Sierra de Tumecha to Chelly, and thence to Santa Fe, by the return route.**

It may be thought, from the frequent mention of good land along the route since we left the eastern base of the Tumecha mountains, on our return trip, that fertility has characterized the country generally through which we have passed since that period. But, lest so erroneous an impression may obtain, I think it proper to observe that, for the greater portion of this distance, the road has threaded the valleys of the country, and therefore the land has presented itself such as I have described it. The country, it is true, has exhibited a greater extent of cultivable soil than that traversed between Santa Fe and the Tumecha mountains, but yet, in comparison with the whole area of surface, it should still be considered as but a very *small fractional part*.

The idea I pertinaciously adhered to when in the States, before ever having seen this country, was, that, besides partaking of the bold characteristics of the primary formations, rocks confusedly piled upon rocks, deep glens, an occasional cascade, green fertile valleys—the usual accompaniments of such characteristics with us in the States—it was also, like the country of the States, generally fertile, and covered with verdure. But never did I have, nor do I believe anybody can have, a full appreciation of the almost universal barrenness which pervades this country, until they come out, as I did, to "search the land," and behold with their own eyes its general nakedness. The primary mountains present none of that wild, rocky, diversified, pleasing aspect which they do in the United States, but, on the contrary, are usually of a rounded form, covered by a dull, lifeless-colored soil, and generally destitute of any other sylva than pine and cedar, most frequently of a sparse and dwarfish character. The sedimentary rocks, which, contrary to my preconceived notions, are the prevalent formations of the country, have a crude, half-made-up appearance, sometimes of a dull buff color, sometimes white, sometimes red, and some-

* See *ante*, thirteenth camp, August 31, for general character of the country traversed east of the Sierra de Tumecha.

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times these alternating, and, being almost universally bare of vegetation, except that of a sparse, dwarfish, sickening-colored aspect, cannot be regarded as a general thing—at least, not until familiarity reconciles you to the sight—without a sensation of loathing. The face of the country, for the same reason—the general absence of all verdure, and the dead, dull, yellow aspect of its soil—has a tendency to create the same disagreeable sensation. I desire it, therefore, to be borne in mind that, when I have in the course of my journal spoken of *fertile* soil, or of *beautiful* prospects, I have spoken *relatively*—that is, in relation or contrast with the other portions of the country in which these exceptions have occurred, *and not in relation to our more favored domain in the States.*

### *Conclusion.*

Before concluding my journal, I think it proper to bring to the notice of the department the expediency of having the country examined west of the Pueblo of Zuñi, for the ascertainment of a wagon-route from the former point to the Pueblo de los Angeles, or, failing in this, to San Diego.

The route from Santa Fe to Zuñi—a distance of two hundred and four miles—is, with a very slight application of labor, practicable for wagons; and the guide, Carravahal, who has been down the Rio de Zuñi to its junction with the Colorado of the West, says it continues practicable all the way along this tributary to the point mentioned.

Mr. Richard Campbell, of Santa Fe, since my return, has informed me that, in 1827, with a party of thirty-five men and a number of pack animals, he travelled from New Mexico to San Diego by the way of Zuñi and the valley of the Rio de Zuñi, and found no difficulty throughout the whole distance. He further states, there is no question that a good wagon-route, furnishing the proper quantum of wood, water, and grass, can be found in this direction, both to San Diego and the *Pueblo de los Angeles.* He informs me, however, that, in order to reach the Rio Colarado, the Rio de Zuñi would have to be diverged from at the falls, within a few miles of its confluence with the Colorado, and a valley running generally southwardly followed down to its junction with the valley of that river.

He has further informed me that above the mouth of the Rio de Zuñi there is a ford, called *El Vado de los Padres*, (the Ford of the Fathers,) to which a route leads from Zuñi by the way of the pueblos of the Moquis This route, which he represents as much shorter than the other, is, however, on account of the difficulty of crossing the cañon of the river at the ford, only practicable for pack animals.

The Colorado, when he crossed it, near the mouth of the Rio de Zuñi, was fordable; but he is of the opinion that it might not always be found so.

It is proper for me, however, in this connexion, to state that I have conversed with two or three trappers, who represent that the Colorado is so deeply cañoned from its mouth upwards as to make a wagon-route in the direction proposed impracticable. These persons, however, have at the same time stated that they know nothing personally of the *continuous* existence of this cañon, never having been immediately on the ground: their representations, then, should not counterbalance the statement of those who have.

I have introduced the above representations, to which I might add those

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of other persons, corroborative of the statements of Messrs. Carravahal and Campbell, in order that the department, being advised of the true state of the information attainable upon the subject, might take such action and give such instructions in the premises as, in its judgment, it might deem expedient.

By reference to the map, it will readily be seen that a route from Santa Fe to Pueblo de los Angeles, in the direction suggested, running as it would intermediate between the southern detour of Cook's route and the northern detour of the "Spanish trail" route, or, in other words, as direct as possible, would not only be shorter by probably as much as three hundred miles than either of these routes, but, passing by the pueblos of Laguna and Zuñi, and possibly of the Moquis, situated still further westward, would furnish supplies of subsistence and repairs of outfit for certainly the first two hundred, if not three hundred, miles of the way—*desiderata* certainly not to be disregarded.

Respectfully submitted.

JAMES H. SIMPSON,
*First Lieutenant Corps Topographical Engineers.*

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## APPENDIX A.

*Lieutenant Simpson's report to Lieutenant Colonel Washington of a reconnaissance with a view to the establishment of a post on the borders of the Navajo country.*

SANTA FE, *October* 10, 1849.

SIR: In accordance with orders No. 35, current series, issued from headquarters of department No. 9, requiring me to make a reconnaissance of the country in the vicinity of Cebolleta, with a view to the selection of a suitable position for a post in that vicinity, I have the honor to report that I have made the reconnaissance required by said order, and present the following as the result.

The point I would suggest as the most suitable one for the location of a post is the small settlement called Cebolletita, situated two and a quarter miles to the south of, and in the same valley with, Cebolleta, and on the road leading from the Pueblo of Laguna to Cebolleta. My reasons for this selection are involved in the following considerations:

The Navajo nation is the principal one to which the post in question, in its military aspects, is to have relation. Coming from the mountains immediately to the *north* and back of Cebolleta, (see map,) and passing by Cebolleta and Cebolletita, is an avenue of approach from the Navajo country to the Mexican settlements in that and the neighboring quarter to the east of it. To the *east* of the selected point, I was informed there was another or other avenues of approach. To the *west*, by the way of the valley of the Rio de San José and one of its tributaries, there are two other avenues of descent to be guarded against. Now, as the number of posts to be established is but one, it is obvious that its position should be such as to affect the greatest possible area of country, and that in the most prompt and effective manner. This position, evidently, then, should be a central one. This condition is fulfilled in the case in question by locating the post at the place stated—Cebolletita.

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The next considerations are, that the locality selected is where the essentials wood and water are abundant for the troops, grass abundant for the stock, and corn doubtless to be had in sufficient quantities from that and the neighboring villages.

In regard to the quarters at the point referred to, there are three *ranchos*, upon which are buildings suitable—with some slight repairs, in the case of one—for the quarters of the troops. These buildings belong, respectively, to Juan Chavez, Manuel Chavez, and José Francisco Arogonas; and the order in which they are named is the order of their convenience in respect to wood and water. The first two, I was assured, could be rented; the third, in all probability, if necessary, could be also.

In regard to the facilities of communication, there is a pack-mule route from Cebolletita to Alburqueque, the distance between the two places being represented to be from forty-five to fifty miles. There are also two wagon roads from Cebolletita to Albuquerque—one by way of the Pueblo de Laguna, which we found pretty good; and the other, a more direct one, by the way of Alamo, said to be the shorter, and equally good. The distance to Albuquerque by the Laguna road is: to Laguna, sixteen miles; thence to Albuquerque, forty-five miles—in all, sixty-one miles.*

The valley in which it is proposed to locate the post, I would further remark, besides being the most pleasant one I saw within the circuit of my reconnaissance, is more thickly populated with Mexicans than any in that region.

Another advantage the locality possesses is its proximity to the friendly Navajos—a position which enables them to be reciprocally protected by our troops, and at the same time give that information in relation to their neighbors which might be of the highest importance to us in our relations with them.

I should not fail to report, that the escort accompanying me was commanded by Lieutenant John Buford, of the 2d dragoons, whom I ever found willing and effective in his co-operation with me in the discharge of my duties.

I am, &c.,

J. H. SIMPSON,
*First Lieut. Corps Topographical Engineers.*

To Lieutenant Colonel J. M. WASHINGTON,
*Commanding 9th Military Department.*

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*Since the establishment of the post at Cebolleta, a pack-mule route has been discovered from that post to Santa Fe by the way of the Pueblo of Jemez, which, doubtless, is from fifteen to twenty miles shorter than by the way of Albuquerque.

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*A comparative vocabulary of words in the languages of the Pueblo or civil*

| Name of the object in English. | In the language of the Pueblo In | | | |
|---|---|---|---|---|
| | Santa Domingo, San Felipe, Santa Anna, Silla, Laguna, Pojuate, Acoma, Cochiti. (1.) | San Juan, Santa Clara, S. Aldefonso, Pojuaque, Nambe, Tesuque. (2.) | Taos, Picoris, Sandia, Isleta. (3.) | Jemez, (old Pecos.) (4.) |
| God | Dios, (Sp.) Montezuma, they say, is synonymous with Dios. | Give no other word than the Span. Dios. | Huam-may-ah | Pay. (Same as for sun.) |
| Heavens | | | | |
| Sun | | Pah | Hoo-len-nah | Pay |
| Moon | | Poy-ye | Pan-nah | Pah-ah |
| Star | She-cat | A-doy-e-ah | Hah-he-glan-nah | Woon-hah |
| Cloud | | | | |
| Earth | Hah-ats | Nah | Pah-han-nah | Dock-ah |
| Man | Hats see | Say-en | Tah-hah-ne-nah | Shu-o-tish |
| Woman | Nai-at-say | Ker | Clay-an-nah | Ste-osh |
| Wife | Kar-nats-shu | Nah-ve-so | Could give no word | Ne-ohoy |
| Boy | O-nue | An-noh | Dy-you-oo-nah | |
| Boy (infant) | Sah-wish-sha | | | A[illegible] |
| Girl | Koy-yah | An-ugh | Koo-ac-lon-nah | |
| Girl (infant) | Sah-wish-sha | | | Fond-o-hos-che |
| Head | Nash-can-ne | Pum-bah | Pi-ne-nah | Chit-chous |
| Forehead | Cop-pay | Sic-co-vah | Pah-hem-nah | Wah-pay |
| Face | Ko-wah | Che-ay | Cha-gah-neem-may | Tcho-tah |
| Eye | Kan-nah | Chay | Che-nay | Saech |
| Nose | Kar-wish-she | Shay | Poo-ae-nak | For-saech |
| Mouth | Tcco-kah | Sho | Clah-mo-e-nah | E-ae-quah |
| Teeth | Har-at-chay-nay | Moo-ah | Mo[illegible]-en-nah-en-hay | Goo-whan |
| Tongue | Wah-at-chin | Hah | May-oon-on-en-ah | Ain-lah |
| Chin | Tyara-kah | Sah-boh | Clah-bon-hay | Ah-tish |
| Ear | Kah-se-pah | Ce-ye-o | Tag-lay-o-nay | Wash-chish |
| Hair | Har-tran | Poh | Pah-han-nay | Fore-lah |
| Neck | Wjt-trah-ne | Kah | Gah-ne-may | Toe |
| Arm | Kah-u-may | Ko | Hah-en-nay | Hah |
| Elbow | | | | |
| Hand | Kah-mosh tay | Mah | | Mah-tish |
| Finger | | | | |
| Breast | Quaist-pah | Pe-ah | Pah-ah-kay-nay-ne-may | Pay-lu |
| Leg | Kay-ah-kah | | Pah-nay | Hong |
| Knee | | | | |
| Foot | Kar-tay | Ah | E-[illegible]-en-nah | Awn-dash |
| Deer | Ke-ah-ne | Pah-ye | Tah-mean-nah | Pah-ah |
| Buffalo | Moo-shats | Kah | Kah-nah-neem-mah | Toss-chach |
| Horse | Kah-yai-oh (Probably a corruption of the Span. *caballo.*) | As in Span. | Kah-wan-nah. (Probably a corruption of the Spanish.) | Gu-nah |
| Serpent | Shors-ker | Could give no word. | Hatch-oo-nah | Pay-chu-tah |

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DIX B.

*ized Indians of New Mexico and of the wild tribes inhabiting its borders.*

| dians of— | | In the language of the wild tribes denominated— | | |
|---|---|---|---|---|
| Zuñi. (5.) | Moqui. (6.) | Navajos. (7.) | Ticorillas, (a branch of the Apaches.) (8.) | Utahs. (9.) |
| Ho-ae-wo-nac-we-o-nah. | Toc-kill ..... | Yuah-del-kill.. | Dios. (Span.) | |
| ..... | Toke-pay-lah ... | | | |
| Yat-tock-kah..... | Tah-wah ..... | Cho-hac-nae-i. | ..... | Tap. |
| ..... | Moo-yah..... | Ol-chay ..... | ..... | Mah-tots |
| Mo yat-chu-way..... | ..... | Del-gay-he .... | Shah..... | Quah-lar tz. |
| ..... | O-now..... | | | |
| Ou-lock-nan-nay ..... | Tou h-quae..... | Ne..... | Nay ..... | |
| Out-se..... | Se-ka-ah ..... | Ten-nay. .. | Ti-k y ..... | Toc-on-pay-ah. |
| O-care. ..... | ..... | E -ten-naj ... | Tay-kay..... | Nai-jah. |
| Could give no word.... | ..... | Cha-at ..... | Pe-aug-co-le .. | |
| Ait-se-ke..... | ..... | ..... | Is-ke-e ..... | Ah-pats. |
| ..... | ..... | Che-y. z..... | | |
| Tya-nah ..... | ..... | ..... | Mem-che-to.... (Doubtless a corruption of *muchachitos*—Spanish.) | Mah-mats. |
| We-at-zah-nah ..... | ..... | Chay way.... | | |
| O-shuck-quin-nay ..... | Qua-tah ..... | Hut-se..... | It-se ..... | Tuts. |
| Huck-kin-nay .... .... | Col-ler ..... | Hut-tah..... | Pin-nay ..... | Mut-tock. |
| No-pon-ne-nay ..... | ..... ..... | Hun-se .. ... | ..... | Koo-elp. |
| Too-nah-way ..... | Po-se. ..... | Hun-rah .... | Pu-dah ..... | Put-ty-shoe. |
| Ne-lin-nay ..... | Ya-kock..... | Hut-chin ..... | Witch-chess .. | Mah-ve-tah. |
| Ac-vah-tin-nay..... | Mo-ah ..... | Huz-zay ..... | Huz-zay..... | Timp. |
| O-nah-way ..... | Tah-mah..... | How-go..... | E-gho..... | Tong. |
| Ho-nin-nay ..... | Ling-a ..... | Hot-so..... | E-zah-te..... | Ah-oh. |
| K'ay-which-chu-nay.... | Ke-at ..... | Hi-ot-ze..... | E-zay-ah..... | Hah-nock-quell. |
| Sah-a huck-tin-nay .... | Nook-a-wuck . | Hut-chah.... | Wick-yah ... | Nink. |
| Ti-ah-way ..... | Hay-me ..... | Hot-se ..... | It-se ..... | Su-ooh. |
| Kin-sin-nay..... | Qua-pe ..... | Huck-quess... | Wick-cost ... | Kolph. |
| Ar-se-way..... | Mah-at..... .. | Hut-con..... | Wit-se ..... | Poo-ir. |
| ..... | Che-ber.. ..... | | | |
| Shon-che-way ..... ... | Mock-tay..... | Hu'-lah ..... | Wis-lah... ... | Mas seer. |
| ..... | Mah-latz ..... | | | |
| Po-at-tan-nay..... | Po-witz-kah ... | Hay-yete..... | Ko-jay-se..... | Pay. |
| Sack-que-way..... | Ho-kah ..... | Hu'-yah ..... | Wit che-te..... | |
| ..... | Tom-me..... | | | |
| Wake-que-a-way.. ..... | Her-kuck..... | Hut-kay..... | Wu-kay .... | Namp. |
| ..... ..... | ..... | Pay-ye..... | Pay-ah..... | |
| Too-she-kay-one-na-way | ..... | A-yun-se ..... | Yah-nay ..... | |
| Too-ahe ..... | As in Spanish... | Kle ..... | Shie..... | Kah-vah. |
| Che-to-lah..... | ..... | Kot-so ..... | Ko-ch..... | Toe-wu-oe |

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| Name of the object in English. | In the language of the Pueblo In | | | |
|---|---|---|---|---|
| | Santo Domingo, San Felipe, Santa Anna, Silla, Laguna, Pejuate, Acome, Cochiti. (1.) | San Juan, Santa Clara, S. Aldefonso, Pojuaque, Nambe, Tesuque. (2.) | Taos, Picoris, Sandia, Isleta. (3.) | Jemez, (old Pecos.) (4.) |
| Rattlesnake | Shrue-o-we | Pay-yoh | Pi-he-own | Kae-ah-vae lah |
| Dog | Tish | Cher | So-dor-nah | Ca[illegible]-nu |
| Cat | Moos | Moo-sah | Moo-se-e-nah | Moon-sah |
| Fire | Hah-k[illegible]n-ye | Tah | Pah-an-nah | Twa-ah |
| Wood | | Sun | | |
| Water | Ts[illegible]ats | Ogh | Poh-ah-oon | Pah |
| Stone | | | | Ke-ah-ah |
| Cactus | Ae-mo[illegible]ch-te | Sow-wah | | Te-ah |
| Corn | | | | |
| Bean | | | | |
| Bread | Pah. (Probably a corruption of the Span *pan*.) | As in Span. | Ah-coon-nah | Zo-tane-bae-lah |
| Flesh | Ish-sha-ne | Pe-we | Zoe-an-nay | Gu-nay-nat-si |
| Bow | | | | |
| Arrow | | | | |
| Fusil | O-nistz | Pe-quar[illegible] | Tah-we-nan | Tah-his-tah |
| Sword | | | | |
| Spurs | | | | |
| Whip | | | | |
| Pipe | | | | |
| Hat | | | | |
| Friend | | Ke-nah | | |

NOTES.

(1.) Obtained by Lieutenant Simpson from U-kat-te-wah, (all the world looks as the man that sings,) governor of the pueblo of Santo Domingo.

(2.) Obtained by Lieutenant Simpson, through Mr. E. M. Kern, from an Indian belonging to the pueblo of San Juan.

(3.) Obtained by Lieutenant Simpson, through Dr. Horace R. Wirtz, U. S. A., from an Indian belonging to the pueblo of Taos.

(4.) Obtained by Lieutenant Simpson from an Indian belonging to the pueblo of Jemez, by name Da-ha-du-lu, (eagle.)

(5.) Obtained by Lieutenant Simpson from an Indian belonging to the pueblo of Zuñi, by name, as he wrote it himself, Lilu. Mexican name, Juan Christoval.

(6.) Obtained by Lieutenant Simpson from a Moqui Indian who happened to be at Chelly when the troops were there.

(7.) Obtained by Lieutenant Simpson from a friendly Navajo chief, by name Tus-ca hogont-le. Mexican name, Sandoval.

(8.) Obtained by Lieutenant Simpson from an Apache Indian, a prisoner in the guard-house at Santa Fe.

(9.) Obtained by Lieutenant Simpson from an Utah Indian, a prisoner in the guard-house at Santa Fe.

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Continued.

| dians of— | | In the language of the wild tribes denominated— | | |
|---|---|---|---|---|
| Zuñi. (5.) | Moqui. (6.) | Navajoe. (7.) | Ticorillas, (a branch of the Apaches.) (8) | Utahs. (9.) |
| ..... | ..... | Klish ..... | | |
| Wai-so-tah..... | Po-ku..... | Klay-cho. ..... | Klin-cha-ah... | Sah-reets. |
| Moo-sah ..... | ..... | Moose ..... | Moo-sah..... | Moo-sah. |
| Mack-ke..... | Day-bor..... | El-chin..... | Cone..... | Coon. |
| ..... | Ser-her-be ..... | ..... | ..... | Oof. |
| Ke-a-o-way..... .. | ..... | Toe..... | Ko..... | Pah. |
| Tze-nan-nay..... | | | | |
| Melah ..... | Kar-uk..... | | | |
| ..... | Se-ka-mo-se..... | | | |
| Moo-hen-nay ..... | ..... | Pah. (Probably a corruption of the Span. *pan.*) | Klay-tun-che-chay. | |
| She-lay ..... | ..... | Et-se..... | It-se ..... | |
| ..... | Au-ah..... | | | |
| ..... | ..... | Ho-huck ..... | | |
| Toe-o-an-nan-nay ..... | A-muck-te..... | Pay-dil-ston .. | Jeh-kay..... | |
| ..... | Le-po-wah..... | | | |
| ..... | Le-pom-uck-ke.. | | | |
| ..... | Wo-lock-pe .... | | | |
| ..... | Chong.. ..... | | | |
| ..... | Pu-ta-nock-a-chee | | | |

NOTES.

In all such syllables as ah, mah, nah, tah, &c., *a* has the same sound as in fat.
In all such syllables as ay, may, nay, kay, &c., *a* has the same sound as in fate.

The following Indian names were obtained by Lieutenant Simpson, through Mr. R. H. Kern, from Indians belonging to the pueblos named:

The Indian name of the pueblo of Santa Anna....is Tom-i-ya.
Do.....do.....Santo Domingo is Ge-e-way.
Do.....do.....Cochiti. .....is Ko-cke.
Do.....do.....Silla..... is Tee-ah.
Do..... do.....San Felipe.....is Ka-ha cha.
Do.....do.....Pecos.....is A-cu-lah.
Do.....do.....Jemez.....is Ha-waw, wah-lah-too-waw.

I am informed that the Indians of the Pueblo de Lentes have lost their original tongue, and now speak entirely the Spanish language.

The only tribes which, in the above vocabulary, discover any obvious affinity in their languages, are the Navajos and the Ticorillas. It is, however, somewhat remarkable that the word for cat, (moose,) with some slight variations, should be found common to them all.

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## APPENDIX C.

*Assistant Surgeon Hammond's description of a room found among the ruins of the Pueblo Bonito.*

CAÑON DE CHAI, UPPER CALIFORNIA,
*September* 7, 1849.

SIR: At your request, I send you a description of a room that I saw, in company with Mr. Collins, of Santa Fe, in the ruins of the Pueblo Bonito, in the Cañon of Chaco, on the 28th ult.

It was in the second of three ranges of rooms on the north side of the ruins. The door opened at the base of the wall, towards the interior of the building; it had never been more than two feet and a half high, and was filled two-thirds with rubbish. The lintels were of natural sticks of wood, one and a half to two and a half inches in diameter, deprived of the bark, and placed at distances of two or three inches apart; yet their ends were attached to each other by withes of oak with its bark well preserved. The room was in the form of a parallelogram, about twelve feet in length, eight feet wide, and the walls, as they stood at the time of observation, seven feet high. The floor was of earth, and the surface irregular. The walls were about two feet thick, and plastered within with a layer of red mud one-fourth of an inch thick. The latter having fallen off in places showed the material of the wall to be sandstone. The stone was ground into pieces the size of our ordinary bricks, the angles not as perfectly formed, though nearly so, and put up in break-joints, having intervals between them, on every side, of about two inches. The intervals were filled with laminæ of a dense sandstone, about three lines in thickness, driven firmly in, and broken off even with the general plane of the wall—the whole resembling mosaic work. Niches, varying in size from two inches to two feet and a half square, and two inches to one and a half feet in horizontal depth, were scattered irregularly over the walls, at various heights above the floor. Near the place of the ceiling, the walls were penetrated horizontally by eight cylindrical beams, about seven inches in diameter; their ends were on a line with the interior planes of the walls they penetrated, and the surfaces of them perpendicular to the length of the beam. They had the appearance of having been sawed off originally, except that there were no marks of the saw left on them; time had slightly disintegrated the surfaces, rounding the edges somewhat here and there. Supporting the floor above were six cylindrical beams, about seven inches in diameter, passing transversely of the room, and at distances of less than two feet apart—the branches of the trees having been hewn off by means of a blunt edged instrument. Above, and resting on these, running longitudinally with the room, were poles of various lengths, about two inches in diameter, irregularly straight, placed in contact with each other, covering all the top of the room, bound together at irregular and various distances, generally at their ends, by slips apparently of palm-leaf or marquez, and the same material converted into cords about one fourth of an inch in diameter, formed of two strans, hung from the poles at several points. Above, and resting upon the poles, closing all above, passing transversely of the room, were planks about seven inches wide and three-fourths of an inch in thickness. The width of the plank was uniform, and so was the thickness. They were

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in contact, or nearly so, admitting but little more than the passage of a knife blade between them, by the edges, through the whole of their lengths. They were not jointed; all their surfaces were level, and as smooth as if planed, excepting the ends; the angles as regular and perfect as could be retained by such vegetable matter. They are probably of pine or cedar, exposed to the atmosphere for as long a time as it is probable these have been. The ends of the plank, several of which were in view, terminated in a line perpendicular to the length of the plank, and the plank appears to have been severed by a blunt instrument. The planks—I examined them minutely by the eye and the touch, for the marks of the saw and other instruments—were smooth, and colored brown by time or by smoke. Beyond the plank nothing was distinguishable from within. The room was redolent with the perfume of cedar. Externally, upon the top, was a heap of stone and mud, ruins that have fallen from above, immovable by the instruments that we had along.

The beams were probably severed by contusions from a dull instrument, and their surfaces ground plain and smooth by a slab of rock; and the plank, split or hewn from the trees, were, no doubt, rendered smooth by the same means.

Very respectfully, your obedient servant,

J. F. HAMMOND,
*Assistant Surgeon U. S. Army.*

First Lieut. J. H. Simpson,
*Corps Topographical Engineers, U. S. Army.*

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## APPENDIX D.

*Schedule of minerals collected by Lieutenant J. H. Simpson, corps of topographical engineers, along the route from Santa Fé, New Mexico, to Chelly, in the Navajo country, via Santa Domingo, Jemez, and Pass Washington of the Sierra de Tunéchá, and from Chelly back to Santa Fé, by the way of Zuñi, Laguna, and Albuquerque, in the fall of* 1849.

| No. of specimen. | Locality. | | | Remarks. |
|---|---|---|---|---|
| | Name. | Latitude. | Longitude. | |
| | | Deg. min. sec. | Deg. min. sec. | |
| 1 | Valley of the Rio Jemez. | 35 46 00 N.. | 106 47 00 W. | Found about an abandoned furnace.* |
| 2 | .....do..... | 35 48 00 | 106 48 00 | Incrustations about mouth of Los Ojos calientes (hot springs.) Thermometer, when immersed, rose to 169° Fahrenheit. Eggs were cooked in from 15 to 20 minutes, and venison in a much shorter time. Boiling point of water at the Pueblo of Jemez several feet lower in altitude, 190°. |
| 3 | Cañon de Penasca.... | 35 34 00 | 106 57 00 | |
| 4 | .....do..... | 35 38 00 | 107 00 00 | |
| 5 | Cañon de la Copa .... | 35 40 00 | 107 11 00 | Found in thin seams in sandstone formation. |
| 6 | .....do..... | 35 40 00 | 107 11 00 | Found in crevices of sandstone rock, and sometimes adhering to the face of the rock. |
| 7 | Sierra Madre (or highlands) dividing the waters of the Atlantic from those of the Pacific. | 35 51 00 | 107 29 00 | Scoriaceous matter protruding through an argillaceous rock which is burnt to different degrees of calcination and underlaid by a friable sandstone of a dirty yellowish color. |
| 8 | Sierra de los Mimbres. | 35 51 00 | 107 29 00 | Broken off a stump, which, by falling over, had split into two parts. Length of stump 4 feet diameter; in its integrity 2½ feet. Some stumps still standing upright, *in place*, upon the surface of a very shallow basin. Bituminous coal cropping from the soil in close proximity. Drawings of these petrefactions accompany my report. |
| 9 | Pueblo Pintado, (one of the ruins of Chaco.) | 35 58 00 | 107 47 00 | A fragment of a stone taken from a front face of the structure; its thickness about the ordinary thickness of the building material. |

*Believing that the department could submit the specimens to a competent geologist for examination, I have thought it would best comport with accuracy to defer presenting their scientific names until they could be given by such authority.

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## APPENDIX D—Continued.

| No. of specimen. | Locality. | | | Remarks. |
|---|---|---|---|---|
| | Name. | Latitude. | Longitude. | |
| | | Deg. min. sec. | Deg. min. sec. | |
| 10 | Cañon of Chaco.... | ..... | ..... | Found on the side of a knoll. |
| 11 | Tunéchá valley..... | ..... | ..... | Found in fragments ever since we left the valley of the Rio Puerco. Bituminous coal of a slaty character, in connexion with arenaceous and argillaceous rocks, being in association with it. |
| 12 | East base of the Sierra de Tunechá. | 36 12 09 N.. | 108 52 00 W. | Bituminous coal, as above stated, has been found coextensive with the country, lying between the valley of the Rio Puerco and the east base of the Sierra de Tunechá, or through a longitudinal interval of 1¾°, but none so good as that illustrated by the specimen presented. This last crops out from the escarpment of an *arrojo* in beds from 2 to 3 feet thick, interstratified with argillaceous shale. |
| 13 | Pass Washington of the Sierra de Tunéchá. | 36 3 22 | 108 56 00 | Similar specimens found at other points of the Sierra de Tunechá along the route. |
| 14 | Sieneguilla de Tuanita (Little John's meadows.) | 36 10 36 | 109 12 15 | Found strewed extensively over the meadows. |
| 15 | Cañon of Chelly..... | 36 7 00 | 109 16 00 | Broken from a petrified tree which protruded horizontally from the north escarpment of the cañon of Chelly, its end only being visible. Diameter of tree 1 foot. Found in drift conglomerate, this formation alternating with sandstone rock composing the superincumbent mass of rock to the top or crest of the cañon, or for a height of about 300 feet. |
| 16 | Cañon of Chelly..... | 36 7 00 | 109 16 00 | Found on a shelf of the north wall of the cañon about 300 feet below the top or crest. |
| 17 | ..... | 35 12 00 | 109 11 00 | Found strewed over an argillaceous soil of a reddish color. |

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## APPENDIX D—Continued.

*Schedule of miscellaneous specimens found along and near the route.*

| No. of specimen. | Locality. | | | Remarks. |
|---|---|---|---|---|
| | Name. | Latitude. | Longitude. | |
| | | *Deg. min. sec.* Between | *Deg. min. sec.* Between | |
| 18 | Ruins in cañon of Chaco. | 35 37 00 and 36 04 00 N.. | 107 47 00 and 108 08 00 W. | Fragment of the end of a floor beam 6 inches in diameter, also of a piece of board; each showing an end just as it was found; also specimens of the brushwood and bark which sustain upon the floor beams the superincumbent flooring of mud mortar; also a specimen of a rope found depending from the ceiling of one of the rooms. |
| 19 | Ruins of Chaco. Ruins of cañon of Chelly. Ruins of Inscription or Moro rock. | ..... | ..... | Specimens of pottery found at the ruins mentioned. |
| 20 | Navajo country..... | ..... | ..... | Got from a Navajo Indian; precise locality not known. |
| 21 | Vicinity of Santa Fé. | ..... | ..... | These calcareous fossils were found imbedded at foot of west slope of Santa Fe (Rocky) mountains. Dip of beds about 45° eastward, or toward the axis of the range Contiguous to the calcareous outcrop, and on its west side, is an outcrop of micaceous slate anticlinal to the limestone formation; or, in other words, it has a dip westward of about 45°. Does not this relation show that the limestone must have been deposited *subsequent* to the elevation of the Rocky mountains, but *prior* to the upheave of the slate formation? All the specimens except the yellowish one, which was got from a neighboring locality, and doubtless from the same formation, show signs of having been slightly calcined in the kiln which is at the outcrop. |

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# APPENDIX E.

## *Table of geographical positions.*

| Number of camp. | Place of observation, and name of locality. | Distances, measured by odometer, in miles and hundredths. | | North latitude. | Longitude west from Greenwich. | | Authorities. |
|---|---|---|---|---|---|---|---|
| | | From camp to camp. | From Santa Fé. | | In time. | In arc. | |
| | | | | ° ′ ″ | h. m. s. | ° ′ ″ | |
| | Santa Fé | | | 35 41 06 | 7 04 10 | 106 02 30 | Bvt. Major W. H. Emory. |
| To 1 | Sieneguilla, on Rio Santa Fé | 16.02 | 16 02 | | | | |
| 2 | On Rio Grande, opposite Santo Domingo | 14.85 | 30.87 | 35 30 56 | 7 55 59 | 106 29 45 | Lieut. J. H. Simpson. |
| 3 | One-third of a mile north of Jémez | 26.60 | 57.47 | 35 36 07 | 7 07 25 | 106 51 15 | .....do. |
| 4 | Three miles south of San Isidora | 5.78 | 63.25 | | | | |
| 5 | On Rio de Chacoli | 16.27 | 79.52 | ..... | 7 08 13 | 107 03 15 | .....do. |
| 6 | Cañada de Piedra de Lumbre | 13.27 | 92.79 | 35 46 13 | | | |
| 7 | Cañon de Torrejon | 13.55 | 106.34 | 35 50 31 | 7 09 35 | 107 23 45 | .....do. |
| 8 | One mile S.E. of ruins of Pueblo Punado | 21.45 | 127.79 | 35 56 27 | 7 11 04 | 107 46 00 | .....do. |
| 9 | Vicinity of Méza Tachada | 14.86 | 142.65 | | | | |
| 10 | ..... | 24.53 | 167.18 | | | | |
| 11 | Tunéchá valley | 14.60 | 181.78 | 36 04 35 | 7 14 38 | 108 39 30 | .....do. |
| 12 | Tunéchá creek | 17.21 | 199.99 | 36 12 39 | 7 15 22.68 | 108 50 45 | .....do. |
| 13 | ..... | 4.32 | 203.31 | | | | |
| 14 | (Estimated) | 10.00 | 213.31 | 36 07 42 | 7 15 37 | 108 54 15 | .....do. |
| 15 | Pass Washington, (estimated) | 6.00 | 219.31 | 36 03 22 | 7 15 44 | 108 56 00 | .....do. |
| 16 | Sieneguilla Chicita, (estimated) | 12.00 | 231.31 | 36 02 07 | 7 16 23 | 109 06 45 | .....do. |
| 17 | Sieneguilla de Juanito | 13.43 | 244.74 | 36 10 36 | 7 16 49 | 109 12 15 | .....do. |
| 18 | Cascade creek | 7.39 | 252.13 | | | | |
| 19 | Two miles W. of N. from mouth of the cañon of Chelly | 26.45 | 278.58 | 36 09 04 | 7 18 50 | 109 42 30 | .....do. |
| 20 | Sierra de Laguna | 20.50 | 299.08 | | | | |
| 21 | Cañoncito Bonito | 24.83 | 323.91 | ..... | 7 17 02 | 109 15 30 | ..... do. |
| 22 | Spring | 23.02 | 346.93 | ..... | 7 17 14 | 109 18 30 | .....do. |
| 23 | ..... | 8.29 | 355.22 | | | | |
| 24 | ..... | 12.08 | 367.30 | 35 11 56 | 7 16 27 | 109 06 45 | .....do. |

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## APPENDIX E—Continued.

| Number of camp. | Place of observation, and name of locality. | Distances, measured by viameter, in miles and hundredths. | | North latitude. | Longitude west from Greenwich. | | Authorities. |
|---|---|---|---|---|---|---|---|
| | | From camp to camp. | From Santa Fé. | | In time. | In arc. | |
| | | | | ° ′ ″ | h. m. s. | ° ′ ″ | |
| 25 | Two and a half miles N.E. from Zuñi | 17.45 | 384 75 | | | | |
| 26 | Ojo del Pescado | 13.71 | 398.46 | 35 06 12 | 7 14 46 | 108 41 45 | Lieut. J. H. Simpson. |
| 27 | Ojo de Gallenas | 27.14 | 425 60 | | | | |
| 28 | Ojo del Gallo | 18 49 | 443.09 | 35 05 17 | ..... | ..... | .....do. |
| 29 | Two miles N.W. of Pueblo de Lagunes | 28.93 | 472.02 | 35 00 49 | ..... | ..... | .....do. |
| 30 | On Rio de San José | 18.51 | 491.53 | | | | |
| 31 | Atrisco, opposite Albuquerque | 28 33 | 519.86 | | | | |
| 32 | One mile above Bernalillo | 20.70 | 540.56 | | | | |
| 32 | Crossing of Rio Gallestio | 22.83 | 571.31 | | | | |
| 33 | Delgados Ranchó | 7.92 | | | | | |
| | Santa Fé | 15.80 | 581.11 | 35 41 06 | 7 04 10 | 106 02 30 | Bvt. Major W. H. Emory. |



## APPENDIX F.

### TABLE OF ASTRONOMICAL OBSERVATIONS.

AUGUST 14, 1849.—*Santa Fe, New Mexico.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 4 | 51 | 51 | 51 | 12 | 20 |
| 5 | 2 | 12 | 47 | 0 | 0 |
| 5 | 3 | 47 | 46 | 21 | 50 |
| 5 | 5 | 47 | 45 | 32 | 30 |
| 5 | 7 | 5 | 45 | 0 | 50 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 4 | 49 | 56.4 | 0 | 12 | 12 | 7 | 4 | 10 |

NOTE.—Index error of sextant = — 37 sec.; and this error was found to be so nearly constant during the several observations along the route, that it may be regarded as such without materially affecting the results.

Rate of chronometer, on a comparison of observation made at Santa Fe before and after the termination of the reconnoissance, found to be a gaining one 1.17 seconds; and this is the rate assumed in the determination of the geographical positions.

Civil time is made use of in all the observations.

The latitude and longitude of Santa Fe assumed, as determined absolutely by Brevet Major Emory in 1846, and to the latter are referred chronometrically the several geographical positions.—(*See table of geographical positions on Emory's map of* 1846–'47.)

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## APPENDIX F—Continued.

### AUGUST 17, 1849.—*Camp 2, on Rio Grande, opposite Santo Domingo.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 4 | 6 | 30 | 69 | 2 | 10 |
| 4 | 8 | 37 | 68 | 11 | 10 |
| 4 | 9 | 52 | 67 | 40 | 50 |
| 4 | 12 | 54 | 66 | 27 | 10 |
| 4 | 14 | 19 | 65 | 52 | 50 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 3 | 56 | 22.25 | 0 | 14 | 4.15 | 7 | 5 | 59 |

### AUGUST 18, 1849.—*Camp 2.*

DETERMINATION OF LATITUDE.

| Time—A. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 4 | 7 | 40 | 74 | 2 | 50 | 35 | 30 | 56 |
| 4 | 11 | 27 | 74 | 2 | 40 | | | |
| 4 | 13 | 35 | 74 | 1 | 0 | | | |
| 4 | 16 | 13 | 74 | 1 | 0 | | | |

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## APPENDIX F—Continued.

### August 19, 1849.—*Camp 3, one-third mile north of Jemez.*

DETERMINATION OF TIME.

| Time—A. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 17 | 33 | 63 | 19 | 40 |
| 8 | 18 | 57 | 63 | 53 | 40 |
| 8 | 20 | 29 | 64 | 30 | 30 |
| 8 | 22 | 22 | 65 | 15 | 50 |
| 8 | 23 | 30 | 65 | 43 | 40 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 8 | 5 | 1.9 | 0 | 15 | 32.3 | 7 | 7 | 25 |

### August 21, 1849.—*Camp 3, one-third mile north of Jemez.*

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 49 | 11 | 70 | 54 | 40 | 35 | 36 | 7 |
| 8 | 55 | 38 | 70 | 57 | 30 | | | |
| 8 | 59 | 21 | 71 | 0 | 30 | | | |
| 9 | 1 | 51 | 71 | 2 | 0 | | | |
| 9 | 3 | 50 | 71 | 3 | 30 | | | |
| 9 | 5 | 9 | 71 | 4 | 10 | | | |

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## APPENDIX F—Continued.

### August 24, 1849.—*Camp 5, valley of Chacoli.*

DETERMINATION OF TIME.

| Time—A. M. | | | Double altitudes of the sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 22 | 12 | 63 | 25 | 10 |
| 8 | 23 | 6 | 63 | 46 | 0 |
| 8 | 24 | 6 | 64 | 10 | 30 |
| 8 | 25 | 36 | 64 | 47 | 40 |
| 8 | 26 | 28 | 65 | 7 | 30 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 8 | 7 | 51.7 | 0 | 16 | 26.3 | 7 | 8 | 13 |

### August 25, 1849.—*Camp 6.*

DETERMINATION OF LATITUDE.

| Time—A. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 12 | 59 | 3 | 74 | 8 | 40 | 35 | 46 | 13 |
| 1 | 1 | 43 | 74 | 9 | 0 | | | |

NOTE.—Intervening clouds prevented more observations being taken.

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## APPENDIX F—Continued.

### August 25, 1849.—*Camp 7, Cañon de Torrejon.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 4 | 54 | 35 | 46 | 45 | 21 |
| 4 | 56 | 13 | 46 | 38 | 10 |
| 4 | 57 | 18 | 46 | 11 | 20 |
| 4 | 58 | 9 | 45 | 50 | 40 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 4 | 38 | 43.45 | 0 | 17 | 50.3 | 7 | 9 | 35 |

### August 25.—*Camp 7.*

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 42 | 0 | 71 | 26 | 10 | | | |
| 8 | 47 | 47 | 71 | 31 | 20 | | | |
| 8 | 51 | 37 | 71 | 33 | 10 | 35 | 50 | 31 |
| 8 | 53 | 58 | 71 | 36 | 10 | | | |
| 8 | 55 | 35 | 71 | 36 | 50 | | | |

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## APPENDIX F—Continued.

AUGUST 26, 1849.—*Camp* 8, *one mile south of ruins of Pueblo Pintado.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of Arcturus (in the west.) | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 30 | 42 | 61 | 32 | 50 |
| 8 | 32 | 35 | 60 | 48 | 20 |
| 8 | 34 | 3 | 60 | 12 | 50 |
| 8 | 37 | 41 | 58 | 44 | 10 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 8 | 14 | 25.7 | 0 | 19 | 20.18 | 7 | 11 | 4 |

AUGUST 26, 1849.—*Camp* 8.

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 46 | 21 | 71 | 43 | 50 | 35 | 56 | 27 |
| 8 | 48 | 0 | 71 | 45 | 30 | | | |
| 8 | 50 | 21 | 71 | 45 | 40 | | | |
| 8 | 51 | 34 | 71 | 47 | 20 | | | |
| 8 | 53 | 19 | 71 | 48 | 30 | | | |
| 8 | 55 | 38 | 71 | 51 | 40 | | | |

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## APPENDIX F—Continued.

### August 29, 1849.—*Camp* 11, *Tunéchá valley*.

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. | Deg. | min. | sec. |
| 8 | 18 | 43 | 71 | 43 | 50 | 36 | 4 | 35 |
| 8 | 20 | 47 | 71 | 45 | 30 | | | |
| 8 | 24 | 44 | 71 | 48 | 20 | | | |
| 8 | 26 | 37 | 71 | 51 | 40 | | | |
| 8 | 28 | 31 | 71 | 51 | 30 | | | |

### August 29, 1849.—*Camp* 11.

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of Arcturus (in the west.) | | |
|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. |
| 8 | 32 | 6 | 57 | 43 | 10 |
| 8 | 34 | 42 | 56 | 40 | 10 |
| 8 | 37 | 58 | 55 | 18 | 40 |
| 8 | 41 | 56 | 53 | 42 | 50 |
| 8 | 45 | 34 | 52 | 16 | 10 |
| 8 | 47 | 41 | 51 | 23 | 40 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | h. | min. | sec. | h. | min. | sec. |
| 8 | 17 | 1.70 | 0 | 22 | 57.80 | 7 | 14 | 38 |

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## APPENDIX F—Continued.

### August 30, 1849.—*Camp* 12, *Tunéchá creek*.

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. |
| 4 | 39 | 0 | 53 | 11 | 50 |
| 4 | 40 | 2 | 52 | 47 | 10 |
| 4 | 41 | 16 | 52 | 18 | 10 |
| 4 | 42 | 4 | 51 | 59 | 0 |
| 4 | 43 | 14 | 51 | 30 | 10 |
| 4 | 44 | 6 | 51 | 10 | 10 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | h. | min. | sec. | h. | min. | sec. |
| 4 | 17 | 53.93 | 0 | 23 | 43.40 | 7 | 15 | 22.68 |

### August 30, 1849.—*Camp* 12.

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. | Deg. | min. | sec. |
| 8 | 25 | 40 | 72 | 8 | 20 | 36 | 12 | 59 |
| 8 | 27 | 29 | 72 | 10 | 30 | | | |
| 8 | 30 | 6 | 72 | 12 | 40 | | | |
| 8 | 35 | 40 | 72 | 19 | 0 | | | |
| 8 | 37 | 46 | 72 | 19 | 10 | | | |
| 8 | 40 | 8 | 72 | 20 | 0 | | | |

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## APPENDIX F—Continued.

### SEPTEMBER 1, 1849.—*Camp* 14.

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. |
| 4 | 26 | 45 | 57 | 6 | 10 |
| 4 | 27 | 45 | 56 | 42 | 40 |
| 4 | 28 | 37 | 56 | 21 | 40 |
| 4 | 29 | 24 | 56 | 2 | 40 |
| 4 | 30 | 13 | 55 | 43 | 40 |
| 4 | 31 | 16 | 55 | 19 | 10 |
| 4 | 33 | 43 | 54 | 20 | 10 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | h. | min. | sec. | h. | min. | sec. |
| 4 | 5 | 39.89 | 0 | 24 | 0.54 | 1 | 15 | 37 |

### SEPTEMBER 1, 1849.—*Camp* 14.

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. | Deg. | min. | sec. |
| 8 | 50 | 47 | 71 | 43 | 50 | 36 | 7 | 42 |
| 8 | 3 | 8 | 71 | 46 | 50 | | | |
| 8 | 8 | 40 | 71 | 53 | 0 | | | |
| 8 | 11 | 39 | 71 | 52 | 30 | | | |
| 8 | 13 | 28 | 71 | 55 | 30 | | | |
| 8 | 14 | 48 | 71 | 55 | 10 | | | |

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## APPENDIX F—Continued.

SEPTEMBER 2, 1849.—*Camp* 15, *Pass Washington, Sierra de Tunéchú.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 4 | 44 | 53 | 49 | 23 | 40 |
| 4 | 46 | 21 | 48 | 48 | 40 |
| 4 | 47 | 51 | 48 | 12 | 30 |
| 4 | 48 | 56 | 47 | 46 | 40 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 4 | 22 | 52.25 | 0 | 24 | 8 | 7 | 15 | 44 |

SEPTEMBER 2, 1849.—*Camp* 15.

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 11 | 53 | 71 | 47 | 40 | 36 | 3 | 22 |
| 8 | 13 | 48 | 71 | 49 | 30 | | | |
| 8 | 18 | 37 | 71 | 53 | 40 | | | |
| 8 | 20 | 9 | 71 | 54 | 30 | | | |
| 8 | 24 | 20 | 71 | 58 | 20 | | | |
| 8 | 26 | 6 | 72 | 1 | 0 | | | |

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## APPENDIX F—Continued.

### SEPTEMBER 3, 1849.—*Camp* 16, *Rio Negro.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitude of sun's upper limb. | | |
|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. |
| 4 | 36 | 10 | 52 | 34 | 50 |
| 4 | 38 | 28 | 51 | 39 | 40 |
| 4 | 40 | 1 | 51 | 2 | 50 |
| 4 | 41 | 30 | 50 | 27 | 20 |
| 4 | 42 | 59 | 49 | 51 | 40 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | h. | min. | sec. | h. | min. | sec. |
| 4 | 15 | 26 | 0 | 24 | 47 | 7 | 16 | 23 |

### SEPTEMBER 3.—*Camp* 16.

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitude of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. | Deg. | min. | sec. |
| 8 | 12 | 15 | 71 | 47 | 50 | 36 | 2 | 7 |
| 8 | 14 | 2 | 71 | 50 | 50 | | | |
| 8 | 15 | 26 | 71 | 50 | 30 | | | |
| 8 | 18 | 20 | 71 | 52 | 50 | | | |
| 8 | 20 | 26 | 71 | 55 | 40 | | | |
| 8 | 22 | 21 | 71 | 55 | 50 | | | |



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## APPENDIX F—Continued.

### SEPTEMBER 4, 1849.—*Camp* 17, *Sienegulla de Juanita.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 4 | 35 | 47 | 52 | 18 | 30 |
| 4 | 37 | 21 | 51 | 41 | 10 |
| 4 | 38 | 43 | 51 | 8 | 40 |
| 4 | 39 | 55 | 50 | 40 | 30 |
| 4 | 40 | 58 | 50 | 15 | 0 |
| 4 | 41 | 48 | 49 | 55 | 0 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 4 | 13 | 48.53 | 0 | 25 | 16.80 | 7 | 16 | 49 |

### SEPTEMBER 4, 1849.—*Camp* 17.

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 4 | 33 | 72 | 1 | 30 | 36 | 10 | 36 |
| 8 | 6 | 12 | 72 | 3 | 30 | | | |
| 8 | 9 | 48 | 72 | 5 | 40 | | | |
| 8 | 12 | 31 | 72 | 8 | 10 | | | |
| 8 | 15 | 20 | 72 | 10 | 30 | | | |
| | 18 | 25 | 72 | 13 | 20 | | | |

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## APPPENDIX F—Continued.

SEPTEMBER 7, 1849.— *Camp 19, one-and-a-half mile northwest of mouth of canon of Chelly.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. |
| 8 | 45 | 6 | 63 | 30 | 50 |
| 8 | 48 | 52 | 65 | 20 | 10 |
| 8 | 50 | 54 | 65 | 44 | 10 |
| 8 | 52 | 10 | 66 | 13 | 10 |
| 8 | 53 | 27 | 66 | 42 | 30 |
| 8 | 54 | 53 | 67 | 15 | 20 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | h | min. | sec. | h. | min. | sec. |
| 8 | 23 | 43.66 | 0 | 27 | 20 | 7 | 15 | 50 |

SEPTEMBER 7, 1849.—*Camp* 19

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. | Deg. | min. | sec. |
| 8 | 12 | 34 | 72 | 12 | 50 | 36 | 9 | |
| 8 | 14 | 18 | 72 | 14 | 10 | | | |
| 8 | 16 | 6 | 72 | 16 | 20 | | | |
| 8 | 18 | 31 | 72 | 18 | 0 | | | |
| 8 | 20 | 17 | 72 | 18 | 50 | | | |
| 8 | 21 | 55 | 72 | 20 | 40 | | | |

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## APPENDIX F—Continued.

### SEPTEMBER 11, 1849.—*Camp 21, Cañoncito Bonito.*

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of Alpha Coronæ Borealis. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 47 | 0 | 71 | 0 | 30 |
| 8 | 48 | 40 | 70 | 19 | 0 |
| 8 | 51 | 53 | 69 | 2 | 0 |
| 8 | 53 | 38 | 68 | 20 | 50 |
| 8 | 55 | 35 | 67 | 35 | 10 |
| 8 | 57 | 55 | 66 | 37 | 0 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 8 | 26 | 49.83 | 0 | 25 | 37 | 7 | 17 | 2 |

### SEPTEMBER 13, 1849.—*Camp 22.*

DETERMINATION OF TIME.

| Time—A. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 16 | 31 | 51 | 18 | 40 |
| 8 | 18 | 21 | 52 | 2 | 50 |
| 8 | 19 | 16 | 52 | 23 | 20 |
| 8 | 20 | 7 | 52 | 43 | 0 |
| 8 | 21 | 10 | 53 | 8 | 20 |
| 8 | 25 | 6 | 54 | 40 | 30 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* |
| 7 | 54 | 14.49 | 0 | 25 | 50.68 | 7 | 17 | 14 |

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## APPENDIX F—Continued.

### SEPTEMBER 14, 1849.—*Camp* 24.

DETERMINATION OF TIME.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 3 | 49 | 4 | 64 | 57 | 0 |
| 3 | 50 | 7 | 64 | 32 | 50 |
| 3 | 50 | 55 | 64 | 14 | 30 |
| 3 | 51 | 46 | 63 | 54 | 50 |
| 3 | 52 | 45 | 63 | 32 | 10 |
| 3 | 53 | 30 | 63 | 15 | 10 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min* | *sec* | *h.* | *min.* | *sec.* |
| 3 | 26 | 12.87 | 0 | 25 | 8 30 | 7 | 16 | 27 |

### SEPTEMBER 14, 1849.—*Camp* 24.

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| *h.* | *min.* | *sec.* | *h.* | *min.* | *sec.* | *Deg.* | *min.* | *sec.* |
| 8 | 6 | 43 | 70 | 37 | 40 | 35 | 11 | 56 |
| 8 | 8 | 23 | 70 | 38 | 30 | | | |
| 8 | 9 | 43 | 70 | 40 | 20 | | | |
| 8 | 11 | 5 | 70 | 41 | 50 | | | |
| 8 | 13 | 10 | 70 | 43 | 50 | | | |
| 8 | 14 | 51 | 70 | 44 | 20 | | | |

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## APPENDIX F—Continued.

### SEPTEMBER 16, 1849.—*Camp 26, Ojo Pescado.*

DETERMINATION OF LONGITUDE.

| Time—P. M. | | | Double altitudes of sun's upper limb. | | |
|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. |
| 3 | 44 | 10 | 65 | 0 | 0 |
| 3 | 45 | 13 | 64 | 36 | 10 |
| 3 | 46 | 11 | 64 | 14 | 10 |
| 3 | 46 | 57 | 63 | 56 | 30 |
| 3 | 47 | 43 | 63 | 39 | 20 |
| 3 | 48 | 33 | 63 | 20 | 30 |

RESULT OF CALCULATION.

| Mean time. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | h. | min. | sec. | Deg. | min. | sec. |
| 3 | 23 | 0.54 | 0 | 23 | 27.29 | 7 | 14 | 46 |

### SEPTEMBER 16, 1849.—*Camp 26.*

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. | Deg. | min | sec. |
| 8 | 34 | 34 | 70 | 52 | 40 | 35 | 5 | 12 |
| 8 | 36 | 33 | 70 | 55 | 10 | | | |
| 8 | 38 | 10 | 70 | 55 | 30 | | | |
| 8 | 39 | 43 | 70 | 55 | 40 | | | |
| 8 | 40 | 46 | 70 | 56 | 40 | | | |
| 8 | 43 | 13 | 70 | 59 | 50 | | | |

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## APPENDIX F—Continued.

### SEPTEMBER 18, 1849.—*Camp 28, Ojo del Gallo.*

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min | sec. | Deg. | min. | sec. |
| 7 | 34 | 10 | 70 | 15 | 20 | | | |
| 7 | 38 | 32 | 70 | 17 | 50 | | | |
| 7 | 39 | 43 | 70 | 19 | 20 | 35 | 5 | 17 |
| 7 | 41 | 35 | 70 | 21 | 50 | | | |
| 7 | 42 | 55 | 70 | 21 | 40 | | | |
| 7 | 44 | 23 | 70 | 22 | 40 | | | |

### SEPTEMBER 19, 1849.—*Camp 29, 2 miles northwest of Pueblo of Laguna.*

DETERMINATION OF LATITUDE.

| Time—P. M. | | | Double altitudes of Polaris. | | | Resulting latitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. | Deg. | min. | sec. |
| 9 | 36 | 43 | 71 | 40 | 30 | | | |
| 9 | 48 | 8 | 71 | 50 | 10 | | | |
| 9 | 49 | 13 | 71 | 49 | 20 | 35 | 0 | 49 |
| 9 | 52 | 46 | 71 | 50 | 50 | | | |
| 9 | 54 | 21 | 71 | 55 | 20 | | | |
| 9 | 56 | 6 | 71 | 55 | 40 | | | |

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## APPENDIX F—Continued.

### SEPTEMBER 27, 1849.—*Santa Fe.*

DETERMINATION OF TIME.

| Time—A. M. | | | Equal altitudes of sun's upper limb. | | | Time—P. M. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | Deg. | min. | sec. | h. | min. | sec. |
| 8 | 59 | 28 | 66 | 36 | 40 | 3 | 7 | 58 |
| 9 | 0 | 34 | 66 | 59 | 30 | 3 | 6 | 51 |
| 9 | 1 | 30 | 67 | 18 | 20 | 3 | 5 | 58 |
| 9 | 2 | 25 | 67 | 37 | 40 | 3 | 5 | 3 |
| 9 | 3 | 48 | 68 | 6 | 10 | 3 | 3 | 40 |

RESULT OF CALCULATION.

| Mean time of apparent moon. | | | Chronometer fast. | | | Longitude. | | |
|---|---|---|---|---|---|---|---|---|
| h. | min. | sec. | h. | min. | sec. | h. | min. | sec. |
| 11 | 50 | 52.12 | 0 | 13 | 3.8 | 7 | 4 | 10 |

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## REPORT OF CAPTAIN R. B. MARCY.

FORT SMITH, ARKANSAS, *November* 20, 1849.

SIR: On the second day of April, 1849, I had the honor to receive the following orders from the headquarters of the 7th military department:

HEADQUARTERS SEVENTH MILITARY DEPARTMENT,
[ORDERS No. 5.] *Fort Smith, April* 2, 1849.

1. In compliance with "special orders" No. 6, dated Adjutant General's office, January 23, 1849, an escort consisting of one subaltern and thirty men of the 1st regiment of dragoons, and one captain, two subalterns, and fifty men of the 5th regiment of infantry, will leave Fort Smith, Arkansas, on the 5th instant, for Santa Fe, New Mexico, for the purpose of affording protection to our citizens emigrating to our newly acquired territories.

2. The quartermaster's department will, upon the requisition of the commanding officer, furnish ample transportation, funds, and such other facilities as may be necessary for the expedition. The commissary department will furnish the necessary funds and subsistence for five months.

3. The commanding officer of the escort will employ a citizen physician to accompany the troops to Santa Fe and back to Fort Smith; and the medical officer at this post will provide a good supply of medicines, hospital stores, &c., for the command.

Captain R. B. Marcy, the commanding officer, will receive a letter of instructions for his guidance on the march, before his departure from this post.

By command of Brigadier General Arbuckle.

F. F. FLINT,
*Acting Assistant Adujant General.*

Captain R. B. MARCY,
*Fifth Regiment Infantry, commanding escort.*

On the 4th day of April, 1849, the following letter of instructions was received by me:

HEADQUARTERS SEVENTH MILITARY DEPARTMENT,
*Fort Smith, April* 4, 1849.

CAPTAIN: The commanding general directs that you proceed with your command from this place, in accordance with department orders No. 5, along the valley of the main Canadian, wholly on the south side of the river, by the most direct practicable route, to your destination, Santa Fe, New Mexico. It is expected you will move forward as rapidly as possible, making such improvements, &c., in the road, as you may deem necessary, until you arrive near to Edwards', where you will secure an ample supply of corn and beeves, and, after remaining there a day or two, you will proceed slowly to the vicinity of Chouteau's, where (if not already overtaken by the Fort Smith company and others who intend starting about the 10th instant) you will await their arrival.

The principal objects of this expedition are: to ascertain and establish the best route from this point to New Mexico and California; to extend to such of our citizens as design leaving here in a few days and traversing your route such facilities as circumstances may require, and it is in our power to give, to insure them a safe and unmolested passage across the

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prairies; and to conciliate as far as possible the different tribes of Indians who inhabit the region of country through which you will pass.

With this view, therefore, you will cause an accurate examination of the country, survey, and measurement of the road travelled to be made, keeping a correct journal of each day's march; noting the distances between good camping places; whether wood and water are to be met with in abundance; and, in short, embracing all subjects worthy of observation, or that may be of interest or service to the future traveller. On reaching the "Grand Prairie," you will most undoubtedly meet with the Comanches; should you do so, you will hold a "talk" with them, and present the principal chiefs with a few pipes and some tobacco, informing them that the present is intended to remind them of the treaty they made with the whites, through General Arbuckle and others, some years ago, at "Camp Holmes," or "Chouteau's Trading house," near the Canadian, in which they stipulated that our citizens should be permitted to pass through their country in safety and without molestation; and that, as a great number of our people will probably travel over the road which is being established to New Mexico by the President of the United States, it is hoped they will remember their promises, &c. You will also endeavor to create and maintain a good understanding with such other tribes as you may chance to meet with, by presents of pipes and tobacco, kind and friendly intercourse, and by preventing the occurrence of any such acts on the part of your men or others as may tend to diminish their confidence in our citizens, alienate their friendly feelings, or excite in them a spirit of hostility and revenge.

If you should find among the Comanches an intelligent Indian who is acquainted with the country between the "Plains" and the Del Norte, and who knows that there is a good pass through the mountains practicable for wagons, from some point on the Del Norte about one hundred and eighty or two hundred miles below Santa Fe, you are authorized to employ him to accompany you as a guide. And in case you should be fully convinced of the correctness of his statements from information received on your arrival at Santa Fe, and that you can march from that point on the Del Norte to the "Plains," or to your outward trail intersecting it, perhaps somewhere near the mouth of Dry river, in *perfect safety*, and without subjecting your command to the necessity of encountering severe trials or hardships, you will return by that route; but if otherwise, you will furnish the commanding officer at Santa Fe with a copy of your field notes west of Dry river, and, after having sufficiently recruited your animals and refreshed your men, you will return with your command to Fort Smith with as little delay as convenience permits.

You are, doubtless, well aware of the importance and necessity of the strictest vigilance and care, at all times and under all circumstances, upon an expedition of this nature; and much must, from the necessity of the case, be left to the discretion of the commanding officer, who, as circumstances arise, should shape his course and make his arrangements accordingly, having a view to the main objects to be attained.

It is understood that an engineer officer will arrive in the course of a few days to accompany your command. If he should join you on the march, you will, of course, afford him every facility necessary to enable

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him to properly discharge his duties. You will please avail yourself of favorable opportunities to report your progress, &c.

I am, sir, very respectfully, your obedient servant,

F. F. FLINT,
*Assistant Acting Adjutant General.*

Captain R. B. MARCY,
*Fifth Regiment Infantry, commanding Santa Fe Expedition,*
*Fort Smith, Arkansas.*

In obedience to the foregoing orders, I employed Dr. Julian Rogers, of Wilmington, Delaware. to act as physician to the escort, and made requisitions upon the quartermaster's and subsistence departments for such supplies as I thought would be necessary for an expedition of this kind, all of which were furnished promptly. I would remark, however, that many of the mules furnished were those which had been driven from Mexico at the close of the war, and, being poor, were not such as I should have selected. In consequence of this, we were longer upon the road than we otherwise should have been, as we were obliged to make short marches and stop frequently to recruit them.

The detachment, as organized at Fort Smith, consisted of Lieutenant J. Buford, and twenty-six non-commissioned officers and privates of F company 1st dragoons, and Lieutenants M. P. Harrison and J. Updegraff, with fifty non-commissioned officers and privates of the 5th infantry.

Twenty men of this detachment, under the command of Lieutenant J. Updegraff, as you are aware, had been previously sent forward upon the route to assist Captain Dent, 5th infantry, in making an examination of the country upon the south side of the Canadian river as far as near Edwards' Trading-house, and to open a road for wagons through the heavily-timbered country between Fort Smith and that point.

The road having been surveyed and measured by Captain Dent as far as the point where I overtook him, and he having made a report of the same, I shall pass briefly over this portion of our route, remarking that my report of this part of the road, so far as relates to courses and distances, is based entirely upon the notes furnished by that officer, and that I have connected his survey with my own upon the accompanying map in such a manner as to give all the information which is necessary for travellers over the road.

The character of the country upon our route for the first hundred and fifty miles from Fort Smith is of such a nature that it becomes extremely soft and boggy in a wet season, and is then almost impassable for loaded wagons, except in the beaten roads. It is generally a soft alluvial soil upon a substratum of quicksand, covered with a heavy growth of timber, mostly post oak; and before the road is packed, it will often be heavy.

Previous to and after my departure from Fort Smith, there had been very frequent rains throughout the whole country over which we passed, and the earth had become perfectly saturated with water; indeed, it was often remarked that there had not been so wet a season for many years. For this reason, our progress in making a new road upon the first part of our route and passing over it with loaded wagons was necessarily very slow, and caused some of the emigrants to think that a better route could have been selected.

This part of the road, however, is much more directly on our course

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than the old road to Little river, and will, in addition to being some thirty miles shorter, be as good, when it has been travelled sufficiently to beat down the earth and pack it. Another advantage which this road possesses over the old road is in the fact, that upon the latter there are large streams to cross, which often detain the traveller for several days; whereas, upon the new road there are no large streams, as it continues altogether upon the south side of the Canadian.

Upon the map which accompanies this report I have noted our camps, and in a table laid down the distances between each, and have also noted the best places for encamping: these I have intended as daily stages for travellers with loaded wagons, and they can easily be made with mule or ox teams. Where there is no wood (and there are but few such places) will be seen by a reference to the table: at such places, a supply for cooking should be carried forward from the previous camp. Generally there is an abundance of wood, water, and grass at all the camping places upon the road.

For the first hundred and fifty miles from Fort Smith the road passes over a gently undulating country, mostly timbered, but interspersed with small prairies affording excellent grass, and the numerous small creeks and rivulets give the traveller an opportunity of encamping at almost any place he may desire.

Beyond this we struck the plains, where wood and water are not so abundant, yet there is no place upon the whole road where a very long drive has to be made to get water.

After reaching the prairie, west of the upper Cross Timbers, the ground is then as smooth and firm as the macadamized road almost the entire distance to Santa Fe.

From Fort Smith to Santa Fe, the road was measured with a chain and viameter; the measurement by the chain was a little less than that of the viameter, as the latter, being attached to a wheel, measured all the slight inequalities of ground over which the wheel passed, whereas the chain, being held horizontal, was more accurate; I have therefore given the distances as determined therewith.

In returning from the "Rio del Norte," by the southern route, I only used the viameter, and made a deduction of the same *per centage* in the distance determined as was found between the two measurements in going out.

The bearing, or course of our road, was taken with a compass every mile, and a mean of the observations taken during each day has been assumed as the course for that day's march.

The variation of the needle was determined by Lieutenant Simpson, (the topographical officer who accompanied the escort,) at four different points on our outward route; and by myself at four points, about equal distances from each other, between the Rio del Norte and Fort Smith, in returning. Between these points a mean of the observation, on each side, has been taken as the correct magnetic variation for that portion of the road.

With these data, and personal observations, together with information obtained from guides and others who could be relied upon, I have plotted my map. As I have thought that a better idea of the country over which we passed could be had by making this report in the form of a journal, I have accordingly adopted that plan, and shall commence it at the point

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where I overtook Captain Dent, after making a few remarks upon the country we passed over before reaching him.

Our "train," consisting of eighteen wagons, one six-pounder iron gun and a travelling forge, each drawn by six mules, crossed the Poteau river at Fort Smith, on the evening of the 4th of April, 1849. On the morning of the 5th we commenced our march, keeping the old road through the Poteau bottom, to the Choctaw agency. Two miles from here there are three roads; the left is the old road to Fort Washita, the right leads to Edwards' trading house, and the middle one is our road: keeping this, our course is 20° south of west, passing over a smooth and gently rolling country of timber and small prairies until we reach the "Sansbois," (forty-seven miles from Fort Smith.)

This stream is an affluent of the Canadian, and can be forded at almost any stage of water. It is sixty feet wide, two and a half feet deep at a medium stage, and not rapid.

From the Sans Bois to Cooper's creek the course is 20° 30′ south of west.

Our road lay between two ranges of low mountains, in a beautiful prairie valley, and ascended very gradually until we reached the summit of the ridge dividing the waters of the Sansbois from those of the south fork of the Canadian or Gaines's creek.

From Cooper's creek to where the road touches a bend of the Sans Bois, sixty-one miles from Fort Smith, our course was west; from that point to the summit of the dividing ridge, 30° south of west, and from thence to the south fork of the Canadian, 20° south of west.

The south fork of the Canadian is 76½ miles from Fort Smith; is one hundred feet wide, and twelve feet in depth at the ferry. There is a ford about three hundred yards above the ferry, where the stream can be crossed when the water is not high.

From here our course was 18° south of west, over a rolling prairie, for ten miles, until we struck the bottom of Coal creek, 88 miles from Fort Smith.

The creek is thirty yards wide, has a gravelly bed, with two feet of water in the channel. Although it is sometimes above fording for a few days at a time, yet it can generally be crossed without difficulty. We worked upon the banks and made a good passage for wagons.

Bituminous coal is found upon this creek, and used by the blacksmiths of the country, who pronounce it of an excellent quality.

From here to the Shawnee trail, our road runs 15° south of west; from thence to the second ford of Coal creek, 30° 30′ south of west; thence to Little Cedar mountain, 100 miles from Fort Smith, the course is 22° south of west; here the road runs 18° north of west to Stony Point, 5° north of west to the Shawnee village, and 26° south of west to Shawneetown, 125 miles from Fort Smith.

At this place the road forks; the right going to Edwards' trading house, (eight miles off,) and the left is our trail. Should travellers desire to purchase supplies, this is the last point where they can be obtained, as the road here leaves the settlements. Horses, cattle, corn, and many articles of merchandise, can be had at Edwards' settlement, on the north side of the Canadian.

While here I engaged a Delaware Indian, named "Black Beaver," to accompany us as guide and interpreter; and he proved to be a most use-

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ful man. He has travelled a great deal among many of the western and northern tribes of Indians, is well acquainted with their character and habits, and converses fluently with the Comanches and most of the other prairie tribes.

He has spent five years in Oregon and California—two years among the Crow and Black Feet Indians; has trapped beaver in the Gila, the Columbia, the Rio Grande, and the Pecos; has crossed the Rocky mountains at many different points, and indeed is one of those men that are seldom met with except in the mountains.

While encamped opposite the mouth of Little river, we were visited by some of the Shawnees who live in the vicinity, and I discovered, much to my surprise, that their language was very similar to that of the Chippewas; indeed, many of their words were the same: for instance, they both call fire "*scota*," water "*nepish*," tobacco "*sama*," bear "*mucqua*," and many others are the same. They live principally by agriculture, and have some good farms; they raise corn, wheat, cattle, hogs, and horses, and appear to have an abundance of everything.

On the 1st of May we left our camp, opposite Edwards', taking a course almost south, gradually turning to the west to pass around mountains which border the Canadian, until we reached the Delaware mountain, 146 miles from Fort Smith.

The country is here very beautiful, being a rolling prairie, with numerous small islands or groves of timber, and many streams of pure spring water, skirted with trees of different kinds.

The soil is of a good quality, resting upon a basis of limestone, and in every respect well adapted to cultivation.

From the Delaware mountain, our road passed by a gradual and easy ascent up the ridge dividing the "Boggy" (a tributary of Red river) from the waters of the Canadian. Directly where we passed, there is a high, round mound, and upon the top a pile of rocks, which can be seen for a long distance around, and is a good landmark for the traveller. One mile from this mound we reached a beautifully clear, rapid stream, abounding with fish, and here we found Captain Dent encamped. After he had furnished me with a copy of his field-notes, he turned back for Fort Smith, and I proceeded on, taking Lieutenant Updegraff and the detachment under his command. Seven miles from where we overtook Captain Dent, we crossed another and much larger stream, thirty yards wide and one foot deep, with a very rapid current: this is called by the Indians "To-paf-kees" creek. There is walnut, oak, ash, and other kinds of hard timber, growing upon the creek, but no grass; about a mile from here, however, at the border of the prairie, we found good grass, and encamped on the night of the 3d of May.

*May* 4.—We did not move to-day, as it has rained most violently all day: the earth has become very soft, and the creeks are full.

*May* 5.—We made an early start this morning and travelled over a beautiful prairie, crossing two small streams (affluents of the Washita) which are called, after they unite, "Mustang creek," from the fact that wild horses are often found upon it.

As Beaver assured me that we should find no more hickory timber after passing this stream, I procured an extra supply of poles, axles, and hounds for our wagons, to serve us across the "plains," and would ad-

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vise all persons passing over the road to do the same, as, after passing here, there is no suitable timber for such purposes.

I saw to-day, for the first time, the "mezquite" grass, and it is probably this which attracts the wild horses, as they are very fond of and soon fatten upon it.

The hills we passed to-day are of a red sandstone formation, highly ferruginous, and in a state of decomposition. Limestone is also found in places. The country, as we advance, is becoming more destitute of timber.

*May* 6.—It rained during the whole of last night, and has made our road so heavy that I have concluded to "lie by" until to-morrow. This evening we have another thunder storm, accompanied by the most intensely vivid lightning I have ever seen. The whole artillery of heaven appears to be playing; and, as the sound reverberates in the distance over the vast expanse of prairie, the effect is indeed most awfully sublime. Upon such an occasion one realizes truly the wonderful power and majesty of the Deity, and the total insignificance of man. While I am writing the rain pours down in torrents, and the wind comes whistling over the distant plain with terrific violence. The flies of our tents, soaked with the driving storm, and drawn to their utmost tension by the shrinking of the cords, strike the tents with such force as to produce reports like pistols. The whole surface of the earth is deluged with water.

*May* 7.—We were so fortunate as to keep our tents in an upright position last night, and the storm ceased after about two hours' duration. Making a start this morning, by hard work on our men and animals we made five miles. The country has been rolling prairie, with several small patches of oak and elm timber. The soil continues highly charged with iron and of a deep red color; it is, however, becoming thin and poor as we advance. At our camp of this evening we can see the valleys of both the Washita and the Canadian, and we are now upon the ridge dividing the waters of these two rivers. As we are now coming into the vicinity of the Comanche "range," I have given orders for cartridges to be issued to the command, and shall take up our line of march from this time in the following order: the dragoons in advance about one mile from the train, the main body of the escort directly in front of the train, the cannon in the centre, and the guard in the rear.

*May* 8.—We marched eleven miles to-day, and struck the dividing ridge after crossing a stream some five miles from our camp of last night. We found many small branches rising near the summit of the ridge, running off into the Washita and Canadian; they are skirted with trees sufficient for fuel, and in many of them there is water near the road; they thus afford good camping places. Our road approached near and in view of the Canadian; a short distance of our camp of to-night we could discover much more timber upon the opposite bank. The grass continues good, but the soil is of a poor quality.

*May* 9.—We resumed our march this morning, keeping the high prairie Divide for seventeen miles, where the ridges turns to the left, nearly opposite "Old Fort Holmes." As the Fort Smith company have not yet reached us, we shall await their arrival here, as ordered. The cause of their delay has been, that they crossed the Canadian at Edwards', and have found the road much worse than on this side. The country we have passed over to-day has been entirely prairie, with the exception of a

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few scattering trees upon the borders of the branches heading near the crest of the "Divide." As we are now near the eastern borders of the "Lower Cross Timbers," I shall start out in the morning and endeavor to find a good road to pass our wagons through.

*May* 10.—Taking Beaver with me, I started out this morning to examine the country ahead. We found that the Divide turned south into the Cross Timbers, was very circuitous in its course, and extended some fifteen miles before it came out upon the prairie west of the "Timbers." It would have required several days' labor to open a road upon the "Divide," and I determined to make a further examination. On our return to camp, we followed down a creek called "Chouteau's creek," which heads near where we turned, and runs almost a due east course between the "Cross Timbers" and the Canadian; we found a smooth prairie along the bank of the creek, and encamped at sundown. As we had taken nothing from camp with us except some hard bread and tea, I began to be fearful towards night that our supper would be but a sorry one, and intimated as much to the Indian, telling him "that a good hunter should certainly kill game enough for two men's supper;" soon after this he discovered a turkey upon the prairie, and, putting spurs to his horse, started after him at full speed. I thought this a novel method of hunting wild turkeys, and looked on the chase with a good deal of interest, particularly as I knew that the quality of our supper depended upon the result. The turkey was about half a mile ahead at the start, and made good running for a short time, but soon found it necessary to resort to flight. The hunter followed on till the turkey alighted and ran into a timbered ravine; he still followed out of sight with his horse, but soon appeared again with a stick driving the exhausted bird before him. I expressed much surprise at the facility with which he run down and caught the turkey; but he informed me that they seldom ever fly more than twice before they become exhausted, and are then easily taken.

*May* 11.—This morning we continued down the creek upon a narrow strip of prairie lying between the "Cross Timbers" and the creek, which led us back to camp in a direct course.

*May* 12.—As the Fort Smith company have not arrived, we are burning a small coal-pit, sufficient to serve us across the "plains." This evening I received a note from Captain Dillard, of the Fort Smith company, informing me that he will join us in three days. He has had great difficulty in passing over the road upon the north side of the Canadian, and the company express much regret that they were not governed by his wishes to follow upon our trail; they promise to do so in future.

*May* 13.—We remained in camp to-day, waiting Captain Dillard's arrival, but shall move forward to-morrow about five miles, for the purpose of bridging two small streams which intersect our route and run into Chouteau's creek.

*May* 14.—Starting this morning, we marched to the first creek, bridged it, and encamped upon the second; they are spring brooks rising in the "Timbers," and have good water in them at all seasons of the year. Upon the banks of Chouteau's creek there is cottonwood, elm, hackberry, and a species of oak bearing an acorn about the size of a black walnut, with a very thick bur, and a fringe at the top of it encircling the nut; this is called by the Indians "overcup." This evening there suddenly arose one of the most terrific storms I ever witnessed—it was a perfect

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tornado; the first blast laid nearly every tent in the camp flat upon the ground, and sent beds, trunks, and tables whirling and tumbling in every direction. Our camp presented for a few minutes a most perfect scene of confusion. As I looked out from under my tent, (which had fallen upon me and held me fast,) I saw, by the incessant flashes of lightning, officers and men running in all directions through the rain—some trying to find shelter, and others following up a hat, blanket, or tent which the gale had seized upon and was carrying off upon the prairie. Nothing could resist the violence of the storm; it continued about an hour, when the wind abated, and we went to work to put up our tents again. Everything is soaked, and we shall remain to-morrow to dry, when we hope to be joined by the Fort Smith company.

*May* 15.—This has been a day of general drying throughout camp, and we are now ready to move forward again, as soon as we learn that Captain Dillard is near us. Dr. Rogers was so unfortunate as to have all his botanical specimens ruined by the storm last night; this is to be much regretted, as he had a great variety of plants and flowers which he will not meet with again, being near the Grand Prairie where the character of vegetation is entirely different from what we have passed.

*May* 16.—Learning that the Fort Smith company are near us, upon the other side of the creek, I started this morning and moved a few miles up the valley.

The grass in the creek bottom is fine and the soil good.

*May* 17.—This morning we continued up the creek for about a mile, then turned to the left, and struck the Divide in the "Cross Timbers;" after marching six miles, we reached the large prairie between the two "Cross Timbers" and encamped upon the head of Chouteau's creek, where we found good grass, fine clear spring water, and oak wood.

Through the "Cross Timbers" the wood is black-jack, post oak, overcup, and hackberry. The soil is gravelly sand, and the rocks a dark, hard sandstone. I found iron ore upon Chouteau's creek, and the soil continues to be ferruginous. We have seen some deer to-day; but game is not abundant.

*May* 18.—Continuing upon the high and dry dividing ridge, we made eleven miles; the soil is of a good quality, but there is no timber and but little water; we, however, found wood, water, and grass sufficient for camping purposes. We have seen occasionally detached pieces of gypsum to-day, and some limestone, but the rocks have generally been a soft, coarse standstone. Our road approached within two miles of the Canadian at one point of our march to-day, and directly at this place we were opposite the mouth of "Spring creek," a very beautiful stream of pure spring water; has good grass upon it, and wood sufficient for camping purposes. The Fort Smith company joined us yesterday, and we shall now move on more rapidly.

*May* 20.—This being Sunday, and a very rainy day, we remained in camp; the rain commenced with one of those thunder showers which are so frequent upon the prairies, and, as usual, it was accompanied by a perfect tempest of wind. We are now near the "Upper Cross Timbers," and I find upon examination that we cannot follow the "Divide" through, as it becomes very rough and broken immediately upon entering the timber. I shall, therefore, leave the "Divide," cross Spring creek, and take the high prairie



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between that stream and the Canadian. In this way I shall be enabled to pass on the prairie entirely around the Upper Cross Timbers.

I met with the wild squash to-day; it has much the appearance of the cultivated varieties, except that the leaves are of a light blue color; they are now in blossom.

*May* 21.—Our road to-day continued on the "Divide" for three miles, when, coming near the Timbers, we turned to the right and took the prairie valley up "Spring creek," skirting the lower edge of the "Cross Timbers;" here we found a fine road, and moved along with great ease to our animals. We encamped upon one of the numerous spring branches which flow into Spring creek, and found an abundance of good wood, water, and grass.

*May* 22.—This morning we continued up the south side of the creek for three miles further, where we turned to the right and crossed to the dividing ridge lying between the creek and the Canadian; at the point where the road strikes the crest of the ridge we found ourselves only one mile from the river, and continued that distance from it until we reached the head of Spring creek, where we encamped, making our day's march sixteen miles. The valley of Spring creek is beautifully situated for farms; slopes gently to the south, and is a mile in width, abundantly watered, arable soil, and timbered with black walnut, elm, hackberry, and cottonwood. It is in the immediate vicinity of the Upper Cross Timbers, where post-oak timber is abundant, affording a good material for building and fencing purposes. It is also directly opposite the head of the Little Washita river, where there is said to be hickory and sugar-maple timber, within a distance of ten miles from this place.

These advantages, in connexion with the fact that there are no other streams for three hundred miles west of here upon our route, which have good soil, or any other building timber except cottonwood, (and that in very small quantities,) render this stream a suitable point for the establishment of a military station, should the government determine to place troops upon this road. It is also a place where the Comanches and Kioways frequently resort for the purpose of killing buffaloes. Moreover, no settlements can be made upon our road west of this point, as there is no place where the soil and timber will admit of it.

*May* 23.—We turned slightly to the left this morning, and, after travelling two miles, struck the main "Divide" of Washita and Canadian. Continuing on this "Divide" for thirteen miles, we passed several high round mounds of a very soft red sandstone, rising up almost perpendicularly out of the open table land, and can be seen for a long distance before reaching them. At the base of the southern mound, following an old Indian trail, it led us down into a deep ravine, where there is a fine spring of cool water, with wood and grass.

Our road from here took a direct course for a point of timber which can be seen from the top of the largest mound, but deviates somewhat from the general bearing. As we found little water to-day, we made this digression for the purpose of seeking a camping-place, and were much delighted, on arriving at the timber, to find a splendid spring of water, rising in a basin of white limestone, as perfectly hollowed out as it could have been done by art, and filled with fine cool water. About five hundred yards below this the stream formed by the water of the spring becomes enlarged, and contains an abundance of sunfish.

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The soil upon our route to-day has been gravelly sand, and no timber except upon the borders of ravines. There is wood sufficient for encamping upon this stream, and fine grass.

*May* 24.—Our road continued on the Divide during the whole day, and was very fine and good. We are now passing through a country when gypsum is found in great quantities: in many places the surface of the earth is covered with a white incruscation of decomposed gypsum, and frequently large blocks were seen, in which there were all varieties, from beautiful transparent selenite to common "plaster of Paris," gradually merging from opaque to pure transparent. The fibrous varieties were also found frequently. The soil upon our road has been very poor, and but little water; at our encampment to night we have water that is bitter and unpalatable, but will answer for cooking when none other can be obtained.

*May* 25.—Our road has kept the Divide all day and, as usual, was firm and smooth; passes over a gypsum formation, and many off the hills have been entirely composed of it. At our camp we have good wood and grass, but the water is as usual where gypsum abounds—far from being sweet.

We have seen many antelopes and turkeys during the last few days, but deer are becoming scarce as we advance. Buffalo tracks have been seen frequently, but as yet none of the animals themselves.

*May* 26.—We continued to follow the dividing ridge to-day for thirteen miles, when we came to a large lateral ridge, running off from the main Divide, which we followed, and did not discover our mistake until we had gone about three miles, where we encamped on a branch of the Canadian.

We found the wood and grass good, but the water continues slightly saline. There is elm, cottonwood, hackberry, and wild china upon the creek where we are encamped. As I was riding in advance of the train to-day I saw the first buffalo; there were two bulls, quietly feeding, about three miles from me. I gave them a chase of about ten miles, fired some five or six balls into one of them, but did not succeed in getting him to the ground. I had a most exciting chase, but it was very severe upon my horse, and I have no doubt it injured him more than three weeks' travelling. Poor fellow! he performed his part most nobly, for which I rewarded him with a good feed of corn on my return to camp; and, as he had been living on grass alone for several weeks, I have no doubt he felt well rewarded for his labor—at all events, his countenance assumed a most grateful expression when it was placed before him.

*May* 27.—To-day, (Sunday,) in accordance with a rule I have adopted, we "lay by," to give the men time to wash, and the animals to graze and recruit.

*May* 28.—We retraced our steps back to the dividing ridge this morning, and placed a stake, with directions to those following us "to keep the left hand trace." Our road passed from here to our camp upon high rolling prairie; with no water or wood, and we were obliged to turn from the dividing ridge down to the bank of the Canadian. We passed down over a gap in the bluffs; found good wood, water, and grass.

*May* 29.—The country we have passed over to day, near the Divide, has been principally a formation of gypsum and blue limestone ledges, in which we discovered petrifactions of oysters and muscles. These are the first fossils we have seen upon our road.

We encamped on a branch of the Little Washita; found wood and

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grass abundant. The country between our road and the two rivers is much broken by hills and ravines, which appear to have been thrown up without the slightest reference to finish or utility; and I am convinced that the only place along near our route where a natural wagon road can be found is directly upon the crest of the Divide. From a high ridge near our camp we can see the Antelope, or Boundary mounds, far to the west.

*May* 30.—Our road was upon the dividing ridge all day, and very firm and smooth, but somewhat circuitous, following the windings of the "Divide;" this has generally been very direct, and, for the two hundred miles we have travelled upon it, I have never seen a better natural road. The country upon each side falling off towards the Canadian and Washita, leaves the crest perfectly dry at all seasons. There are numerous small branches rising near the road which are skirted with timber and grass, thereby giving the traveller an opportunity to encamp at almost any time he feels disposed. The soil is unfit for cultivation, being a hard gravelly sand, and very poor. We left the Divide near our camp, and are upon a branch of the Canadian; the water, wood, and grass are good.

*May* 31 —This morning we followed down the creek, and travelled for several miles upon the Canadian; finding this part of our road sandy, however, we soon turned back, and came upon the high prairie between two of the Antelope buttes. These hills are about one hundred and fifty feet high, of porous sandstone, and appear to be the result of volcanic action. They rise almost perpendicularly from the smooth prairie, are flat upon the top, and present every indication of having been raised out of the earth by volcanic agency. They are near the 100th degree of longitude, and are sometimes called the Boundary mounds, as being near the line formerly claimed by Texas as her eastern boundary. We encamped this evening without wood at some holes of water in the prairie; we could have found wood by going six miles further, but our mules were wearied, and I concluded to use the "buffalo chips" rather than drive that distance.

*June* 1.—Taking the "Divide" again this morning, we marched fourteen miles over a very direct and firm road, without a hill or ravine, until we reached our camp, upon a small lake on the high prairie. There is an abundance of never-failing water in the lake, and the buffalo grass grows luxuriantly upon its banks. This grass is very short and thick; but animals are extravagantly fond of it, and it is very nutritious. There are hills about a mile to the east of the lake similar to the "Antelope buttes;" these can be seen for a long distance upon our road, and are good landmarks. As it is half a mile from the lake to the nearest wood, I would recommend to travellers to throw a few sticks for cooking into their wagons before reaching here. We received a visit this evening from four Kioway Indians, dressed in their war costume, and armed with rifles, bows, lances, and shields. They were on their way (as they told us) to Chihuahua, Mexico, where they were going to steal mules and horses, and expected to be absent from here a year or more. I brought them into camp, presented them with some tobacco and pipes, gave them supper, and told them that we were disposed to be friendly and at peace with the Kioways; that it was the desire of their "great father," the President of the United States, to be on terms of peace with all his "red children." This appeared to please them, and they replied that they

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would communicate my "talk" to their people, who live forty miles north of here upon the north fork of the Canadian. I was much surprised at the ease and facility with which "Beaver" communicated with them by pantomime. This appears to be a universal language among Indians, and the same signs and gestures are made use of and understood by all tribes. The grace and rapidity with which this mute conversation was carried on upon a variety of topics relative to our road and their own affairs astonished me beyond measure. I had no idea before that the Indians were such adepts at pantomime; and I have no hesitation in saying that they would compare with the most accomplished performers of our operas.

*June* 2.—We travelled sixteen miles to-day over a very good road, with but little water near it, however, until we reached our present camp; here we have wood and water in a ravine. The country, as we advance, becomes gradually higher, and the soil continues poor, with but little timber. We are yet upon the "Divide" of the Washita and Canadian—about five miles from the latter, and three miles from a large branch of the former. The wife of one of the emigrants encamped near us has been sick for several days, and reported to-night as very low. The fatigue and inconveniences to which she is necessarily exposed in a journey over the prairies, has, no doubt, had a tendency to aggravate her disease. Being a lady of delicate constitution, and having never before been subjected to the privations and hardships of a camp life, she is but poorly fitted to endure in sickness a march of this kind.

*June* 3.—This being Sunday, we stopped to recruit our men and animals.

*June* 4.—We made a march of ten miles to-day, and reached Dry river, crossed and encamped on the west bank. We found bluffs about two hundred feet high on the east side, very abrupt, and crowned with ledges of sandstone; but after a short examination, discovered a pass which led us by a very gradual descent to the river bottom. The distance between the top of the bluffs, from one side of the stream to those of the other, is five miles, and the valley where we crossed about two miles in width. There is wood, water, and grass in abundance here, and it is a fine camping place. The bed of the stream is one hundred and fifty feet from bank to bank; but when we arrived in the evening there was no water, except in holes. The next morning, however, there was water running over the quicksand, forming a stream some ten feet wide. I could account for this in no other way than from the fact that the quicksand absorbs a large portion of the water flowing through the stream, and in the daytime the sun evaporates the remainder; but in the night, there being but little evaporation, the water not absorbed passes off over the bed of the river.

On approaching Dry river from the east, our road passed up the ridge dividing the head branches of the Washita from "Dry river;" here the Divide, which our road has followed about two hundred and fifty miles, turns away to the south, and from this place we see it no more. I am informed by Beaver, who is well acquainted with this part of the country, that this stream has its source in an extensive salt plain southwest of here, and that "Red river," which has never been explored to its head, rises in the same plain, and near the same place. It has generally been supposed that Red river extended far west of here, near the Pecos, and

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passed through a portion of the "Llano Estacado," but Beaver says it rises east of that plain. The Canadian, for the last two days' travel, has been shut in by high bluffs on each side, and the country between the bluffs and our road much broken by sharp round hills and deep gulleys.

The soil in this vicinity is totally worthless and unproductive; no timber fit for building, and but little water. We have seen many fresh Indian "signs" to-day, but no Indians. I have cautioned the emigrants to be vigilant in guarding their animals, as many of them continue to be very careless.

*June* 5.—We ascended this morning, through a smooth pass, to the top of the western bluff of Dry river, where we found ourselves upon a very elevated plain which divides the waters of Dry river from the Canadian. Passing along this on our course we made seventeen miles and encamped upon a small tributary of the Canadian, where we found good water, but standing in holes along the bed of the creek. We passed several of these streams to-day, and they were all similar to this. The soil is still poor, and wood scarce. The formation of the bluffs near our camp is sandstone of a very soft and porous character.

*June* 6.—We made a drive of twenty-two and a half miles to-day, but did not follow the "Divide" far, as it turned too much south. We crossed several dry ravines, where there will generally be water found, as it is but a few days since they became dry. We, however, found no water until we arrived at our present camp. This is upon a very beautiful, clear stream of spring water. The valley through which the stream runs is about five miles wide, and has a great deal of large cottonwood timber upon it. The grass is of the best quality, (mezquite,) and there is a little arable soil upon the banks of the creek. This is the largest affluent of the Canadian we have passed since leaving Spring creek. Notwithstanding it runs over a very wide bed of quicksand, yet there will always be running water found here, as the stream is fed by numerous large springs. It is one of the best camping places upon the road, and as some of our wagon tires are loose and require resetting, I shall "lie over" to morrow for that purpose From the fact of this stream having so much more timber upon its banks than the others we have passed, I have called it Timbered creek upon my map.

*June* 7.—We remained upon "Timbered creek" and repaired our wagons to-day.

*June* 8.—At seven miles from our last camp we crossed another stream of pure spring water, where there is wood and grass in abundance; and at our present camp we have another small spring creek, which will always afford sufficient water for the traveller's purposes. We left the Fort Smith company this morning at "Timbered creek." They were detained in consequence of the illness of the wife of an emigrant; and we have learned this evening that the result of the detention has been an addition to the company of two promising boys, (twins,) which the happy father has done Captain Dillard and myself the honor of calling "Dillard" and "Marcy." For my part I feel highly complimented; and if I never see the gold regions myself, I shall have the satisfaction of knowing that my name is represented there. I wish the young gentleman a safe journey to California, and much happiness and gold after he gets there. Our road has continued to approach the Canadian for the last three days, and we are now about four miles from it.

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*June* 9.—After marching three miles this morning, we arrived upon the border of a deep valley, with high rocky ruffs upon each side, which we at once pronounced to be the stream Gregg calls "Bluff creek." Indeed, after we had passed it and ascended to the high plain on the opposite side, we fell into an old wagon trace, which confirmed me in the belief.

"Bluff creek" has good wood and grass upon its banks, and water plenty. It is of the same character as Dry river, with quicksand bed and poor soil in its valley. We followed Gregg's trace for several miles, and encamped in a ravine, where we found large pools of water coming from springs, with excellent grass and fuel. One of our gentlemen killed an antelope to-day, which we made our dinner from, and found it equally as good as venison. These animals frequent the highest and most arid plains, where no other animal ever resorts, and I have often found them where there was no water for many miles around. This has induced me to believe that they seldom require that element, without which most other animals perish in a short time. They are exceedingly timid; at the same time have much curiosity; and if the hunter will conceal himself in the grass, he can call them near him by showing his hand, or some other small object, above the grass.

*June* 10.—We made a late start this morning and travelled three and a half miles, when, ascertaining that there was no water for a long distance ahead, and Captain Dillard having marched about ten miles to overtake us, I determined to encamp at a ravine where we found wood and water. Although there may be times when there is no water here, yet I think it can always be depended upon, except in the very dryest season. This place cannot be mistaken, as it is due south of, and about two miles from, a very prominent round mound, which can be seen for several miles. We have passed over a high rolling prairie for the last three days, destitute of wood, except a narrow fringe of trees upon the borders of the ravines—a soil worthless and utterly unfit for cultivation. We found great quantities of grapes in the ravines near our road, growing on low bushes, very similar to those that are trimmed and cultivated.

*June* 11.—We started this morning, our road continuing over the elevated plateau, destitute of water, until we reached here, where there is a fine spring creek, with a great abundance of wood and grass. Our march was fourteen and three-quarter miles; and this position must be reached, as it is the first camping place after leaving our camp of last night. We are at this point about eight miles from the Canadian. We have several varieties of wild fruit upon the creek near our camp; among others, grapes and gooseberries. There has been but little game seen for the last three days. I killed a turkey this evening, which is the first we have seen for a week. Quails or partridges are found at all places upon our road; this bird and the meadow-lark appear to be common in all latitudes, from the extreme northern States to the most southern.

The streams through this part of the country have but few fish in them. We have, however, seen the sunfish and catfish wherever there is a stream of any magnitude.

*June* 12.—Our march this morning, for the first four miles, was over rather heavy and sandy road, after which we had a smooth prairie. The soil for several days past has been of a white, sandy appearance; but to-day, as soon as we struck a red soil, our road became at once as firm as

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marble, and our mules passed over it with great ease. Should travellers encamp at this place, they will be obliged to put a few sticks of wood in their wagons for cooking before reaching here, as there is none to be found on this stream. It requires but very little fuel to cook supper and breakfast, if it is properly economized. It should be cut short and split into small pieces; then digging a hole in the ground about twelve inches in depth, and of a size suitable for the wood and cooking utensils, all the heat is preserved, and a very small fire serves to cook a meal. We observed a very beautiful species of cactus along our road to-day, growing upon the high prairie to the height of six or eight feet. It shoots up from the ground in joints of about six inches in length, of an octagonal form, and every joint as it rises making an angle with the one beneath, sometimes branching off horizontally, and all nearly of the same size and length. A plant generally covers an area of ten or twelve feet in diameter, and, filled (as they are at this season) with a multitde of beautiful pink blossoms, they make the desert prairie look like a flower-garden. Our road has run nearly parallel to the course of the Canadian to-day, and the bluffs upon it can be seen nearly the whole distance. We have seen a few mezquite bushes during the past three days.

*June* 13.—The bluffs bordering the "Llano Estacado" have run parallel to our road, at from one-fourth to one mile distant, during most of the day. They are from 100 to 250 feet high, generally sandstone, covered in places with a growth of dwarf cedar. We marched 17⅞ miles over a very smooth prairie, and found an abundance of good water at four different places along to road.

As our wagon tires contined to become loose, from the shrinkage consequent upon the extreme dryness of the atmosphere in these elevated plains, I was desirous of finding a place where wood was plenty, in order that we might reset them. We were so fortunate as to find this a most favorable spot for that purpose, and at a convenient day's drive from our last encampment. Our present position is about half a mile from the road, to the left, near the timber. It is directly in a gap or notch, formed by the bluffs of the "Llano Estacado," which here jut in very near the road, and present the appearance of the walls of fortifications, with glacis revetted with turf. There is one near our camp, detached from the main bluff, that can be seen for many miles; and as it is round, very symmetrical, and crowned with a stone cap in the form of a reversed plate, it is a good landmark.

We passed a great deal of the small mezquite and numberless plants of the jointed cactus to day. The stalk of the latter is, when dried, a hard wood, and makes good fuel.

Our road has for a good portion of the day been passing through a continuous dog-town. One of the animals was brought alive into camp this evening, and having an opportunity to examine it, I was at a loss to conceive why it should ever have been called "prairie dog." It is a very timid animal; but, when irritated, bites severely, as one of our young gentlemen can testify. It is but little larger than the gray squirrel, of a reddish brown color, with head, teeth, and feet, very similar to that animal, and a more appropriate name, in my opinion, would be "prairie squirrel." In passing through one of their towns, early in the morning, they are observed sitting upright at the mouths of their burrows, entertaining each other by a most incessant barking, very similar to that of

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the gray squirrel. On the approach of an intruder they all disppear in their holes, but very soon can be seen poking their noses above ground again to see if the stranger is gone; and if so, the concert is resumed.

The rattlesnake and a small species of owl are found in the same holes with the dogs. At first I was doubtful whether this domestic arrangement was in accordance with the wishes of the owner of the premises, but, a short time since, I was satisfied no such friendly relations existed between them, for, on killing a rattlesnake at one of the dog holes, it was found that he had swallowed a young dog, thereby establishing the fact that the snake is an intruder, and preys upon the dogs.

*June* 14.—Leaving camp early this morning, we travelled two miles on our course, when we encountered a spur of the plain, running too far east for us to pass around under it; and finding a very easy ascent to the summit, I took the road over the plain. When we were upon the high table-land, a view presented itself as boundless as the ocean. Not a tree, shrub, or any other object, either animate or inanimate, relieved the dreary monotony of the prospect; it was a vast, illimitable expanse of desert prairie—the dreaded "Llano Estacado" of New Mexico; or, in other words, the great Zahara of North America. It is a region almost as vast and trackless as the ocean—a land where no man, either savage or civilized, permanently abides; it spreads forth into a treeless, desolate waste of uninhabited solitude, which always has been, and must continue, uninhabited forever; even the savages dare not venture to cross it except at two or three places, where they know water can be found. The only herbage upon these barren plains is a very short buffalo grass, and, on account of the scarcity of water, all animals appear to shun it. Our road was perfectly hard and smooth, and our animals did not suffer much from the effects of the long drive of twenty-eight miles which we made.

There are wood and water at nine miles from where we encamped last night; but from that point to our present camp is 18½ miles, and no water in the intermediate distances. Should travellers not feel disposed to make the long drive of twenty-eight miles, they will fidd a good camping place at the first point indicated, and will have an easy drive for the following day. Two miles before reaching camp we descended from the plain to a creek with fine water, but little wood.

*June* 15.—We travelled for ten miles to-day along the foot of the bluffs upon our left, when we reached a stream where the water was standing in large pools, with sufficient wood and grass. I determined to encamp here, the distance to the next water being about ten miles. This has been an old camping place for Mexicans, as the trees in the vicinity are well stripped of their branches, and show marks of the axe; moreover, we are now upon the old Mexican cart-road.

Our friends in the emigrants' camp are enjoying themselves much this evening; they have managed to raise some music, and are dancing around their camp fires most merrily. It certainly looks as if they were determined to keep up their spirits as they go along.

*June* 16.—In consequence of a shower, which came up about daylight, we made a late start and travelled twenty-two miles, when I ascertained from an advanced party which I had sent out early in the morning that I was still nine miles from the first water; as our teams were too tired to make that distance I encamped for the first time without that most necessary element. Our mules will suffer, but I shall make an early drive and

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"lie over" to-morrow at the first water. I passed an ox-team to-day, owned by some men who had been left three hundred miles from here by a company in advance of us. One of their number had gone out for the purpose of hunting, and was lost. These men, with their team, had stopped back to search for him, and it was about ten days before they succeeded in finding him. They then started forward again, and have made a most extraordinary drive, averaging over thirty miles per day with a loaded wagon; and, notwithstanding they made a drive of thirty-eight miles yesterday, their cattle looked well.

This proves conclusively, I think, that oxen can perform a journey as well as any other animal.

About three miles from our camp of last night we came in sight of the "Cerro Tucumcari." It appeared to be about thirty miles distant, a little to the right of our course, apparently perfectly round and symmetrical, and is a most conspicuous landmark. It presents, when seen at a long distance, very much the appearance of the dome of the Capitol at Washington.

*June* 17.—We hitched up our mules at 2 o'clock this morning, and pushed ahead over the dry prairie for 13 miles before we found water; and this hardly deserved the appellation, for it had more the appearance of the drainings of a stable-yard than the pure element we were in search of. Notwithstanding this, our half-famished animals plunged in, and swallowed large quantities. It was sulphurous and decidedly disagreeable to the taste, yet we made use of it freely, and experienced no ill effects from it. Had we known the different points upon the road where water could have been obtained, we might have encamped at the last water, 22 miles from here, and easily driven to this place the following day.

Our present camp is nearly opposite the "Cerro Tucumcari," and near the bluffs bordering the plains "Indian signs" have been seen for the last three days, and the emigrants have lost several horses, supposed to have been taken by them. Notwithstanding this, many of them are very careless, and do not guard their animals as they should. It is necessary in the Comanche and Kioway country to be always upon the alert, as these Indians frequently follow a train for days together, only waiting for a favorable opportunity to steal horses.

A section of the vertebra of a buffalo, with several ribs attached, in a petrified state, was found to-day; also, several petrifactions of pieces of wood and muscles.

The slope of the bluffs for the last 25 miles has been covered with a dense growth of small cedar trees upon a white sandstone rock, and Beaver informs me that it is to such places as this that the grizzly bear and mountain sheep resort. We have seen no game for several days. Horned frogs, rattlesnakes, chameleons, and swifts, are abundant, and appear to constitute almost the only indications of animal life upon these desert prairies.

*June* 18.—We travelled this morning along under the bluffs for three miles, where we crossed an "arroyo," in which there were water and wood in abundance. At about eight miles we were overtaken by a party of 20 or 30 Comanches, who came upon their trim-built ponies to pay us a visit. Their chief was a fine looking old man by the name of Is-sa-ki-ep. He professed much love for Americans, and persisted in testifying it by giving me an embrace "à la Mexicaine," which, for the good of the

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service, I forced myself to submit to. Seizing me in his brawny arms (we were still mounted on our horses) and laying his greasy head upon my shoulder, he gave me a most bruin-like squeeze; after undergoing which I flattered myself that the salutation was completed; but in this I was mistaken, and was doomed to suffer another similar torture, with the savage's head upon my other shoulder, at the same time rubbing his greasy face against mine; all of which he gave me to understand was to be regarded as a most distinguished and signal mark of affection for the American people, (whom he loved so much that it almost broke his heart,) and which I, as their representative, had the honor "pour amor patria" to receive. They followed us to our camp, where I told the chief that it was the desire of their Great Father, the President of the United States, to be on terms of friendship and at peace with all his red children, and that he expected emigrants would receive good treatment in passing through the Comanche country. They protested the utmost friendship and good will; after which I gave them some pipes and tobacco, and they went off well pleased.

Our encampment is upon a small creek directly between two mountains, called by the Comanches the "Big and Little Tucumcari." The larger one is about three miles to the south of our road, and some eight miles in diameter at the base. The small one is about eight miles north of the road, two miles in diameter, and 750 feet high.

*June* 19.—As our animals have become a little jaded from the long marches we have been making for a few days past, I concluded to stop here and give them a day's rest.

We were visited again this morning by our Indian friend Is-sa-ki-ep and about fifty of his band, with several women and children. The Comanche women are, as in many other wild tribes, the slaves of their lords, and it is a common practice for their husbands to lend or sell them to a visitor for one, two, or three days at a time. There is no alternative for the women but to submit, as their husbands do not hesitate, in case of disobedience, to punish them by cutting off an ear or nose. I should not imagine, however, that they would often be subjected to this degradation; for, if we may judge of them by the specimens before us, they are the most repulsive-looking objects of the female kind on earth—covered with filth and dirt, their hair cut close to the head, and features ugly in the extreme. No one would ever imagine that they belonged to the same species as the Anglo-Saxon women. They have several Mexicans (slaves) among them which they have kidnapped. They make use of the boys to herd their animals, and the women for wives. Those who visited us this morning were armed with the bow, quiver, and shield, and they gave us an opportunity of witnessing the force with which they can throw the arrow. As we were about to slaughter an ox, one of the Indians requested to use his bow for that purpose, and approached to within abount twenty yards of the animals, strained his bow to the full extent, and let fly an arrow, which buried itself in the vitals of the ox, passing through and breaking two ribs in its course. It is thus that they kill the buffalo, upon which these Indians (who are called the upper Comanches, or "buffalo eaters") mainly depend for a subsistence.

They renewed their professions of friendship to us and all Americans. I recieved their assurances with the semblance of confidence—nevertheless, did not on that account exercise any less vigilance in the care of our

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animals; for these fellows make their living by robbing the Mexicans of their horses and mules, and disposing of such as they do not require to the traders who come among them.

The wealth of the Comanches consists entirely in these animals. They serve them to ride, carry their burdens, traffic, and for food when no other animals can be found. Many among them own from fifty to two hundred horses and mules; and that man who has only twenty is regarded as a poor man. It is considered a great accomplishment to be able to steal horses successfully, and those who excel in this are the most highly honored in the tribe.

The band near us, consisting of about 300 souls, have 2,500 horses and mules—many of them fine animals; and they generally have the Mexican brand upon them. They require much care and attention, as they are herded upon the open prairies, and never receive any other food than that which the grass furnishes. Their details of herdsmen are made daily, with as much regularity and system as the guard details at a military post. Their animals are divided into separate herds of about 150 each, and are guarded night and day with the strictest vigilance and attention. In the summer, these Indians follow the buffalo as far north as Arkansas river, returning in the autumn to the south as far as the headwaters of the Brazos and Colorado, where they find the grama, mezquite, and buffalo grasses. These, remaining green during the winter, afford pasturage for their animals until the following spring, when they return again to the north. Thus they migrate back and forth. They plant no corn, and their only food is meat and a few wild plants that grow upon the prairies.

One of the gentlemen of the Fort Smith company lost a horse last night, and, learning he had been seen at the Comanche camp, went for him, but, on his arrival, was told that he had not been there. The chief was in our camp at the time, and knew nothing of the matter until his return home, when he required the horse to be delivered to him by a young man who had taken him, and brought him back to me, ten miles, saying that he was our friend, and would not suffer us to be wronged by any of his band. This evidence of his sincerity went further to convince me of his good faith than all he had said or done before, and I did not suffer him to go away unrewarded. I have now no doubt but the Comanches, seeing such numbers of whites passing through their country, are satisfied that they are not able to cope with us, and that their best policy is to remain at peace.

I had a talk with them to-day, in which I told them that their Great Father, the President, having such a multitude of white children in the country towards the east that there was not room sufficient for all of them, had purchased another country far towards the setting sun, and that he was now sending, and would continue to send, many of his children through their country to occupy the new purchase. He hoped and expected the Comanches would not molest these people in their journey through their country, but would take them by the hand, and treat them as friends and brothers. That General Arbuckle (their father at Fort Smith) remembered well the treaty he had made with Ta-ba-guee-na and other chiefs of the Comanches at Fort Holmes, in 1834, wherein they stipulated that our people should be allowed a free and uninterrupted passage through their country. That he hoped they had not forgotten it,

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and he had sent them some pipes and tobacco to smoke in remembrance of the same.

The chief replied, that the talk was good; it did not go into one ear and pass out of the other, but sank deep into his heart and would remain there always. That he was a firm friend to Americans, and should treat them kindly wherever and whenever he met them. He was not one of those who took a friend by the hand and let him go whenever it suited his purposes, but that he held him fast, and remained true and sincere. He also stated that he had recently paid a visit to the Indian agent at Bent's Fort, had held a "talk" with him, and liked all the agent had said, except two things—one of which was, that our government would not suffer the Comanches to commit further depredations upon the inhabitants of the province of Chihuahua, or other parts of Mexico; the other, that they would be required to give up all Mexican prisoners now in their possession. These two things, he said, gave him much pain. After he concluded, I made him a present of tobacco and pipes, and some fresh beef, and they departed well pleased.

*June* 20.—Our march has been a long one to day, as we passed no water after leaving the head of the creek upon which we encamped last night. We are here upon the "Laguna Colorado," where the Texans were taken prisoners. Although there is but little water above the surface in the bed of the laguna, yet, by digging about three feet, we found the greatest abundance. Our camp is on the left of the road, near the timber, with a plain trail leading to it. Grass good.

*June* 21.—After marching seven miles this morning through a grove of cedars, we crossed an arroyo with many large pools of water, about 400 yards to the right of the road, where there is good camping ground, with timber and grass.

At our camp to-night we are seventeen miles from our last encampment upon Pajirato creed, a branch of the Canadian. It is a good camping place; and should travellers pass over this road towards Fort Smith in a very dry season, I would recommend them to encamp here, and the following day at the large pools I have spoken of as seven miles from our last camp, as there is a greater quantity of water at that place than where we encamped upon the Laguna Colorado. They would then be able to drive to the head of the creek, where we met the Comanches, the following day.

*June* 22.—We travelled over a smooth dry prairie to-day for thirteen miles, and encamped upon "Gallenos creek," an affluent of the Rio Pecos. Here we had good water, with some cottonwood upon the creek, but the grass is short, the Mexicans having recently made this a pasture ground for large flocks of sheep. We have passed many high sandstone hills on each side of our road to-day, and we have seen far off in the distance the northwest mountains, with their tops covered with snow. The country in this vicinity is a miserably sandy plain, and fit for no other purpose but for grazing sheep.

*June* 23.—Our road passed for fifteen miles over a very high rolling prairie, with detached rocky hills upon our right, running off towards the Canadian, until we reached the principal branch of the Gallenos creek; a fine running stream, with a rock bed, and fifty yards wide. Nine miles from here there is a spring of cold water; and at this place the road forks, the right leading to San Miguel, the left to Anton Chico. We took the

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latter, and reached the Pecos before night, making a drive of thirty-one miles. This was the first settlement we had seen since leaving Edwards' trading-house, and we were much delighted to see houses and cultivated fields once more.

Anton Chico is a town of about five hundred inhabitants, situated upon the west bank of the Rio Pecos, built (as all towns in New Mexico are) of "adobes," or unburnt blocks of clay, and looks at a distance like many piles of unburnt bricks. The inhabitants raise corn, wheat, onions, beans, and peas, upon which they subsist.

*June* 24.—After our long march of yesterday, I determined to remain here to-day, and rest our animals. This is St. John's day, and with the Mexicans a gala day, in which they all congregate, for the purpose of running horses, fighting chickens, dancing, and a variety of other amusements, in which they all participate with real hearty good will. In the evening I visited a fandango for a few minutes, where I saw the Mexicans in their favorite national amusement, the dance; and I was much surprised to see with what ease and grace a "peon," who is degraded to a condition worse than slavery, and is constantly employed in the lowest kind of menial services, would hand his signorita to the floor to engage in a gallopade or waltz. They are really very graceful.

*June* 25.—From all I could learn at Anton Chico relative to the road to Santa Fe, I inferred that the one passing through Galleno was the shortest and best. I therefore took this in preference to the San Miguel route. After crossing the Pecos, which we here found a very rapid stream of one hundred feet wide and two feet deep, we travelled over a well-beaten wagon road for fifteen miles, when we came opposite a beautiful little town on the Pecos, called "Questa." As the main road does not pass in sight of the town, I took a trail which can be easily travelled with wagons, and rode out until I suddenly and unexpectedly came upon the crest of a bluff terminating the high plain. Here, a most magnificent view presented itself as I stood upon the top of the almost perpendicular cliff bordering the valley of the Pecos, and one thousand feet above it: I could see the valley up and down the river for several miles. It is here about one mile wide, and shut in with immense walls of lime and sandstone. Casting my eyes down from this giddy height, a magnificent carpet of cultivated fields of wheat, corn, and other grains was spread out direct beneath me, with the beautiful little river winding quietly and gracefully through the centre; this, together with the Mexicans in their broad-brimmed sombreros and strangely shaped costume, plodding quietly along behind their ploughs and "carretas," and the "Sierras Blancos," covered with perpetual snow, and glistening in the distance like burnished silver as the sun shone upon them, formed one of the most beautiful landscapes that it is possible to conceive of. The town of Questa is upon the opposite bank of the river, and has about eight hundred inhabitants. I called at the house of the alcalde, but unfortunately he was absent. "El Signora," however, gave me a dinner, and did the honors of hostess with much hospitality and grace; and I am indebted to her for a most capital repast. I would advise those who pass over this road in future to turn from the main road about two miles before arriving opposite here, and encamp at the place where the road strikes the top of the bluffs. They will here have grass and wood, and can drive

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their animals down into the valley for water. Our camp is ten miles from Questa, at a pool where we expected to have found water.

*June* 26.—This has been the longest day's march we have made since leaving Fort Smith, (33¾ miles.) Twelve miles from our last camp we passed several lagunas or ponds, where we watered our animals, and gave them two hours' rest. At this place there are two roads—the left goes to Albuquerque, the right to Santa Fe. Taking the latter, it led us over a very hard prairie until we reached Gallestia.

*June* 27.—This town is situated on a creek which rises in the mountains near by, and runs through a dry plain into the Rio del Norte at San Domingo. We found a large encampment of emigrants here, recruiting their animals, laying in their supplies of provisions, and making preparations for their outward journey to California.

They bring their teams to this place to graze; and it is the nearest point to Santa Fe where they can find grass. They then visit Santa Fe, make their purchases, and return.

From this place to Santa Fe there are two roads. We started out in the evening, and took the right hand after passing the point of the mountain near the town, and travelled nine miles, encamping in a ravine running down from the mountain; found the grass here short, as it is everywhere in the vicinity of Santa Fe.

*June* 28.—Continuing up the ravine this morning, we struck the Independence road at the top of the mountain, and from here continued in it until we reached Santa Fe, about four o'clock in the evening.

The geological formation of the country changed the moment we entered the Independence road. Up to this time we had seen no primitive rocks, but now our road wound through the "cañons" of the mountains, bordered by cliffs composed of huge masses of granite, until we arrived within five miles of Santa Fe; from here to the town the country is a succession of barren hills, covered in places with a growth of dwarf cedars, destitute of grass and totally unfit for cultivation.

The route we have travelled over from Fort Smith to Santa Fe, as measured with the chain, is 819½ miles; and, for so long a distance, I have never passed over a country where wagons could move along with as much ease and facility, without the expenditure of any labor in making a road, as upon this route. Our course being altogether upon the south side of the Canadian, and generally upon the ridges dividing the tributaries of that river from those of Red river and the Washita, until we reached the grand prairie, we were not obliged to cross any large streams, and but few ravines or gullies. After passing beyond the head of the Washita we found the plains approached and continued near the Canadian; consequently all the streams flowing into it were short and small, thereby affording water sufficient for the traveller's purposes, but not presenting any obstacle to his progress.

The general course of the Canadian, along our route, is east and west; and as Santa Fe is almost due west from Fort Smith—the latitude of the former being N. 35° 11′ 6″, of the latter about N. 35° 20′—this makes our route very direct between the two points. The country lying between the two meridians of Fort Smith and Santa Fe is intersected by a narrow belt of timbered land, running from north of the Canadian to the southern part of Texas, and varying from ten to thirty miles in width. This, bordering the great western plains, forms the boundary line between the

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woodlands and prairies. That portion of the country lying east of this is generally a rich and fertile soil, varied by lawns and woodlands, abounding with a multitude of beautiful streams and rivulets, and in every respect well adapted to cultivation; whereas, on the west, it is an ocean of barren prairie, with but here and there a feeble stream and a few solitary trees.

It would seem as if the Creator had designed this as an immense natural barrier, beyond which agriculturists should not pass—leaving the great prairies for the savage to roam over at will.

There are no ranges of mountains to cross over on our road, and but few hills of any magnitude; and these could in most cases be avoided entirely by passing around them, or their slopes made very gradual and easy. Generally, the face of the country is extremely uniform and smooth.

I am, therefore, of the opinion, that but few localities could be found upon the continent which (for as great a distance) would present as few obstacles to the construction of a railway as upon this route. It is true that, upon the western extremity, there is but little timber except cottonwood; but, in many places destitute of timber, there are large quarries of lime and sandstone, whose divisional structures are so perfectly smooth and uniform that the masses could easily be wrought into shape, and in many cases made use of as substitutes for timber. The surface of the ground is generally so perfectly even and level that but little labor would be required to grade the road; and, as there are but few hills or ravines, there would not be much excavation or embankment.

*Table of distances, &c.*

| Dates. | Places of observation. | Distances by chain. From camp to camp. | Distances by chain. Total distance from Fort Smith, Ark. | Remarks. |
|---|---|---|---|---|
| 1849. | | | | |
| April 5 | From Fort Smith to Strickland's | 15 | 15 | Good camp. |
| | Camp creek | 11 | 26 | Good camp; Indian farm. |
| | Coon creek | 12 | 38 | Good camp; prairie. |
| | Sans Bois | 9 | 47 | Good camp on the west side, near the prairie. |
| | Bend of Sans Bois | 14 | 61 | Good camp; Indian farm. |
| | South fork Canadian, James creek | 15 | 76 | Do do |
| | 1st ford of Coal creek | 12 | 88 | Good camp; house. |
| | 2d ford of Coal creek | 8 | 96 | Do do |
| | Little Cedar mountain | 4 | 100 | |
| | Stony Point | 6 | 106 | |
| | Shawnee village | 5 | 111 | Indian houses. |
| | Shawneetown | 14 | 125 | Indian houses, opposite Edwards' T. H. |
| | Delaware mountain | 21 | 146 | Good camp. |
| | Branch of Boggy river | 5 | 151 | Do |
| | Clear creek | 3 | 154 | Wood and good water. |
| | Branch of Topofki creek | 7 | 161 | Do do |
| May 3 to 5 | Cane creek | 9½ | 170½ | Do do |
| 5 to 7 | Small branch | 5 | 175½ | Do do |
| 7 to 8 | Mustang creek | 11½ | 187 | Do do |
| 8 to 9 | Small branch of Chouteau's creek | 17½ | 205½ | Do do |
| 9 to 14 | do do do | 6½ | 211½ | Do do |
| 14 to 16 | do do do | 5½ | 217½ | Do do |
| 16 to 17 | Head of Chouteau's creek | 12½ | 230½ | Do do |
| 17 to 18 | Branch of Washita | 6 | 236½ | Good camp. |
| 18 to 19 | do do | 11½ | 247½ | Do |
| 19 to 21 | Branch of Spring creek | 5½ | 253½ | Do |
| 21 to 22 | Head of Spring creek | 16 | 269½ | Do |
| 22 to 23 | Road from N. Canadian side | 9 | 278½ | No water. |
| 23 | Red Mounds | 4 | 282½ | Spring, wood, and grass. |
| 23 to 24 | Branch of Washita | 5 | 287½ | Do do |





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*Table of distances, &c.*

| Dates. | Places of observation. | Distances by chain. From camp to camp. | Distances by chain. Total distance from Fort Smith, Ark. | Remarks. |
|---|---|---|---|---|
| 1849. | | | | |
| May 24 to 25 | Branch of Canadian | 15¾ | 303 | Sulphur water. |
| 25 to 26 | Branch of Washita | 17¼ | 320¾ | Do |
| 26 to 28 | Branch of Canadian | 18 | 338¾ | Brackish. |
| 28 to 29 | On Canadian | 19 | 357¾ | Good water. |
| 29 to 30 | Little Washita | 16 | 373¾ | Brackish water. |
| 30 to 31 | Branch of Canadian | 13 | 386¾ | Good water. |
| 31 to June 1 | Antelope Buttes | 17¼ | 404 | Good water; no wood. |
| June 1 to 2 | Rush lake | 14 | 418 | Near high buttes; no wood; good water. |
| 2 to 4 | Branch of Washita | 16 | 434 | Near large cotton-wood; wood and water. |
| 4 to 5 | Dry river | 10¼ | 444¼ | Good water. |
| 5 to 6 | Branch of Canadian | 17 | 461¼ | Do |
| 6 to 8 | Timbered creek | 22¼ | 483¼ | Fine spring. |
| 8 to 9 | Spring branch | 11¾ | 495¼ | Good water. |
| 9 to 10 | ...do... | 14 | 509 | Do |
| 10 to 11 | Branch of Canadian | 3¼ | 512¾ | Near high mound; good water. |
| 11 to 12 | ...do...do... | 14¾ | 527¼ | Good water. |
| 12 | ...do...do... | 8 | 535¼ | Not our camp. |
| 12 to 13 | ...do...do... | 10¾ | 545¾ | No wood; good water. |
| 13 to 14 | Spring branch | 17¾ | 563¾ | On the left of the road. |
| 14 | Branch of Canadian | 9¼ | 573¼ | Not our camp. |
| 14 to 15 | ...do...do... | 18¾ | 591¾ | |
| 15 to 16 | Pools of water | 10¼ | 602 | Wood. |
| 16 | Large water | 10 | 612 | Not our camp. |
| 16 to 17 | No water | 12 | 624 | |
| 17 to 18 | Pools of water | 13 | 637 | Wood. |
| 18 to 20 | Tributary of Canadian | 13¼ | 650¼ | Near Cerro Tucumcari; wood. |
| 20 | Head of Creek | 5 | 655 | Not our camp. |
| 20 to 21 | Laguna Calorado | 19¾ | 675¼ | |
| 21 | Pools of water | 7 | 682¼ | Not our camp; good wood. |
| 21 to 22 | Pejarito creek | 10¾ | 692¾ | Wood and water. |
| 22 to 23 | Gallenas creek | 13¼ | 706¼ | Wood. |
| 23 | 2d Gallenas creek | 15 | 721¼ | Large wood and water; not our camp. |
| 23 to 25 | Rio Pecos (Anton Chico) | 16¼ | 737¼ | Wood and water. |
| 25 | Rio Pecos (Questa) | 15 | 752¼ | Camp on the bluffs. |
| 25 to 26 | Without water | 9¼ | 761½ | Good wood and water. |
| 26 | Laguna Colorado | 12½ | 774 | Two red ponds on left; not our camp. |
| 26 to 27 | Gallestra | 21¼ | 795¼ | Good water. |
| 27 to 28 | In cañon | 9¼ | 804¼ | No water. |
| 28 | Santa Fe | 15 | 819 | |

NOTE.—From Fort Smith to Clear creek the road has an abundance of wood, water, and grass upon it, and the traveller can encamp any time he chooses.



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Immediately after our arrival at Santa Fe I sent our mules to Tocolote, about sixty miles off, to recruit. This was said to be the nearest and best place for grazing in the vicinity of Santa Fe. I made arrangements also to have them fed with corn while they were at the grazing camp, in order that they might be in a condition to travel and make the return march at as early a period as possible. They were, however, in such poor condition when we reached Santa Fe, that it required six weeks' rest before I considered them sufficiently recruited to perform the journey back.

In the mean time, during our stay in New Mexico, Lieutenant Buford, with the dragoons of my command, was ordered to "James," (seventy miles,) upon an expedition against the "Navajo Indians," who had been committing depredations in that quarter, and was absent about three weeks upon this service. Lieutenant Harrison and Dr. Rogers were also (at their request) assigned to duty with a detachment sent out on an expedition against the Apaches, under Major Steen, and marched about six hundred miles through the country south of Santa Fe, while I remained with the infantry portion of my command as the only garrison of Santa Fe.

I made inquiries relative to the practicability of finding a wagon route from a point south of Santa Fe, upon the Rio del Norte, crossing the Rio Pecos and striking in an easterly course to the headwaters of Red river, or the Brazos, and from thence back to Fort Smith; but, as the country lying east and adjacent to the Rio del Norte is for the most part infested by Apaches and other hostile Indians, I found but few Mexicans who knew anything about the country, and these were unwilling to act as guides and return home alone through the Indian country. I, however, found, a Comanche Indian living at San Miguel who was born and raised directly in the country over which we desired to pass, and was perfectly familiar with almost every stream and water-hole upon the prairies. It was his opinion that wagons could pass without difficulty from a point of the Rio Grande called "Joya de Cibaletta," about one hundred and fifty miles below Santa Fe, to the headwaters of the Colorado, crossing the Pecos at a grove of timber called "Bosque Redondo," about seventy-five miles below Anton Chico. Upon this route he stated that he could take the wagon train from Santa Fe to the head of the Colorado in one month, and would insure water for the mules every night. He furthermore stated that there were but three places where the Llano Estacado, or Staked Plain, which extends four hundred miles from north to south on the east side of the Rio Pecos, could be crossed, on account of the scarcity of water; one of them was north of the "Joya de Cibaletta," and another nearly opposite El Paso. As all the California emigrants, after their arrival at Santa Fe, are obliged to turn and go down the Rio Grande (some three hundred miles) to Cooke's route, before they can find a wagon road through the mountains west of the river, it occurred to me, that if there was a practicable route from that point to Fort Smith, it would shorten the distance to California very much; and as several parties of emigrants had reached El Paso from Texas, I was satisfied I could go through, and I employed the Comanche guide and determined to return by the southern route. Previous to our departure Lieutenant Sackett had been promoted to the company to which the dragoon portion of the escort belonged, and Lieutenant Buford having been promoted to a company stationed in California, they were transferred by order of the commanding

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officer at Santa Fe. These, with the exception of one man left sick at Santa Fe, were the only changes in the command from the time we left Fort Smith.

From Santa Fe we struck the Rio Grande at Algodones, and followed the road down the east bank of the river until we reached Fra Cristobal on the evening of the 25th of August.

At this point the bluffs of the mountains approach near the river, and render it necessary to keep to the left across a large bend, where in a dry season there is no water, until reaching the river again; this is the commencement of the "Journado del Muerto."

Leaving Fra Cristobal at two o'clock on the morning of the 26th, and passing up through a cañon out of the valley of the Rio Grande, we entered the dreary plain of the Journado, and marched to the "Laguna del Muerto," a distance of 25⅞ miles by the viameter. Although there is sometimes water in the Laguna for several days after a rain, yet, when we arrived, the bed was perfectly dry. We had, however, filled our water barrels at the river, and the men did not suffer. After resting our animals and giving them time to graze, we again started forward, and marched to Perrillo or "Point of Rocks," 28½ miles. Here we found rain-water standing in pools, and encamped for the night.

On the 28th, after marching 23¼ miles, we reached the river again at the southern extremity of the Journado, making the entire distance across the desert 77½ miles. The road passes over a very high and level plain, is perfectly firm and smooth, and is generally travelled (when there is no water) in two nights and one day with loaded wagons. As this is upon the main and only road from Santa Fe to El Paso, and has been travelled for many years by the inhabitants of New Mexico, I presume there is no way of avoiding it. We found the grass good, and a small growth of scrubby brush, which answered very well to cook with; but there were no trees or other vegetation, except several varieties of the cactus and palmetto.

Upon both sides of the road there were detached mountains in sight constantly, and one near which we passed soon after leaving Fra Cristobal was composed entirely of large masses of dark basalt thrown together loosely into an immense hill or mountain of some five hundred feet high.

On the 29th we reached Dona Ana, a town upon the east bank of the Rio Grande, sixty miles above El Paso, of 300 inhabitants, principally Mexicans, who raise corn, wheat, onions, beans, and grapes, and depend for a subsistence almost entirely upon the cultivation of the soil. They are obliged here, as in all places in New Mexico, to irrigate, as without this the soil would produce nothing. The only available land is, therefore, in the valley, where water can be carried in canals or ditches from the river.

This is a new town, settled by men from El Paso some ten years since, and, until it was garrisoned by a part of a company of United States troops, was frequently visited by those brigands of the mountains, "the Apaches," who were in the habit of coming down from their mountain retreats, stampeding and driving off cattle and horses, and before the Mexicans were aware of their proximity, were out of reach again in the mountains.

These Indians are perfectly lawless, savage, and brave, and having been allowed to roam the country at will, and commit depredations upon

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the Mexicans for so long a time, it will require a very severe lesson to teach them that we are masters in New Mexico. Being a numerous tribe, and commanded as they are by an ambitions chieftain by the name of "Gomez," who has received a Spanish education in Mexico, and being entirely dependant upon plunder for a subsistence, I am of the opinion that they are destined to give us much anoyance and trouble before they are subdued.

Dona Ana being but fifteen miles below San Diego, (the point upon the Rio Grande where Colonel Cook's road leaves the river,) and the only town within seventy miles, I was anxious to find the shortest practicable wagon road from here to Fort Smith. I therefore made inquiries relative to the country between here and the Rio Picos, but found that this part of the country was almost wholly unknown to the Mexicans, as (although they are great travellers) it is seldom that they can be induced to venture far into the Apache "range." I found one man, however, who stated that he knew the country for fifty miles east of Dona Ana, and, upon condition that I would deposite the amount he was to receive with the commanding officer for the benefit of his family in case he should be killed in returning, he would consent to accompany us that distance. I accordingly engaged him, and on the morning of the 1st of September left Dona Ana, taking a course N. 81° E. towards a gap in the Organ range, called San Augustine Pass. Our road passed to the left of the high Organ peaks by a gradual ascent for fifteen miles until we reached the gap, which was low, and the passage smooth and easy. From here we passed around to the south for four miles under the base of the mountain, where we encamped at a spring, and found fine grama grass. The Organ range of mountains takes its name from the supposed similarity of the high-pointed peaks to the pipes of an organ. They are a trap formation, and somewhat columnar in their structure, with the columns standing vertically, and in some cases rising to the height of a thousand feet, and terminating in sharp points.

Upon the lower part of the mountain there is good pitch-pine timber, but no other wood except a species of small oak. From our present position we can see the Sacramento mountains very distinctly across a level plain to the east. They do not appear to be at a greater distance than eight or ten miles from us, but our guide informs me they are forty miles off; this illusion is often experienced in New Mexico, and I can only account for it by the remarkable purity and transparency of the atmosphere, which enables the eye to penetrate far, and to discern objects distinctly.

*September* 2.—Continuing along under the base of the Organ mountains, we struck the road from El Paso to the Salt lakes at about three miles from our camp of last night, and followed this for three miles further to a spring which rises in the mountain, and runs down a ravine upon which we are encamped, to the road.

This is called the "Ojo de Solado," and has an abundant supply of water at its source, but sometimes it is absorbed by the sand before it reaches the road, and it is then necessary to send to the foot of the mountain for water, as we cannot drive wagons nearer than the road.

The Sacramento mountains are in sight to-night, and the two ranges, "Organ" and "Sacramento," run nearly parallel from north to south, and from thirty to forty miles apart. The intervening valley is flat and

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sandy, and has no water upon it. As we had to cross this valley, we provided ourselves with a supply of water for the use of the men, and on the morning of the 3d September left camp, and following the Salt road for about four miles, struck in a direct line for "Waco mountains," which can be seen from our last camp, and where we were told by the guide we should find water. As the road was somewhat sandy and we had to make a new track, our progress was necessarily slow. After travelling eighteen miles we halted at 6 o'clock in the evening, giving the men time to sleep, and the animals to graze and rest, when we were again in motion, and reached the Waco mountains at 2 o'clock p. m. on the 4th of September, making the entire distance from the Solado spring to this place $37\frac{1}{16}$ miles, about seven miles greater than the estimate of our guide.

The manner in which the Mexican traders make these long stages without water (and I believe it to be the best) is, before starting, to graze their animals from morning until about 3 p. m., give them all the water they will drink, then harness and start them immediately, and drive until 4 o'clock the next morning, when they stop three hours to graze while the dew is on the grass, and drive until it becomes hot towards the middle of the day; they then make another halt until 5 o'clock in the evening, when they start again and push through to the water. In this way fifty, sixty, or seventy miles can be made with loaded mule or ox wagons in the hottest weather of the summer. The Journado del Muerto is 77 miles in length; yet it is travelled during the whole year with heavily loaded teams. After these long drives, animals should be allowed a day or two to rest and recruit.

Our present encampment is but thirty miles from El Paso, and our guide informs me that the road is not so sandy as the one we have passed over; but our route is about thirty miles nearer from this point to Dona Ana, than to go the El Paso road. There is a plain wagon road from here to El Paso. We found a great abundance of good water in an immense tank up a ravine on the South mountain. This is a huge deep basin, scooped out of the solid rock with great symmetry and regularity, and of sufficient capacity to contain several hundred gallons of water. We also found sufficient water for our animals in the ravine. The road passes between the two mountains, which approach within a few rods of each other, leaving a level pass, bordered by immense ledges of rocks, standing out in bold relief directly over the road. The rocks composing the mountains are large masses of dark-gray sandstone, thrown up in the utmost disorder and confusion, leaving numerous holes and caverns, which have often served the Apaches as hiding places.

We remained at this place on the 5th, and on the morning of the 6th, making an early start, crossed a plain in an easterly direction towards the south base of the "Cierra Alto," which is about 1,500 feet high, and can be seen for many miles around. Here we entered a cañon, which brought us by a very easy and gradual slope, of about three miles, to high level mesa or plain, directly at the southeastern base of the mountain.

From this point we would see the Sierra del Alamo, in a direction north 75° east, and to this our road led us over a firm prairie, a distance of $22\frac{1}{4}$ miles.

The Sierra del Alamo is a mountain of gray sandstone, mixed with flint rock, about 1,000 feet high, and stands out alone upon the flat prairie. On the north side, about 300 yards from the road, is a spring near three

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cotton-wood trees, with an Indian trail leading to it. The spot cannot be mistaken, as there are no cotton-wood trees anywhere else in the vicinity.

Our road to-day, with the exception of one place in the cañon, was capital, passing over a prairie perfectly hard and smooth.

Along the whole course of the road from Dona Ana here, there has been a most luxuriant growth of grama grass of several different kinds, and we find sufficient fuel for camping purposes at all places.

*September* 7.—We passed around the north base of the "Cierra" this morning, when we came in sight of the rugged top of the "Comudas," in a direction N. 72° E.; from here our road was over the gravelly mesa, and perfectly good for 8¾ miles, which brought us to the "Comudas." This is another of those immense piles of loose rocks, which, rising up almost perpendicularly to the height of 500 feet out of the level gravelly plain, and utterly denuded of vegetation, presents a most strange and picturesque appearance, very different from any scenery we meet with in the settled parts of the United States. Upon the east side of the "Comudas" there is an arched entrance into a large cavern which is lighted from above, and in this we found a well fifteen feet deep, filled to the top with beautifully pure water; besides this we found water sufficient for our animals in tanks on the west side of the hill.

Our guide informed us that this is a favorite place of resort for the Apaches, who come here when travellers are seen approaching, hide themselves in the caverns of the mountains, and rob them of their horses, and cautioned us to be upon our guard on our arrival, as they might be in the midst of our animals before aware of their presence: we have, however, seen none of them.

The geological formation of this mountain is different from any we have passed before, being a dark coarse granite or gneiss, with a small proportion of feldspar, and the mica predominating. All the other rocks we have seen before, between this place and the mountains at Santa Fe, have been secondary.

*September* 8.—Our road to-day led us around the east side of the Comudas, to the north end, where we turned almost due east, and travelled towards the southern peak of a high range of mountains called the "Sierra Guadalupe." For the first five miles we passed directly at the foot of a low range of hills running northeast and southwest, after leaving which we struck out upon the high prairie, and found the road most excellent the entire distance to the Ojo del Cuerbo, or Crow Spring. The spring is upon the open plain, and contains a large supply of water at all seasons; and, although it is sulphurous, yet animals are very fond of it, and we found it to answer, in the absence of better, for drinking and cooking.

Two miles from here our road crossed the dry bed of the outlet to the Salt lakes some twenty miles south of this; there was a thin, white incrustation of salt over the bed of the stream. Vegetation has been of the same character to-day as heretofore, and the grama grass growing everywhere upon the road. Our march has been 26 miles, but the road so good that our animals did not suffer, and we reached camp early.

*September* 9.—Our course this morning, after leaving the Ojo del Cuerbo, was south 49° east, bearing directly for the peak of the Guadalupe, until we arrived nearly opposite to it on the west side; we then continued past it, gradually turning to the left around the hills at the base until we reached a rocky ravine which led us directly up to the foot of

the towering cliff of the peak. We encamped near the head of the ravine, where there is a spring about 200 yards north of the road, and good grass. Animals must be driven up the ravine to the water, as the wagons cannot pass further than the turn of the road.

We had a good road to-day, with the exception of four miles of sand, and made twenty-three and one-twentieth miles.

The Guadalupe range of mountains terminates at this place in an immense perpendicular bluff of light colored sandstone, which rises to the enormous height of nearly two thousand feet, and runs off to the northeast towards the Pecos. On the south of the peak there is a range of bluffs about two hundred feet high, running from north to south across our course, and over which we have to pass. At about ten or twelve miles south of here this bluff appears to terminate; but as we can pass up without difficulty at this place, we shall not go out of our course to avoid it.

*September* 10.—We remained in camp to-day until about 3 oclock p. m., when, getting our wagon train up the hill, we found ourselves upon very high rolling table land, which our guide says descends from here to the Pecos river. As we have been continually ascending from the Rio Grande to this point, we are therefore now upon the summit level of the two streams. As it rained most of the afternoon, we only made a short march of four miles, passing in a northeast direction around under the mountains, and encamped in a ravine which runs down through a large grove of pine timber from a gap in the Guadalupe mountains; there is a fine spring three hundred yards to the west of the road, which affords an abundant supply of water.

The mountains are covered on the eastern side with groves of large pine trees; and as this is the only kind of timber fit for building in the country, it may some day be useful We have also seen a species of cedar with the bark resembling that of the oak, and very different from any we have ever seen before.

There are many varieties of the cactus and palmettos about the mountains, and we have this evening for the first time seen the maguey plant, which constitutes almost the only vegetable food that the Apaches and southern Comanches get for a great portion of the year. They prepare it by boiling it until it is soft, then mash it into a paste, and I am told that in this form it makes a very palatable, nutritious food.

The Guadalupe is the last of the mountains between the Rio Grande and the Pecos. It appears there are three distinct ranges of mountains traversing the country east of El Paso in a north and south direction: the first the Organ range, twenty miles east of the Rio Grande; thirty miles from this the Sacramento, the continuation of which, about fifty miles north of Dona Ana, is called the "Sierra Blanco," and has perpetual snow upon its summit; from thence it extends on to near Santa Fe. The third is the range of the Guadalupe, fifty miles east of the second.

These wild and rocky mountain ranges are the places where several animals resort that are to be met with nowhere else. The grizzly bear (the most formidable animal of the continent) finds a lurking place in the caverns and thickets, and feeds upon the wild fruit that abounds here. The bighorn, or cimarron, is also seen skipping playfully from rock to rock upon the narrow overhanging crags, and cropping the short herbage which grows upon them: these, with the black-tailed deer, are almost the only animals found upon these mountains. One of the latter was killed this

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evening, and we found it very similar to the common fallow deer of the States, but much larger.

There are but few varieties of birds upon the prairies: we have, however, seen quails at all places we have been, and occasionally a few plover and English snipe.

*September* 11.—As our animals were somewhat jaded from the long marches we have made for a few days past, and as we had a long journey before us, I remained in our camp of last night until after dinner to give them rest, when we moved forward over a good road to Independence spring, five miles.

Here we found two large springs of pure cold water, which boil up from the ground and run off in a stream about the size of a barrel, with a great supply of oak wood and grama grass near, rendering it a most derirable place for encamping.

The country from the base of the mountains to this place is rolling, and the soil good.

The peak of Guadalupe, and the general outline of the chain, can be seen from here, and it appears to be impossible to pass through it with wagons anywhere north of our route; and as the defile is near the peak, which can be seen for many miles around, it is a good landmark.

About twelve miles south of this are several salt lakes, which our guide informed me had been formerly resorted to by the Mexicans for salt; but that since the Indians had become hostile, they did not venture to go there. The salt is deposited in a pure state upon the bed of the lake, about six inches in thickness; and when the water becomes low and recedes from high-water mark, it can be shoveled up in large quantities. The Salt lake north of El Paso is of the same character, and furnishes all the salt that is consumed in New Mexico and several of the States of southern Mexico. From specimens that I saw, I should imagine it to be pure chloride of sodium, with a very strong saline taste, and equal to the best Turk's island salt.

As it rained nearly all day to-day, the 12th September, we did not move.

On the 13th we started forward again, and travelled over a hard rolling prairie, passing many round symmetrical mounds on each side of the road, until we reached the Ojo de San Martin, at the head of the Delaware creek, our average course being south 85° east, and the distance travelled $15\frac{3}{10}$ miles.

The mounds were standing isolated and detached from the other hills around, and were as regularly symmetrical as they could have been made by art, being composed of an alternate strata of lime and sandstone lying horizontally upon each other in thin plates like slate, and receding in terraces from the base to the top, the shape in all cases being conical, and almost as round as if cut out for a monument. We noticed one with a cap upon the top, in the form of an inverted plate, which, from its peculiar shape, the Mexicans call "centirula."

We saw a fresh Apache trail crossing our road to-day, and, as they are probably novering about us for no good purpose, I shall see that our animals are guarded with great care. Our custom has been to herd them during the day in the immediate vicinity of the camp; at night the mules are driven into a "corral," formed with the wagons arranged in a circle, and the horses picketed together near the tents of the men, with senti-

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nels walking among them constantly. In this way I think we shall baffle Messieurs "Los Apaches," notwithstanding they have the reputation of being the most expert and boldest horse thieves in the west. They have often had the impertinence to enter the Mexican towns in open daylight, drive off animals, and take women and children prisoners, before the faces of the soldiers stationed there; indeed, they are as inveterate freebooters as can be found on earth.

There are several springs at this place, the waters of which unite and form the Delaware creek. One of them, the Ojo de San Martin, bursts out of a solid limestone rock in a volume of sufficient magnitude to drive an ordinary saw-mill at the fountain-head, and is as pure, sweet water as I ever drank.

Above this there are several others possessing different mineral properties. One is highly charged with sulphuretted hydrogen, and tastes very much like the Kentucky "Blue Lick water." Another is decidedly chalybeate, and a third is strongly sulphurous, leaving a thick incrustation of sulphur upon the rocks for many yards from the source.

These unite in one common outlet, and the amalgamation is far from pleasant to the taste.

Is it not within the scope of probabilities that these springs may be found to possess valuable medicinal properties, and that this place may yet (and at no very distant period) become a place of fashionable resort for the "upper-ten-thousand" of New Mexico? The climate here is delightful, the atmosphere perfectly elastic and pure, and the temperature uniform and delicious; then, may not an invalid derive as much benefit at this place as at Saratoga or any other of our watering places?

There is but little wood near here, except some small mezquite bushes and a species of dwarf live-oak, which answers very well for fuel. I also noticed yesterday a tree which is spoken of by a writer in California as being frequently seen there. It resembles the box-wood in some respects, growing in clusters or bunches, with a similar leaf, but appears to shed its bark (which is very thin and tough) annually. At this season, when the old bark is off, the stock and branches have more the appearance of the limbs of a person, both in color and texture, than of a tree, the exterior being a most beautiful flesh-color. It produces a fruit which is eaten by the Indians.

*September* 14.—Our course to-day has been north 83° east, down the left bank of the creek, crossing over a tract of poor soil covered in places with white decomposed gypsum. We touched the creek at but one place, until we arrived at our present camp. This is upon a high sandy bluff bordering the creek.

We found the stream at this point literally alive with a multitude of fish, and in a very short time we caught enough to supply the whole command. Among other kinds, we caught a white bass that I have never seen anywhere before, and found it very excellent.

From our last camp to where we struck the creek was 6 $\frac{3}{10}$ miles, and from there to this place 5 $\frac{3}{8}$ miles.

*September* 15.—We continued down the creek to-day in a course north 67° east for 9 $\frac{1}{2}$ miles, crossed and encamped on the south bank. We have passed over a country similar to that of yesterday, being poor soil, no timber, and covered with decomposed gypsum. The grama grass is

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very large and abundant along the valley of the stream, and affords excellent pasturage for our animals.

*September* 16.—Leaving the Delaware creek this morning, we struck out upon the prairie in a course south 64° 30′ east, and, after travelling nine miles, came in sight of the valley of the Rio Pecos. Our course led us down the stream six miles further, where we descended from the high lands into a sandy bottom, and encamped upon the river. The stream is here about thirty yards wide, very sinuous, rapid, and deep, with high clay banks. I understand that it receives a very considerable tributary some fifty miles above here, called the "Sacramento river," rising in the chain of mountains of that name; and this is said by the Mexicans to have upon its borders the most beautiful valley of lawns and woodlands of any streams known in New Mexico. They express their admiration of it by the word "linda," which, I believe, signifies super-excellent; yet, as it is in the heart of the Apache "range," it has never been settled.

Our Comanche guide informs me this evening that I cannot, as I desired, go directly from this point to the head of the Colorado or Brazos, as no man (not even an Indian) ever undertakes to cross the "Llano Estacado" opposite here. He states that it is eight days' travel from here to "Bosque Redondo," where the route from the "Joya de Cibaletta" crosses the Pecos, and about sixty miles to where the other route crosses near the southern terminus of the Llano Estacado. We are, therefore, obliged to follow down this stream until we find we can with safety turn east.

*September* 17.—We continued down the Pecos this morning for four and a half miles, where there is a rapid, with good rock bottom; and here we could have forded the stream, there being but three feet water in the channel. I, however, concluded, as the banks required some digging, to make a good passage for the wagons, that I would continue down the valley and search for a better crossing. After marching six miles further, we encamped again on the west bank of the river. Here we found the finest and most luxuriant grama grass we had seen, with mezquite wood. The water of the Pecos is slightly brackish, but we used it without inconvenience.

*September* 18.—Keeping down the right bank of the river, we found the valley covered in many places with a growth of small mezquite trees, and in these we saw for the first time since leaving the Rio Grande the white-tailed or common deer of the States. Our course was S. 68° 7′ E.; distance travelled 13¼ miles. The soil in the river bottom has been clay covered with a heavy grama grass, and the stream very crooked, with perpendicular banks from three to twenty feet high. Along its whole course the water is muddy, resembling the water of the Rio Grande. There is a total absence of anything like timber on its banks, and a stranger would not expect to find a water-course in approaching it until he was directly upon it, so much does it appear like other places upon the surrounding prairies. The course of the river runs so much nearer the direction I wish to travel than I had been led to believe from the maps of the country, that I shall continue down for some days further before turning east.

*September* 19.—Our road continued in the valley of the river, touching it occasionally, and cutting off the large bends, where it could be done, until we reached a high bank at 13¼ miles from our last camp; here we

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found good wood and grass, and encamped. The soil has been of a clayey nature to-day, but very soft and rich; no timber except small mezquite bushes, which answer very well for fuel. The road through the bottom where we have travelled to day will be muddy after heavy rains, but at such times travellers can keep back upon the high prairie ridge.

*September* 20.—Our course to-day was S. 81° E. for 15 $\frac{3}{10}$ miles along the west bank of the river. We passed a small salt lake upon our road, which was very highly saline; with this exception, the features of the valley were similar to that part which we passed yesterday. As I have not been able to find another ford since leaving the rapids, I have concluded to endeavor to effect a crossing at this place to-morrow. The river from the rapids here is very rapid, deep, and narrow, with high vertical banks of soft clay.

*September* 21.—I was obliged to resort to one of those expedients which necessity often forces travellers in this wild country to put in practice; and that was, to invent and construct a substitute for a ferry-boat to transport our men and baggage across the river. This I did by taking one of our wagon beds and placing six empty barrels in it, lashing them down firmly with ropes, and tying one on each outside, opposite the centre. I then attached a long stout rope to each end of the bed, and placed it bottom up in the water; a man then swam the river with the end of a small cord in his mouth, and to the end of this was tied one of the ropes of the wagon, which he pulled across and made fast to a stake upon the opposite bank. Some men then took passage upon the inverted wagon boats, and the current carried it to other shore, the rope attached to the stake preventing it from going down the stream further than its length. The boat was then drawn back by men for another load, and in this manner we crossed our men and baggage in a short time. We could transport 2,000 pounds of freight at one load, perfectly dry. Our wagons were then lashed fast to the axles, with ropes tied to each end, when they were pushed into the river and hauled across. There were fifteen feet of water where we crossed. As the current ran rapidly and the banks were muddy and steep, I was fearful that our mules would not make the passage. I therefore tied a rope to the neck of each one and pulled them across.

*September* 22.—This morning we made a march of nine miles down near the left bank of the river in a direction N. 82° E., where we struck a narrow laguna, or lake, which we followed for about two miles, and encamped near the southern extremity. The soil has been a rich loam, and I have no doubt would prove very productive. There has been a chain of sand hills in sight to-day, running from north to south across our course, about twenty miles to the east of us, (upon the Llano Estacado,) in which our guide informs me that there is water, but that we are obliged to pass over a sandy road for some fifteen miles to get through them. I have, therefore, determined to remain at this place until I can send ahead and ascertain whether I cannot pass to the south of them.

*September* 23.—I sent out Lieutenant Sackett with an escort of dragoons, this morning, to explore the country in the vicinity of the sand hills, and shall remain here until to-morrow evening, by which time I expect to learn the result of his explorations.

*September* 24.—After filling our water barrels, and giving our animals all they would drink, I made a start this evening at two o'clock, and

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travelled ten miles in a direction nearly perpendicular to the valley of the river. Shortly after we left the laguna, an express returned from Lieutenant Sackett, informing me that, after, making a thorough examination of the range of sand hills for about forty miles south of our course, he was of the opinion that there was no place within that distance where they could be crossed with wagons. The whole surface of the country in that direction seemed to be one continuous succession of white sand hills, from twenty to one hundred feet high, in which his horses sunk to their knees at almost every step, from which I infer that the route indicated by our guide is the only one in the vicinity where this formidable obstacle can be passed. I shall, therefore, take a direct course for the pass in the morning, and expect to reach the hills during the day.

*September* 25.—We reached the sand hills this afternoon, about two o'clock, over a good level road, except about four miles near here, which is sandy, making the distance from the Pecos twent-three miles and four-tenths. There is a great abundance of good water at several places in the sand hills, but it is necessary to drive animals to it, as it is half a mile from the road and wagons cannot pass nearer. There is a trail leading to the water from where the road strikes the hills. These hills, or mounds, present a most singular and anomalous feature in the geology of the prairies. They extend (so far as we have explored) at least fifty miles in nearly a north and south direction, and from five to ten miles east and west; they are white drift-sand thrown up with much uniformity into a multitude of conical hills, destitute of soil, trees, or herbage.

In following up the trail from our road into the midst of this ocean of sand, we suddenly came upon several large, deep pools of pure water—the very last place on earth where one would ever think of looking for it. We are told by our guide that water can always be found here in the dryest season, and, judging from the rushes and other water plants growing in the ponds, I have no doubt that such is the case.

*September* 26.—As we have a long march before us still, and as the road through the hills is sandy, I have concluded to double teams to-day, and send on one-half of the wagons to the last watering place, five miles from here, and take up the remainder to-morrow.

*September* 27.—We moved up to-day with the wagons that were left behind yesterday, and found the water at this place equally as good as at the other. Although there are but two particular points where trails lead from the road to water in the hills, yet it can be found almost anywhere between the two points by going about half a mile to the east of the road, among the highest hills.

*September* 28.—Eight miles of sandy road which we passed over to-day brought us out upon the hard prairie again. Thus the entire distance from where we first encountered the sand to this place is about seventeen miles; but only about one-half that distance is bad, and this not worse than some parts of the road upon the Rio Grande. There is good grass near the hills, and sufficient wood for fuel.

*September* 29.—Leaving the sand this morning, we pushed out upon the high plain of the Llano Estacado, not knowing whether we were to find water before we reached a luguna about sixty five miles distant. As our guide had passed over this portion of the road but once before, and then in a hurry, he was not very familiar with the localities. I therefore

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sent a party in advance to search for water, and felt some anxiety as to the result; I was relieved, however, about 11 o'clock, when a messenger returned with the cheering intelligence that the party had found a large pond of good water about sixteen miles from where we left this morning. This good news appeared to inspire our men and animals with renewed vigor. From the cheerless silence of the last two hours, the aspect of everything changed in a moment to humorous jokes and boisterous merriment. The whips were heard cracking from one end of the train to the other, and the mules appeared to move along with more ease than before.

From the sand hills our road followed an old Comanche trail until we turned to the left, two miles from our present camp. The track we make is plain, and travellers will have no difficulty in following it to the water. We are near two ponds in the prairie, where, judging from present appearances, there will always be water found, except in the dry season; the grass is good. Our course from the sand hills is N. 57° E., and the distance fifteen miles and three-tenths.

*September* 30.—In consequence of the hard work we have given our mules for the last four days, I "lay by" to-day to give them rest and grass, after the long journey of about fifteen hundred miles which they have made from Fort Smith; they require much care and attention, and it causes more delay than is agreeable; but there is no alternative.

*October* 1.—This has been a most fatiguing day to me, as I have been suffering for the last five days with an attack of dysentery; it has reduced me to such a weak state that I am obliged to be carried in a wagon in a lying posture, and every slight jar of the wagon sends the most acute pain through my whole system.

We marched seventeen miles in a course N. 67° E. over a firm high prairie, and are encamped near a pond on the plain. About half way between this place and our last camp, we discovered a small lake about one mile to the north of our road, where it is thought there will be water at all seasons; it is about three feet deep, covers several acres of ground, and has rushes growing in it. There are also numerous trails made by mustangs leading to it, showing that it is much frequented by them; and as the horse requires water every day, he would not probably stay at a place where it could not be found at all times. This lake I have called "Mustang pond;" and as it is situated about half-way between the sand hills and the laguna, (which is ahead of us,) I conceive it to be very important for travellers. Nine miles from our last camp, there is another large pond about half a mile to the right of the road, and I have driven a stake in the middle of the road opposite to it, with directions written upon it how to find the pond; this is a mile west of the Mustang pond. By keeping this in mind, and remembering that the trails in the vicinity all concentrate at the water, there will be no difficulty in finding it. As our road does not go directly to the pond, and as there is much sameness in the aspect of the prairies upon the Llano Estacado, persons might pass this place without finding the water, unless they follow the directions given above.

*October* 2.—We marched twenty-three miles to-day in a course N. 72° 22′ E., which brought us to the Laguna, or Salt lake. The country has been similar to that of yesterday, over the high rolling table lands of the

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Mésa, with no wood except the small mezquite brush. The water in the Laguna is brackish, but there is a small pond south of the road where we are encamped, which, although it is slightly sulphurous, is not unpalatable.

Should travellers come to this place, on their way to New Mexico, in an extremely dry season of the year, I would recommend them to carry from here in their wagons a supply of drinking water sufficient for two days, as this would last them until they reached the sand hills, if, by any accident, they did not discover the Mustang pond.

*October* 3.—Leaving the Salt lake this morning, our bearing was N. 71° E. for eight miles, where we reached the border of the high plain, and descended an easy slope of about fifty feet to a bench below; here we could see two low bluffs in the direction we were marching, near which our guide informed us we could find a fine spring of water. Fourteen and a half miles' travel over a beautiful road brought us to the spring, which we found flowing from a deep chasm in the limestone rocks into an immense reservoir of some fifty feet in depth.

This appears to have been a favorite place of resort for the Comanches, as there are remains of lodges in every direction; indeed, our Comanche guide tells me that he has often been here before, and that there was a battle fought here some years since between the Pawnees and Comanches, in which his brother was killed. He also informs me that there is a good wagon route from here to the Rio Pecos, striking it some seventy miles lower down than where we crossed, keeping entirely to the south of the Llano Estacado, and crossing the head branches of the Colorado.

There is a Comanche trail leading over this route, and it would, undoubtedly, be the best between this point and Chihuahua, as it is nearer than the one we have travelled, with no sand upon it and an abundance of water.

I think by taking the trail at this place and keeping the crest of the Llano Estacado on the right, one would have no difficulty in getting through to the plains at the Chihuahua crossing.

The mezquite trees are becoming larger as we descend from the high plain, and the soil better; several fossil shells of the muscle species were found here.

*October* 4.—We left the "Big Spring" to-day at one o'clock p. m., and travelled 12¼ mile in course N. 43° E. to a spring in a beautiful timbered valley, with excellent grass. The spring is in the limestone rocks to the south of the road, and furnishes a good supply of water. It is a tributary of the Concho. We have passed over a rolling country to-day, covered with mezquite trees.

*October* 5.—Our course to-day was N. 47° 28′ E., over a rolling and rather broken country, of good soil, and covered on each side with large mezquite trees.

After marching 11½ miles we encamped in an extensive bottom or flat, through which there is good water standing in pools along the bed of the stream, and a great abundance of the finest mezquite grass. Manuel, our Comanche guide, leaves us at this place, and returns alone through a wild Indian country, some six hundred miles, to his home at San Miguel. He strikes directly across the "Llano Estacado" to "Bosque Redondo," on the Rio Pecos, over the route which has been spoken of before as

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passable for wagons. He expects to make the journey in fourteen days, and has no fear but what he shall reach home in safety. I have found him a man of much more than ordinary judgment and character; and should it ever become necessary to make an examination of the route from here to the Bosque Redondo, and thence to Joya de Cibaletta, I would have no hesitation in recommending him as the best guide that can be found in New Mexico.

*October* 6.—For about eleven miles after leaving camp this morning, our road passed over a perfectly flat prairie, covered with short buffalo grass, and through a continuous dog town almost the entire distance. We then struck into a creek bottom, crossed and followed down about three miles to its junction with a large stream, which is the main Red Fork of the Colorado, or, according to the Comanche nomenclature, the Pash-a-ho-no. We found this a stream of twenty yards in width, six inches deep, and running rapidly over a rocky bed; the water has a red tinge, and is slightly saline. The banks are bold and rocky, and I should imagine this to be the character of it to its source in the "Llano Estacado." This is the first tributary of the north branch of the Colorado that we have crossed. The main Rio Colorado has, near its head, two principal tributaries—the Concho and the Red Fork; all others are affluents of those two.

The country through which we are passing now is becoming much more interesting than it has been; there is some timber and streams of running water. Our camp is in a grove of mezquite and wild china trees upon the bank of a creek running into the Pash-a-ho-no.

We have seen wild turkeys upon this creek—the first since leaving the Rio Grande. Quails and meadow larks are common everywhere upon our route.

*October* 7.—Lieutenant Harrison started out after dinner to-day to examine a ravine two miles from here, and, as he has not returned, I think he must have wandered further than he intended, and has not been able to reach camp before dark. I have had our cannon fired, and if he is within twenty miles of us he will be likely to hear it, as the atmosphere is perfectly still and clear. Should he not return before to-morrow morning I shall send out parties to search for him; but, as he is a good woodsman, I am in hopes he will find his way to camp alone.

We remained in camp to rest our men and animals, intending to resume our march to-morrow.

*October* 8.—This has been a most melancholy day to us. As Mr. Harrison did not return during last night, I concluded that he might have become lost upon the prairies, and at daylight this morning I had another gun fired, in order that, if within hearing, he might take the direction and return to camp. I also sent out Lieutenant Updegraff and Beaver to take the track of his horse, follow it to the ravine, and, if possible, find out where he had gone; besides sending several parties of dragoons in different directions in search of him. In the course of two hours Lieutenant Updegraff returned, and stated that he had followed the track about one mile and a half beyond the ravine, where it appeared Lieutenant Harrison had been met by a party of Indians, and gone off with them in a southern direction. I immediately ordered Lieutenant Sackett to take all our mounted force, get upon the trail of the Indians, and follow them until he overtook them and recovered Lieutenant H.



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Lieutenant Sackett followed the track about two miles from where he was met by the Indians, to a small branch of the Colorado, where, to his horror and astonishment, he suddenly came upon the murdered and mangled corpse of poor Lieutenant Harrison, lying down among the rocks, where they had thrown him, scalped, and stripped of all his clothing. The Indians had then struck out upon the prairie, and set off at full speed.

These facts having been reported to me, I despatched a wagon for the body, had it brought to our new camp, (three miles from that of last night,) and am preparing a box, in which I hope to take it to Fort Washita.

As it was late in the day before we got the corpse to camp, and as it was impossible to follow the trail after night, I directed Lieutenant Sackett to postpone his departure until early to-morrow morning. They have already had sufficient time to get a long distance from us, and, as our horses are mostly jaded and poor, I have not much expectation of his overtaking the murderers, unless they have gone to an encampment where there are women and children; but, from the course they have travelled, and their manner of encamping, Beaver thinks it probable that he may be able to form a very correct idea as to the part of the country they are making for, and perhaps tell to what tribe they belong.

There are several circumstances which have led me to believe that the act has been committed by a party of Kioways. There has been a large band of them lurking about the head of the Rio Concho during the whole summer, committing depredations upon the inhabitants of the State of Chihuahua; and it is but a short time since they stole several horses from an emigrating party from Louisiana upon this same stream.

The emigrants followed them, but, on overtaking them and not finding their animals, determined to keep them prisoners until they were returned. This resulted in an encounter, in which several of the Indians were killed, and among them their chief. Besides this, I heard of two other instances where Indians of this same tribe have committed depredations upon emigrants on the northern routes to New Mexico.

It has occurred to me that a remnant of the band upon the Concho may have been following us to get revenge for the loss of their chief. If so, they have taken most ample compensation; for a better young officer, or a more courteous, amiable, and refined gentleman, never lived. He was universally beloved by all who knew him: his kindness of heart and gentleness of disposition were remarked by every one.

When the melancholy news reached us that he had been murdered, there was such an expression of gloom cast over the command as I have never withessed before. Old soldiers who had often seen their comrades falling by their sides in battle, and whose hearts, it might be supposed, were steeled against the manifestation of what some might consider weakness, were seen to turn away their faces to conceal their tears. They knew that in his death they lost a good friend.

*October* 9.—After starting Lieutenant Sackett, with all our mounted force, in pursuit of the murderers, I moved forward, this morning, over a fine rolling country of prairies and timber, with good soil, and in many places well watered. At eleven miles we passed a pond in which there will be good water at all seasons. At nine miles from this we struck the

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first affluent of the Brazos, (a tributary of Clear Fork.) running north. All the branches of the Colorado upon our route run south.

Our camp is upon the creek, where we have good grass and mezquite wood.

Lieutenant Sackett, with his command, returned about 10 o'clock this evening, and reports that he took the trail of the Indians, and followed it for a few miles, when he came to a spot where they had made a fire, cooked meat, and departed in great haste, after night, leaving a pair of new moccasins, a lariat, and a saddle, from which we infer that they did not know we were so near, were alarmed at hearing our gun, and left immediately. Their course from here was almost due north for fifteen miles, (the distance he followed them.)

Finding that some of his horses were failing, one giving out entirely, and the Indians far ahead upon fresh animals, he reluctantly abandoned the pursuit, and returned to camp.

Beaver pronounces the saddle and moccasins the same kind as those used by the Kioways; and, as their permanent abiding place is nearly opposite the Antelope buttes between the Canadian and Arkansas, the bearing of the trail would lead there. These are additional evidences of the correctness of my first suspicions.

It is well known, furthermore, that these Indians are a most deceitful and treacherous race: even the Comanches will not trust them. Lieutenant Harrison has always, in the goodness of his heart, had great confidence in the effect of kind and hospitable treatment towards the Indians, in order to secure their good will; and has often been heard to remark that, should he meet with a party of Indians when alone on the prairies, he would approach and greet them cordially. He was well armed and mounted; and it is thought that, if he had made the attempt, he might possibly have reached camp unharmed.

*October* 10.—Our road to-day passed over a very level plain, mostly covered with mezquite wood, until we reached this place. Our course has been N. 62° 28′ E.; and the distance travelled thirteen miles.

We are encamped upon the same stream that we left this morning, and have good water standing in large pools where our road crosses. About four hundred yards below, however, there are salt springs running into the creek, which renders it nauseous and unfit for use.

We passed over some gypsum rock to-day, near a small creek, and here we found the water bitter and unpalatable, as it has always been when we have met with that mineral.

*October* 11.—Leaving camp early this morning, we marched about two miles, when we struck a piece of sandy road three miles in extent; but we passed over it without difficulty, and had a most capital road from there to our camp.

There have been two low bald mountains in sight, about ten miles to the north, nearly all day, which are good landmarks. They are upon the head of the Double Mountain fork of the Brazos, and give it its name. We have been travelling through groves of mezquite timber, with a beautiful carpet of rich grama grass underneath, nearly all day.

There has not been so much water upon our road as usual to-day. We, however, passed one pond, where we obtained sufficient to water our animals. At our camp, we are upon the head of a creek which is slightly

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brackish, but is drinkable, and our animals appear to be more fond of it than of sweet water. We have seen several fresh Indian trails to-day, and they have been telegraphing with their signal-fires in several different directions. One was about twenty five miles to the northeast of us, in the mountains opposite the main Brazos, and another in our rear. This is a method by which they communicate to each other intelligence of the approach of strangers, and various other facts known to themselves.

*October* 12.—Our course to-day has been north 55° east, and our road passing over a rolling prairie, with but little timber for the first seven miles, when we came upon the high banks of the Double Mountain fork of the Brazos, or "Tock-an-ho no," as the Comanches call it. Where we struck the stream it was fifty yards wide, twelve in depth, and very rapid, with a rocky bed at one place, but generally quicksand. We did not cross, but continued to the south, crossing a spring branch, and passing over as beautiful a country for eight miles as I ever beheld. It was a perfectly level grassy glade, and covered with a growth of large mezquite trees at uniform distances, standing with great regularity, and presenting more the appearance of an immense peach orchard than a wilderness. The grass was of the short buffalo variety, and as uniform and even as new mown meadow; and the soil equally as rich, and very similar to that in the Red river bottoms. This, together with the fact of its being well watered with small spring brooks, gives it all the requisites for making beautiful plantations that the most fastidious amateur in agriculture could desire. We encamped on a creek to the south of the road.

*October* 13.—It has been threatening rain for the last four days; and this morning, as we had everything in readiness for marching, it commenced, and continued all day, accompanied by a cold north wind. We made nine miles over a very beautiful country, covered with mezquite trees, and intersected with numerous small spring rivulets, tributaries of the Double Mountain fork of the Brazos.

We encamped on one of these, and had much difficulty in making a fire, as everything had been saturated with water. Our road has been heavy, and the cold "norther" has had an effect upon our animals which I did not anticipate; many of them failed before we reached camp, five gave out entirely, could not be got in, and died during the day. Three more have already died since we reached camp, and I very much fear, if the storm does not abate, we shall lose many more before morning. They are principally Mexican mules, raised in a warm climate, and could not (in the low state of flesh they are now in) stand cold rains.

*October* 14.—We have had during last night one of the most terrific storms I have ever witnessed in the whole course of my life. The wind blew a perfect tempest from the north, and it appeared as if the whole flood-gates of the heavens were suddenly opened, and the accumulated rains of a year poured out in torrents for fifteen consecutive hours upon us. The whole surface of the earth was deluged; even upon the tops of the hills there were three inches of water, and it filled every ravine and hole about us. The creek upon which we are encamped had but very little water in it last night: it is now full to the top of its banks, and would float a steamboat.

Our poor mules have suffered severely from the effects of the storm, and twenty-five have perished. I trust, however, that the violence of the storm

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has passed, and that we shall be enabled, with care, to preserve the remainder. I have had several of our wagon covers cut up, and made blankets to cover the weakest of them. We cannot move from here until the creeks run down, and our animals recover some strength, as at present many of them are but barely able to walk.

We have now remaining twenty days' rations, which would have been more than sufficient to serve us to Fort Washita; but the storm has placed me in a situation which could not have been anticipated, and I have reduced the allowance of flour one third, to provide against any further contingencies.

Previous to the storm, we were moving along finely at the rate of about sixteen miles per day, and our mules were doing as well as could be expected; but the loss of thirty-three in one night has placed a very serious obstacle upon our movements, and I am obliged to leave a part of our wagons, reduce the amount of our baggage as much as possible, and endeavor to get on with what we cannot dispense with, after the ground becomes a little settled.

I have felt the most lively anxiety for our mules from the commencement of the journey, knowing that our progress depended entirely upon them, and have therefore required the teamsters to pay the most unremitting attention to them; but it appears that they cannot endure one of these bleak northers upon the prairies.

Our oxen did not suffer in the least from the storm, and some of them belonging to our sutler, that were very lean when we left Dona Ana, and have hauled very heavy loads the entire journey around from Fort Smith, have been improving for the last month, while our mules, with lighter work, have been falling off. I am decidedly of the opinion, after the experience I have had with different kinds of cattle, that oxen make better teams for prairie travelling than either mules or horses. In the very warmest weather of summer, over sandy roads where there is but little water, mules are preferable, but under any other circumstances I should prefer oxen. They will travel from 20 to 25 miles from day to day over good roads with perfect ease; and there is no danger of their being stolen by the Indians. In hot weather they should be driven morning and evening, and allowed to stop during the middle of the day.

*October* 15.—We remained in camp to-day awaiting the termination of the storm, and giving our animals time to recover a little from the effects of it. As we lost no more last night, we hope to be able to preserve those that we have left. The cold wind continues to blow from the north, with intervals of rain, but I think the storm is nearly over; and as soon as the creeks (which are now swimming) run down, I shall endeavor to go on. I reduced the flour part of the ration one third yesterday, and as the men see the necessity of it, they submit to it cheerfully. Indeed, they have upon all occasions performed their arduous duties with the utmost alacrity and good will, and upon the whole of our long march of some seventeen hundred miles I have seldom had occasion to reprove one of them.

*October* 16.—This has been a day of general drying, and clearing our wagons of all articles that could conveniently be dispensed with upon our march. I have taken five of our oldest wagons to pieces, and placed them in a low place near the creek on the south side of the road. I have also had other surplus articles boxed up and buried about fifty yards from

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the road, and a large fire made over the spot, with directions written upon a tree to the right where these articles may be found.

The storm has passed, and we have a bright, warm day, with a south wind. If this continues I shall move ahead to-morrow to the next creek, about four miles from here.

*October* 17.—We made a start this morning, and marched four miles to another small creek, which we found too high to cross, and encamped upon the west bank. This creek unites with the one we left this morning, and runs into the Clear Fork of the "Brazos."

The country continues of the same character as before, gently undulating, smooth, and well situated for farms. We pass from one creek to another every three or four miles over high and dry mezquite openings, which slope very gently towards the creek bottoms on each side, and the soil cannot be surpassed. There is no part of it that cannot be made available for cultivation. We find upon this creek mulberry, elm, hackberry, wild china, and oak.

*October* 18.—We crossed the creek this morning, and after travelling two miles in an east course, struck another, which we found still too high to cross, and were obliged to encamp on the west side to await the fall of the water. We have seen signal-fires at several points to-day, showing that Indians are about us.

*October* 19.—Last night was one of the coldest I have ever known at this season of the year. About dark the wind turned to the north, bringing clouds and rain, and this morning the surface of the ground is covered with snow. Our mules fortunately found cover in the timber on the creek, and did not suffer so much as we were fearful they would. Much to our surprise and delight we found the creek had fallen six feet during the night, and was now fordable. We crossed after digging down the banks, and marched four and a half miles in a course 1° 30′ south of east, when we reached another creek tributary to the "Qua qua ho no," or Clear Fork of Brazos; we crossed it, and encamped on the east bank. There are several kinds of hard timber upon this creek, with fine grass. All these small streams have buffalo, cat, and several other kinds of fish in them. We have seen fresh Indian signs to day, but as yet none have shown themselves.

*October* 20.—We travelled to-day over a very beautiful succession of ridges and valleys between clear running brooks, skirted with a variety of different kinds of timber for ten miles, in a direction N. 70° 20′ E., when we came to the hills which border the valley of the Qua qua ho no, a branch of the Clear Fork of Brazos.

I was about three miles in advance of the train, with Beaver and three others, when we discovered five Indians coming towards us, driving pack horses. As soon as they saw us they changed their course, and appeared afraid to come near. I sent Beaver out alone to meet them, and to invite them to approach. Instead of going directly where they were, he went to an eminence to the right, where they could see him distinctly, and beckoned to them with his left hand to come to him, at the same time placing his right hand in token of friendship. After repeating this pantomime several times, with great formality and precision, one of the Indians galloped towards him until he reached within two hundred yards, when he halted and went through the same gestures as Beaver had done; after this they approached and embraced, when questions were asked by each

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as to who the other was, where they were going, &c., &c. They were a party of Comanches, and stated that their village was but a short distance off on the bank of the "Qua-qua-ho-no." After remaining but a few minutes with us, they rode off again at full speed towards their camp, and in a short time parties were seen coming towards us from all directions. As our train had reached us I made a halt, and we soon had several hundred men, women, and children around us. I permitted them to approach, as I knew they would commit no depradations while their families were with them.

They had been with us but a short time, when we saw another large party approaching, which Beaver instantly pronounced to be his friends the Kickapoos—and this proved correct. They numbered one hundred warriors—fine, dashing looking young fellows—all well mounted, and armed with good rifles, upon some of which we saw the familiar names of "Darranger" and "Tryon," "Philadelphia, makers." They had their families with them, and were going to pass the winter in hunting upon the Colorado, where they expected to find game abundant. They had a very large number of horses and mules, to transport their provisions and baggage, and were in every respect well fitted out for their hunt. The name of their chief was "Pa-pe-qua na," a good looking old man, who said he had always been a friend to the whites.

Among the Comanches were several chiefs and captains; who, after the usual prelude of expressing their entire devotion to the American people, showed me letters from various persons who had passed through their country, requesting the whites to treat the bearers kindly. Among them I remember the names Se na-co, Pe a te-quash, and Was-se-na ha. Se-na-co was a dignified, fine-looking old man, and showed me numerous testimonials of his friendship and good will towards the whites. Among others, he had letters from Major Neighbors, the Comanche agent, Colonel Montgomery and Major Gates, of the army, all giving him a good character. He kept these with great care, and appeared to regard them as of much importance. He is principal "war chief" of the southern Comanches, and appears to be sincere in his professions of friendship for us.

While the Kickapoos remained with us, I inquired of them if they had heard anything said among the Comanches relative to the murder of Lieutenant Harrison. They had not, but were of the opinion that the act was committed by the Kioways; and the chief promised to make diligent search among all the Indians he met, for the horse and other articles that were taken at the time. These were minutely described to him, and he felt confident he should be able to learn everything connected with it before his return home to the Creek nation, in the spring, and promised to report his discoveries to the commanding officer at Fort Washita.

These Indians are brave warriors, good shots, and prepared to meet any of the prairie tribes, either in peace or war. They carry out goods on their hunts, which they exchange for mules, and drive them to the settlements in the spring; thus they form a commercial communicating medium between the white traders and the wild Indians, and drive a profitable trade, while they indulge in their favorite amusement, the chase.

After I had made the chiefs a present of some tobacco, I invited Se na-co and his suite, eight in all, to our camp for the night. He appeared much

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gratified with his reception, and, when he parted from us, shook me warmly by the hand, saying that "he was not a Comanche, but an American;" and, as I could not be outdone in politeness by a wild Indian, I returned the compliment by telling him that I was soul and body a Comanche, and that there was not a drop of Anglo-Saxon blood in my veins, all of which was no doubt duly understood and appreciated.

The Qua qua-ho-no, upon which we are encamped, unites with the Clear Fork of the Brazos about two miles below here. It is forty yards wide, two feet deep, and runs rapidly over a gravelly bottom. It is shut in on both sides by ranges of hills about two hundred feet high, between which the creek flows through a most beautiful and picturesque valley two miles wide, of fine rich soil, intersected at every few hundred yards by rapid spring rivulets, affluents of the main stream. This is and has been for many years a favorite place of resort for the Comanches.

The valley being covered with several kinds of grass that remains green during the winter, they come here in autumn, graze and fatten their horses, and are ready for the buffalo on their winter migration to this region. We found the first pecan timber here that we have seen since we left the Creek nation.

*October* 21.—We crossed the creek this morning and passed out of the valley of the Qua-qua-ho-no through a ravine which winds by a very gentle and almost imperceptible grade to the top of the plain, crossing several small branches before we reached our present camp, seven miles from the last.

We are upon a clear spring branch fifteen feet wide, abounding with fish. Our poor mules are so much reduced that I am obliged to husband their strength with great care in order to get along at all. I therefore make short marches, to give them ample time to rest and eat. The mezquite wood and grass continue very abundant, and we occasionally see the grama grass.

The principal rocks for the last four days have been sandstone of different kinds, some dark and highly impregnated with iron, and having the appearance of volcanic productions; others in very thin slabs or plates and of an exceedingly fine texture, the fracture resembling that of a bone. I observed this evening a variety of the thistle which is new to me; it has a stock of about three feet in height, with a most gorgeous and beautiful blossom of a deep royal purple color. It has something the shape and appearance of the passion flower.

*October* 22.—At three miles from our last camp we crossed a large spring branch twenty feet wide, which runs into the Clear Fork of Brazos. Our road from there was over a smooth, undulating country, abounding with small streams and covered with mezquite timber; after travelling nine miles and three fourths, we encamped upon another small tributary of the Clear Fork of Brazos. The weather begins to be warm and clear, and our mules are improving.

*October* 23.—Our course to day has been N. 68° 8′ E., over beautiful fertile ridges and valleys, covered with live-oak, post-oak, and mezquite timber for nine miles, when we struck a rapid stream of clear water about twenty feet wide and eight inches in depth, with high banks skirted with a variety of large timber, such as live oak, wild china, elm, hackberry, and cotton-wood. The valley, which is a mile wide, has a most luxuri-

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ant grass and other vegetation, indicating the best quality of soil. There are bluffs about fifty feet high bordering the valley, and these are covered with groves of post-oak. The stream runs to the east of the Clear Fork into the main Brazos. About thirty miles north of our camp there is a sharp mound visible from the hills about here, and Beaver tells me that directly at the foot of this mound runs the Big Witchita, one of the principal tributaries to Red river, and that thirty miles in a northwest course from that mound the Red river forks: one branch, coming in from the west, is called Ke-che a qua-ho-no, or "Prairie-dog Town river," from the circumstance of there being a round mound upon the stream which has a prairie dog town on the top of it. This branch rises in the Llano Estacado. The other or northern branch is the principal stream, which rises in the Salt plains near the head of Dry river.

*October* 24.—After marching 6 7-10th miles this morning, we came upon the bluffs which border the valley of the main branch of the Rio Brazos; we descended about fifty feet by an easy slope into the valley and struck the river at a place where it was fordable. It was a much larger stream than I had anticipated, being 200 yards from bank to bank, with a current of about four miles an hour, and three feet deep in the channel at this time, (when the water is at a medium stage.) Judging from the "drift," it does not appear to be subject to a rise of more than five feet above its present depth, and does not overflow its banks. The bed is red sand, which becomes soft quicksand during a rise or fall, and is then difficult to ford. It was falling rapidly when we reached it, and we were obliged to take off our mules, drive them across, and pull over the wagons with ropes, the men taking the water for each wagon. This stream rises in the salt plains of the Llano Estancado, some hundred and fifty miles west of here, and I am told runs through a rough, broken country for a great portion of the distance; indeed the mountains along its borders were frequently pointed out to me by our guide along our route west of here. The water is brackish and unfit for use; there are, however, small streams running into the river so frequently that fresh water can be found at almost every place where it is required. The valley of the Brazos is (where we crossed) three miles wide, elevated about eight feet above the water in the river, and skirted on each side with a range of hills, from fifty to two hundred feet high, covered with timber. The soil in the valley upon the west side is rather sandy, but on the east side it is good. The adjacent country upon both sides is very fertile. Should our government at any future time decide upon establishing a military post as far west of the frontier settlements of Texas as this, I am of the opinion that near this place would be the best that could be selected, for the following reasons: The Rio Brazos runs through a country much frequented by all southern prairie tribes of Indians east of the Pecos. Upon the south and west side range that numerous and powerful tribe the Comanches; also the Kioways, Lepans, and Tonkeways. Upon the north and east side are found the Witchitas, Caddos, Wacos, and those other small tribes which inhabit the country between the Washita and Red river. The Brazos forms the boundary between the Comanches and the tribes living east of it, and the latter are not suffered by the Comanches to hunt upon the west side of this river. A military post established here would therefore be in close proximity to all of these tribes, and

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would unquestionably have the effect in a great measure to put a stop to the depredations which they commit upon the frontier settlements of Texas. From all I can learn, there is a very superior tract of country between here and the extreme western settlements in Texas. This would be occupied in a short time, if farmers could have the protection which a garrison at this place would afford. As this is nearly on a continuation of the line dividing the waters of Red river from those that run south into the Brazos, Trinity, and Sabine, and as the geography of the country would point out this ridge as being the most favorable location for a road, it would strike the Brazos at this place. There is oak building-timber and stone in abundance in this vicinity. The grass remains green during the entire winter, and animals thrive and fatten without any other food. The climate is mild and salubrious, the atmosphere dry and pure, and cannot prove otherwise than healthy. These, with other local advantages, such as pure water, rich soil, good fuel, &c., make this the most favorable point for a military post I have seen. We encamped to-night upon a small branch running through the Brazos valley, about two miles east of where we crossed.

*October* 25.—We passed up a ravine by a very gradual and easy ascent to the plain on the east side of the Brazos, and taking a course N. 65° 50′ E., travelled over rolling mezquite and post-oak openings, with occasional prairies, for twelve and a half miles, where we encamped on a small affluent of the Brazos.

The soil on this side of the river is different from that on the west side, being a mixture of reddish clay and sandy loam; it is, however, equally as fertile, and produces a luxuriant vegetation. We have passed several ledges of dark hard sandstone to-day, which would make good building material.

*October* 26.—Leaving the creek this morning, we passed up through a grove of heavy post oak and black-jack (the latter a species of oak) of about four miles in width. This is upon a ridge which divides the Brazos from the west fork of the Trinity river. Continuing on in a direction north 45° 28′ east, over smooth ground, we made 13 1/16 miles, and encamped on a small running stream (ten feet wide) which our guide calls the head of the main west fork of Trinity. It is fringed with a narrow strip of large oaks and other hard timber, suitable for buildings and rails, and flows through a valley about a mile in width, of good soil, (a rich sandy loam,) which is in every respect well adapted for farming.

There is grass in this valley which grows to the height of six or eight feet, with a round jointed stock, and a head upon the top filled with seed which our animals eat eagerly, and I think must be very nutritious.

The timber increases in size and quantity as we advance. We are now passing through groves of oak, and do not find so much mezquite timber as we did on the other side of the Brazos. The grass has also changed from the grama to the mezquite variety. Upon the last hundred miles of our route we have seen but little game, as we have been in the vicinity of Indians who are constantly hunting and drive it off; but now we are coming where the Indians seldom hunt, and the game is more abundant. Two deer and three turkeys were brought into camp this evening, and we have seen the first grouse to-day since leaving the vicinity of Chouteau's trading-house, on the Canadian. These birds ap-

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pear to stay near the settlements, as we have seen none upon our whole march at any other place.

*October* 27.—We passed out of the valley this morning; and, after travelling three miles, struck upon the ridge dividing the Red river from the Trinity. Here we found a fine smooth road, and travelled 14½ miles in a direction north 65° 15' east, encamping upon a small branch of the west fork of the Trinity.

The road upon the "Divide" crosses the heads of numerous creeks, running into the Trinity on the south and the Little Witchita on the north, and upon nearly all of them there is a great abundance of timber and good soils. Between the tributaries of the Trinity (which occur every two or three miles) there are ridges of rolling prairie, covered with luxuriant grass. The western border of the Upper Cross Timbers has been in sight to the south all day.

*October* 28.—Our road has continued near the crest of the Divide all day, sometimes crossing the head of an affluent of the Little Witchita, and at others a branch of the Trinity. Our average course has been north 74° 32' east, and we travelled 13$\frac{1}{10}$ miles. We are encamped in a rich bottom between two small spring brooks, and have fine grass and wood.

We passed through a dense grove of oak to-day of four miles in width, and have seen many more on both sides of our road.

When we arrived, we found there had been a large number of Indians encamped here about five days since, and Beaver, with his usual sagacity, immediately pronounced it at Kickapoo camp. Having a curiosity to learn how he arrived at this conclusion, I asked him what he had seen to indicate that this was an encampment of that particular tribe? This led to a conversation, in which he instructed me how, on seeing an old Indian camp, to determine at once what particular tribe had occupied it.

The Comanches make their lodges by placing poles on the ground in a circle, and tying the tops together, thus forming a frame-work of a conical shape, which they cover with buffalo hides.

The Witchitas makes their lodges in the same manner, but do not unite the poles at the top, leaving an opening at the top for the smoke to pass out. This, when covered, forms the frustrum of a cone.

The Kickapoos place the poles in a circle like the Comanches; but, instead of bringing them to a point at the top, they bend them so as to unite in an arch with those of the opposite side: the lodge is thus round upon the top.

The Delawares and Shawnees carry tents, and leave the poles standing wherever they encamp.

The Cherokees have tents also, but make their fires different from the Delawares: they place the wood in the fire with the sticks parallel, and burn from one end, pushing it into the fire as it burns away; whereas the others place each stick pointing to the centre of the fire, like the spokes of a wheel.

These facts, although simple and apparently of little importance in themselves, might be of great service to a traveller upon the prairies, as it would enable him, should he find a camp that had been recently deserted, to tell whether it had been occupied by friendly or hostile Indians;

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and, if they should be enemies, by observing the trail they had made on leaving, he would know what direction to take to avoid them.

*October* 29.—Our road continued upon the Divine in a course N. 82° E., until we encamped upon a small creek running into Red river, twelve and a half miles from our last camp. Our present position is nearly due south from the junction of the Little Witchita with Red river. We have been passing near the borders of the "Upper Cross Timbers" all day, and gradually approaching them until we are within a mile. We have seen but little mezquite timber to-day, and the mezquite and grama grasses have almost entirely disappeared; but we find the other kinds of prairie grass in abundance.

*October* 30.—We entered the "Cross Timbers" this morning, and passed on the north side of the "Divide," crossing the heads of the Red river affluents every mile or two to our camp. We are upon a clear creek, about fifteen feet wide, running rapidly towards Red river through a beautiful bottom of prairie and timber interspersed. The "Cross Timbers" have thus far been principally post oak and black-jack, with many small glades or prairies through them, and abundantly watered with clear streams. A mile from our last camp we struck a fresh wagon trail which followed the Divide, and was upon our course; we have therefore continued in it. This is the first indication of civilization that we have seen upon our route since we left Dona Ana, and it looks as if we were approaching near the settlement. Game is becoming more abundant as we advance east. Beaver and myself have seen several fresh bear tracks to-day, and each killed a deer; we have as yet, however, seen no bears.

*October* 31.—We passed through the "Upper Cross Timbers" to-day and encamped upon an affluent of the Trinity, eleven miles from our last camp. We found the Divide somewhat circuitous, but were obliged to follow it in consequence of the numerous creeks running off on each side. The soil through the Timbers is more sandy than it has been further west, but there are many small glades where the soil is good and well adapted to agriculture. The formation is (upon the Trinity waters) principally limestone. The game continues abundant, and Beaver and myself have each killed another deer to-day. Our camp is on the prairie, about two miles from the Timbers, to the south of the road.

*November* 1.—Still keeping the Divide, we marched thirteen miles and three-quarters to-day, and encamped to the right of the road upon a branch of the Middle or Elm fork of the Trinity. After we had travelled four miles this morning, we found that the wagon we had been following for several days turned down off the Divide towards the settlements on the west side of Elm fork, but as this course was too much south for us, I kept the high prairie Divide, and two miles from our camp it approached in sight of and very near the valley of Red river.

*November* 2.—Our road along the Divide has been of a similar character to-day that of yesterday, and runs nearly parallel to the Elm fork, until it comes opposite Fitzhugh's Station; here it bears more to the east. The extreme frontier settlement is upon the creek opposite our camp. It is a most charming stream, about forty yards wide, and one foot deep, of pure spring water, and a great abundance, of the best timber of various descriptions upon its banks, such as white oak, bur oak, hickory ash, pecan, &c. Outside of the Timber upon the creek the prairie is rich and produces abundant crops. I think it one of the most beautiful locations for

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farmers that can be found; and as the productiveness of the land has been thoroughly tested, there can be doubt on that score. It is very thinly settled at present, but offers great inducements for others to come. Our position is seven miles and two-tenths from our last camp.

*November* 3.—We marched sixteen miles to-day upon the Divide, and encamped upon a tributary of the "Elm Fork," in the "Lower Cross Timbers."

*November* 4.—We continued upon the dividing ridge through the "Lower Cross Timbers" to day, until we intersected a road from Fitzhugh's Station; here we reluctantly left this splendid natural road which we have travelled on from the Brazos, and turned to the left towards Preston, where I determined to cross Red river. After making our day's march, (twelve and a half miles,) I encamped near a plantation, owned by Mr. McCarty, upon the head of the "Big Sandy," an affluent of Red river.

*November* 5.—We continued on the Preston road for twelve miles and three-fifths, encamping at a small branch of Red river. On the 6th of November we reached Preston, crossed the river in a flat-boat, and encamped in the Chickasaw nation, eight miles from our last camp. On the 7th, after travelling seventeen miles and three-tenths in a direction N. 3° 20′ E., we reached Fort Washita; here we remained until the 10th of November. I then ordered the portion of the escort belonging to the Fort Towson command (thirty-seven men) to proceed direct to that post, while Lieutenant Sackett, with the remainder of the escort, was directed to proceed with the train to Fort Smith, intersecting our outward road at the crossing of Gaines's creek, on the south fork of the Canadian.

As we had succeeded in bringing the corpse of Lieutenant Harrison without inconvenience, it was considered desirable that it should be taken on to Fort Smith. I therefore gave directions accordingly, and proceeded in advance of the train to report in person to the general commanding the 7th military department. The road from Fort Washita to Fort Smith was surveyed and measured, in the same manner and with the same instruments as the other part of our road, under the supervision of Lieutenant Sackett, and the bearings and distances from day to day accurately plotted upon the accompanying map. The command with the train left Fort Washita on the 10th of November; arrived at the south fork of the Canadian on the 15th; left here on the morning of the 16th, and reached Fort Smith on the 20th November. The distance from Fort Washita to the south fork of the Canadian is eighty-one miles, and from thence to Fort Smith seventy-six miles. The distance from Dona Ana to Fort Smith, according to our measurement, is 894 miles—only about eighty miles greater than the distance to Santa Fe on our outward route. By a glance at the map it will be seen that our road at a point near the Brazos passes to the south of a direct line to Fort Smith, and at Preston turns to the north again, forming an angle of about 50°. Our guide is of opinion that a good wagon road can be found from the Brazos in very nearly a direct line to Fort Smith, leaving Preston and Fort Washita to the right, and intersecting the Canadian route near the Delaware mountain. If such is the case, it would shorten the road some thirty or forty miles; but as I am obliged to pass Fort Washita to get supplies, I could not examine that route.

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The entire distance that the escort has marched since it left Fort Smith is 2,023 miles. The command has generally been very healthy, and no deaths among the enlisted men. With the exception of one man left sick, and three desertions in New Mexico, the strength is the same as when placed under my command.

I shall now close my report with a few general remarks in reference to the country we have passed over, the relative merits of the two routes, and the probability of finding other better lines of communication between the Mississippi river, New Mexico, and California.

In the first place, I beg leave to remark, that before leaving Fort Smith for Santa Fe I had been led into very erroneous notions in regard to the geography of the country lying between the Rio Grande and the heads of the rivers running into the United States and Gulf of Mexico. From the best maps I could find, I was induced to believe that there were extensive ranges of lofty mountains running across the route from El Paso to Fort Smith, which could not be avoided, and that there were large streams in some places, where upon examination none are found; that in other places there were no streams, where indeed there are many. For instance, upon many of the modern and most approved maps, the Rio Pecos, or, as it is improperly termed by some, the Rio Puerco, is laid down as running from north to south nearly parallel to the Rio del Norte, and at a distance of about forty or fifty miles from it, when its course for nearly a hundred miles that we have followed it is but about 25° south of east; and instead of being fifty miles from the Rio del Norte, it is two hundred and four in nearly a direct line. This opinion has been so general, that several parties of emigrants on their way to New Mexico left the Rio Pecos in the morning, expecting to reach the Rio Grande the same night; and some of them falling into a route where there was no water, travelled several days in a westerly direction, suffering greatly, and in some instances perishing before they reached the river. The inhabitants at El Paso in one instance sent out water to the relief of emigrants who were too much exhausted to get it, and who would otherwise have probably died upon the plains.

Disturnell's map of Mexico, &c., upon which the boundary between the United States and Mexico is by the treaty defined, is one of the most inaccurate of all those I have seen, so far as relates to the country over which I have passed. He makes a greater error than most others in laying down the Pecos, and has the Colorado, Brazos, and Red river all inaccurately placed. Upon the Red river he has a very large branch coming from far west, near El Paso, which he calls "Ensenado Choctaw." This is altogether an imaginary stream, as no one who has been in the country ever heard of it; neither does any branch of Red River extend to within three hundred miles of the Rio del Norte. There are but three principal tributaries to Red river above Fort Washita; these are the Big and the Little Witchita and the Ke-che a qua-ho-no, but neither flows far from towards El Paso. These, with the main branch of Red river and the Brazos, all have their sources in extensive salt plains far east of the Rio Pecos. Their waters are strongly saline and unpalatable, and for a long distance run through a country poorly watered, and bordered by rugged cliffs and deep ravines. Hence it appears to me impracticable to find a road to the Rio Grande which shall follow up the course of either of these

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streams. Even if the road could be made to the head of one of them, it would terminate at the eestern border of the Llano Estacado; for no man, as I have remarked before, attempts to cross that desert, except at certain points.

It therefore appears to me, that if a route could be found in nearly a direct line from a desirable point in the United States, which would skirt the border of the plain, and at the same time have sufficient water and wood upon it at all seasons of the year for the traveller's use, that would be the best location for a road, as, in this case, the road would cross the head branches of streams where there would be an abundance of water, and no heavy hills or large rivers to pass. Fortunately, on our return from New Mexico we fell into a route of this description, and had no difficulty in finding an abundant supply of wood, water, and grass upon nearly the whole route.

On leaving the valley of the Rio del Norte, our road passed through a gap or pass in the first chain of mountains in a direction which would have taken me near Fort Smith, but I was obliged here to change our course to avoid the Sacramento chain of mountains lying across our route, as our guide told me there was no practicable pass for wagons through there. I therefore bore south, and crossed the level plain dividing the two ranges to the "Sierra Waco." Our road thus far is but little more elevated than the table lands adjacent to the valley of the Rio Grande. From this point we ascended about two hundred feet through a sinuous valley or cañon of gentle grade to the second bench, at the southern extremity of the Sierra Alto. We then crossed another extensive plain of about eighty miles in width, which brought us to the Sierra Guadalupe: here we encountered the margin of another high plain, which forms the third and highest bench between the Rio Grande and the Rio Pecos, the difference between the summit level at this point and Dona Ana not being over five hundred feet. From this chain of mountains the road descends to the valley of the Pecos, about two hundred feet. Thus, from the Rio Grande to the Pecos, a distance of two hundred and four miles, there are but three hills of any magnitude to ascend in coming east, and those with a little expense could be made as good as any road in our country. From the valley of the Pecos to the sand hills the road ascends probably two hundred feet, but the slope is so uniform that it is hardly perceptible. These hills are near the southern extremity of the great desert of the Llano Estacado, and stand upon the summit of the plain dividing the waters of the Rio Pecos from those that run east and south into the United States.

Our road from here runs across the "Llano Estacado" for seventy-eight miles upon a perfectly level prairie as firm and smooth as marble. It then descends from the high table land about fifty feet into a rolling prairie country, where the Colorado of Texas has its source. Thus far there is but little timber or water upon our route, except at certain points noted upon the map; but these points can be made from day to day with loaded teams. As if, however, in compensation for the absence of other favors, nature, in her wise economy, has adorned the entire face of the country with a luxuriant verdure of different kinds of grama grass, affording the most nutritious sustenance for animals, and rendering it one of the best countries for grazing large flocks and herds that can be conceived of.

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Immediately after we descended from the high table lands, we struck upon an entirely different country from the one we had been passing over before. By a reference to the map it will be seen that we kept near the plain upon the head branches of the Colorado and the Clear Fork of the Brazos. Here we found a smooth road over a gently undulating country of prairies and timber, and abounding with numerous clear spring branches for two hundred miles, and in many places covered with large groves of mezquite timber, which makes the very best of fuel. The soil cannot be surpassed for fertility. The grass remains green during the entire winter, and the climate is salubrious and healthy; indeed, it possesses all the requisites that can be desired for making a fine agricultural country, and I venture to predict that at no very distant period it will contain a very dense population. It is only necessary for our practical farmers to see it, and have protection from the incursions of the Indians, to settle it at once.

Soon after crossing the Rio Brazos, our road strikes out upon the high ridge lying between the waters of the Trinity and Red river; and it appears as if nature had formed this expressly for a road, as it runs for a hundred miles through a country which is frequently much broken up upon each side with hills and deep ravines; and the only place where wagons can pass is directly upon the crest of this natural defile. It is as firm and smooth as a turnpike, with no streams of magnitude or other obstructions through the entire distance to near Preston, where we left it and crossed Red river. From Preston to Fort Washita, and thence to our outward route upon Gaines's creek, the road passes through the Chickasaw country, which is rolling, and in many places covered with a great variety of large timber, and well watered, with no mountains or high hills to pass over. Hence you will perceive that from Dona Ana to Fort Smith, a distance of 994 miles, our road passes over smooth and very uniformly level ground, crossing no mountains or deep valleys, and for five hundred miles upon the eastern extremity runs through the heart of a country possessing great natural advantages. I conceive this to be decidedly the best overland wagon route to California for several reasons, among which are the following:

1. I was assured by several of the best guides in New Mexico—among others Messrs. Lereux, Kit Carson, Hatcher, and Thomas—that there was no point upon the Rio Grande north of San Diego from which wagons could pass through the extensive ranges of mountains lying west of that river, and that it would be necessary to take Colonel Cook's route to the head of the Gila. Should emigrants go to Santa Fe, therefore, they have to travel three hundred miles down the river to reach this point, whereas our return route leaves this road almost directly at the placer.

2. The roads from Fort Smith and Independence to Santa Fe being over eight hundred miles, and the distance down the Rio Grande three hundred more over a very sandy road, makes these routes longer than the southern route from Fort Smith by two hundred miles.

3. As there is grass upon this route at all seasons of the year, it can be travelled at any time. It is true that the old grama grass dries up early in the spring, but appears to cure like hay, and does not lose its nutritious properties.

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4. As San Diego on the Rio Grande, the mouth of the Gila river, and San Diego on the Pacific, are all very nearly upon the same parallel of latitude, (32° 45' 54",) our southern route would form a direct line of communication with Cooke's road from the United States through to the Pacific, and probably shorter by several hundred miles than any other.

There is a difference of thirteen degrees longitude between Fort Smith and Dona Ana, and ten degrees difference between Dona Ana and San Diego, in California. The probable distance, therefore, from Fort Smith through to the Pacific would not be more than about seventeen hundred miles. Emigrants with good cattle, and well supplied with the proper "outfit" for the journey, should go through in four months with ease.

As I have remarked before, I consider oxen to be the best description of cattle for the prairies; and emigrants, before leaving for California, should provide themselves with one or two extra pairs to be ready to supply the places of any which may fail or die upon the road. They should take light, strong wagons, and transport nothing but provisions and such other articles as are absolutely required upon the journey. Their provisions should be secured in small packages, and not suffered to become wet. Each wagon should have a double cover, a water-cask, and extra axle-pole and pair of hounds, before going out into the plains, as after this no timber is to be found suitable for such purposes. They should form parties or companies of from seventy-five to a hundred men each, which would be sufficient for protection, guarding animals, &c. While travelling through the Indian country they should herd their animals, night and day, with the utmost vigilance and care, and never allow them to move from camp without an armed guard.

The best season for emigrants to leave the United States for California, upon the southern road, is about the first of June. There would then be good grass and water to the Rio Grande, and they would reach there about the last of July. This would give them time to stop two or three weeks to graze and recruit their animals, and lay in additional supplies, should they require any, for the remainder of their journey. Flour, corn, vegetables, and beef cattle, as also many articles of merchandise that travellers require—such as clothing, shoes, &c.—can be obtained for moderate prices at Dona Ana or El Paso.

Leaving the Rio Grande about the 1st of August, they would reach the Colorado of California after the annual flood, which occurs in July and August, overflows the banks for several miles on each side, and renders it utterly impassable for wagons; and in this way they would arrive at San Diego during the healthy season.

From all I can learn of the other routes to California, I am induced to believe that, should our government, at any future time, determine upon making a national road of any description across the continent, the southern route we have travelled is eminently worthy of consideration. We find upon none of the northern routes as much water, timber, or rich, fertile soil, as upon this. There are many more mountains to pass over, and during a part of the year they are buried in deep snows.

I have been kindly allowed the perusal of a letter written by an officer of the army (an attentive and experienced observer of nature) who has



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recently passed over that portion of the northern route between Fort Kearny and Fort Laramie, in which he speaks of the country in the following language: "The country between Fort Kearny and Fort Laramie is a vast undulating sandy desert—but little wood or water—totally destitute of interest, and utterly worthless, and must remain so forever: it never can be inhabited to any extent, as there is no soil, and the seasons are too short."

The distance between these two places is three hundred and sixty-four miles. In one place, wood for cooking has to be carried for three consecutive days in wagons, and in several places it is necessary to carry water.

The road from Independence, after passing through a country of poor soil, and very destitute of wood, for a great distance, passes over lofty and rugged mountains, near Santa Fe.

Lieutenant Colonel Emory states that the arable soil upon this road extends to the 99th degree of longitude. Therefore, if a road could be made from the Missouri river to California, it would pass through a very barren country, which could not be settled or improved; whereas one constructed through the country we have passed over from Dona Ana to Fort Smith, with the protection which a chain of military posts along the route would afford, would open a vast tract of beautiful country to the notice of agriculturists, and would be settled in a very short time.

The advantages which this route possesses over others adapt it in a preeminent degree to the construction of a railroad. For the reasons I have mentioned, and from all the examination and consideration which I have been able to give the subject, I cannot resist the strength of my own convictions that any experienced and impartial engineer, after a thorough and careful reconnaissance of all the different routes, would at once give this the preference over any other.

From Dona Ana or El Paso to near where we crossed Red river—a distance of 700 miles—there are probably as few difficulties to encounter as upon any other road that can be found in our country. Throughout this entire distance it would not be necessary to make a single tunnel, or to use a stationary engine. There would be but few heavy excavations or embankments; and, for a great portion of the distance, the surface of the earth is so perfectly firm and smooth that it would appear to have been designed by the Great Architect of the Universe for a railroad, and adapted and fitted by nature's handiwork for the reception of the superstructure. There is an abundance of building stone, and an inexhaustible amount of mezquite timber, which, for its durability, is admirably adapted for use as sleepers, and for fuel.

From Red river it could be carried to Fort Smith without difficulty, or to any other point that might be selected. This, united with a railroad from the Rio Grande to the San Diego, would give us a great national highway across our continent from the Atlantic to the Pacific, in a very direct line, and would enable the traveller to pass safely and comfortably over a distance in a week which before required four months of toil, hardship, and danger. It would afford our government a cheap and rapid transit for troops and munitions of war, and would enable us to communicate with our far-distant territories in a few hours.

These considerations, in connexion with the vast and incalculable commercial benefits that the whole civilized world would receive, would ren-

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der it a monument to the genius, enterprise, and philanthropy of the American people.

I am, very respectfully, your obedient servant,

R. B. MARCY,

*Captain 5th Infantry, commanding escort.*

Lieut. F. F. FLINT,

*Acting Assistant Adjutant General,*

*7th Military Department, U. S. Army.*

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*Table of distances,*

| Date. | Place of observation. | Distances by chain in miles. From camp to camp. | Distances by chain in miles. Total distance from Dona Ana. | Average bearing from camp to camp. |
|---|---|---|---|---|
| 1849. September 1 | Organ mountains | 19 | 19 | N. 81° E..... |
| 2 | Camp No. 2... | $6\frac{8}{10}$ | $25\frac{8}{10}$ | S. 53° E..... |
| 3 | ....do.....3... | 18 | $43\frac{3}{10}$ | S. 47° 10′ E.. |
| 4—6 | ....do.....4... | $19\frac{1}{2}$ | $63\frac{1}{10}$ | S. 47° E..... |
| 6 | ....do.....5... | $22\frac{1}{4}$ | $85\frac{3}{14}$ | N. 81° 5′ E... |
| 7 | ....do.....6... | $8\frac{3}{4}$ | $94\frac{1}{20}$ | N. 72° E..... |
| 8 | ....do.....7... | $25\frac{13}{20}$ | 120 | S. 83° E..... |
| 9 | ....do.....8... | $23\frac{1}{20}$ | $143\frac{1}{20}$ | S. 49° E..... |
| 10 | ....do.....9... | $4\frac{1}{4}$ | $147\frac{6}{30}$ | N. 45° E..... |
| 11—13 | ....do.....10... | $5\frac{1}{10}$ | $152\frac{4}{10}$ | N. 87° E..... |
| 13 | ....do.....11... | $15\frac{3}{10}$ | $167\frac{7}{10}$ | S. 85° E..... |
| 14 | ....do.....12... | $11\frac{27}{40}$ | $179\frac{15}{40}$ | N. 83° E..... |
| 15 | ....do.....13... | $9\frac{1}{8}$ | $188\frac{1}{2}$ | N. 67° E..... |
| 16 | ....do.....14... | $15\frac{8}{10}$ | $204\frac{3}{10}$ | S. 64° 30′ E.. |
| 17 | ....do.....15... | $11\frac{1}{8}$ | $215\frac{17}{40}$ | S. 59° 30′ E.. |
| 18 | ....do.....16... | $13\frac{1}{8}$ | $228\frac{11}{20}$ | S. 68° 7′ E... |
| 19 | ....do.....17... | $13\frac{5}{8}$ | $242\frac{7}{40}$ | S. 40° 40′ E.. |
| 20—22 | ....do.....18... | $15\frac{3}{10}$ | $257\frac{19}{40}$ | S. 81° E..... |
| 22—24 | ....do.....19... | $9\frac{9}{10}$ | $267\frac{3}{8}$ | N. 82° E..... |
| 24 | ....do.....20... | 10 | $277\frac{3}{8}$ | N. 25° E..... |
| 25—27 | ....do.....21... | $13\frac{7}{10}$ | $290\frac{11}{20}$ | N. 25° E..... |
| 27 | ....do.....22... | $4\frac{3}{4}$ | $295\frac{3}{10}$ | N. 87° E..... |
| 28 | ....do.....23... | $8\frac{7}{10}$ | $303\frac{3}{5}$ | N. 49° 4′ E... |
| 29 | ....do.....24... | $15\frac{3}{10}$ | $318\frac{9}{10}$ | N. 57° E..... |
| October 1 | ....do.....25... | 17 | $335\frac{9}{10}$ | N. 67° E..... |
| 2 | ....do.....26... | 23 | $358\frac{9}{10}$ | N. 72° 22′ E.. |
| 3 | ....do.....27... | $22\frac{9}{10}$ | $381\frac{1}{5}$ | N. 71° E..... |
| 4 | ....do.....28... | $12\frac{1}{10}$ | $393\frac{9}{10}$ | N. 43° E..... |
| 5 | ....do.....29... | $11\frac{1}{5}$ | $405\frac{7}{30}$ | N. 47° 28′ E.. |

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*bearings, &c.*

| Meteorological observations. | | Variations of compass. | Camping places. |
|---|---|---|---|
| Wind. | Weather. | | |
| West..... | Clear and calm.. | 12° 28′ | At springs four miles south of Pass. |
| West..... | Clear..... | ..... | Solado Spring, near Organ mountains. |
| Southwest. | Cloudy and warm..... | ..... | On prairie; no water. |
| South..... | .....do..... | ..... | At Waco mountains, (tanks.) |
| East..... | Clear, cool, and strong wind. | ..... | Sierra del Alama, (spring.) |
| East..... | Rain; cold wind. | ..... | Comudas, (deep wells.) |
| Southwest. | Mild and clear... | ..... | Ojo del Cuerbo, (springs.) |
| South..... | Warm showers.. | ..... | Peak of Guadalupe, (spring up ravine.) |
| South..... | Morning clear; evening rain. | ..... | Ojo del Camins, (spring in the pine timber.) |
| North..... | Cool wind; clear. | ..... | Independence spring, near road |
| East..... | Cool; rain last night. | ..... | Ojo de San Martin (spring.) |
| Southeast.. | Mild and clear... | ..... | On Delaware creek. |
| South..... | Cloudy and mild | ..... | |
| Southeast.. | Clear; warm and strong wind. | ..... | At Rio Pecos, (brackish water.) |
| Southeast.. | Cool; cloudy.... | ..... | Do do |
| East..... | Cold rain and windy. | ..... | Do do |
| Northeast.. | Cloudy and warm | ..... | Do do |
| North..... | .....do..... | 11° 8′ | Crossing. |
| Southeast.. | Warm; rain..... | ..... | Laguna, (brackish water.) |
| East..... | Rain; mild..... | ..... | On prairie, (no water.) |
| North..... | Cold; rain..... | ..... | Sand hills; water to the east, in the hills.) |
| North..... | .....do..... | ..... | Do do |
| West..... | Clear and cold..... | ..... | Pond. |
| West..... | Cloudy and cool. | ..... | Pond on Llano Estacado. |
| Northeast.. | Clear and cool; windy. | ..... | Do do |
| East..... | Clear; moderately warm. | ..... | Laguna Colorado; water in pond. |
| Northeast.. | ...do.....do... | ..... | On "Big Spring," to the south. |
| West..... | Clear; warm..... | ..... | Spring on the road. |
| Northwest. | Very windy and cold. | ..... | Laguna on the road. |

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*Table of distances,*

| Date. | Place of observation. | Distances by chain in miles. | | Average bearing from camp to camp. |
|---|---|---|---|---|
| | | From camp to camp. | Total distance from Dona Ana. | |
| 1849. | | | | |
| Oct. 6—8 | Camp No. 30... | $18\frac{8}{10}$ | $423\frac{8}{10}$ | N. 56° 12′ E.. |
| 8 | ....do.....31... | 3 | $426\frac{8}{10}$ | E..... |
| 9 | ....do.....32... | $20\frac{3}{8}$ | $446\frac{188}{160}$ | N. 67° E..... |
| 10 | ....do.....33... | 13 | $459\frac{188}{160}$ | N. 62° 28′ E.. |
| 11 | ....do.....34... | $18\frac{1}{2}$ | $478\frac{18}{160}$ | N. 52° 40′ E.. |
| 12 | ....do.....35... | $17\frac{1}{10}$ | $495\frac{6}{16}$ | N. 55° E..... |
| 13—17 | ....do.....36... | $8\frac{1}{2}$ | $503\frac{17}{16}$ | N. 78° 20′ E.. |
| 17 | ....do.....37... | 4 | $507\frac{17}{16}$ | S. 86° E..... |
| 18 | ....do.....38... | 2 | $509\frac{17}{16}$ | S. 88° E..... |
| 19 | ....do.....39... | $4\frac{1}{2}$ | $514\frac{5}{16}$ | S. 88° 30′ E.. |
| 20 | ....do.....40... | $12\frac{1}{2}$ | $526\frac{11}{16}$ | N. 70° 20′ E.. |
| 21 | ....do.....,41... | 7 | $533\frac{11}{16}$ | N. 68° E..... |
| 22 | ....do.....42... | $9\frac{3}{4}$ | $543\frac{5}{16}$ | N. 80° 20′ E.. |
| 23 | ....do.....43... | $11\frac{3}{4}$ | $554\frac{8}{16}$ | N. 68° 8′ E... |
| 24 | ....do.....44... | $6\frac{3}{16}$ | $561\frac{31}{160}$ | N. 69° E..... |
| 25 | ....do.....45... | $12\frac{1}{4}$ | $573\frac{99}{160}$ | N. 65° 50′ E.. |
| 26 | ....do.....46... | $13\frac{1}{10}$ | $586\frac{28}{160}$ | N. 45° 28′ E.. |
| 27 | ....do.....47... | $14\frac{4}{10}$ | $601\frac{14}{160}$ | N. 65° 15′ E.. |
| 28 | ....do.....48... | $13\frac{3}{10}$ | $614\frac{87}{160}$ | N. 74° 32′ E.. |
| 29 | ....do.....49... | $12\frac{1}{2}$ | $626\frac{87}{160}$ | N. 82° E..... |
| 30 | ....do.....50... | 13 | $639\frac{87}{160}$ | N. 48° 31 E.. |
| 31 | ....do.....51... | 11 | $650\frac{87}{160}$ | S. 79° E..... |
| November 1 | ....do.....52... | $13\frac{3}{4}$ | $664\frac{67}{160}$ | N. 83° 10′ E.. |
| 2 | ....do.....53... | $7\frac{3}{10}$ | $671\frac{91}{160}$ | S. 83° E..... |
| 3 | ....do.....54... | $14\frac{1}{4}$ | $686\frac{19}{160}$ | N. 75° 10′ E.. |
| 4 | ....do.....55... | $12\frac{1}{2}$ | $698\frac{79}{160}$ | N. 81° E..... |
| 5 | ....do.....56... | $12\frac{3}{4}$ | $711\frac{81}{160}$ | N. 60° 45′ E.. |
| 6 | ....do.....57... | 8 | $719\frac{81}{160}$ | N. 55° E..... |
| 7—10 | ....do.....58... | $17\frac{7}{10}$ | $736\frac{18}{16}$ | N. 3° 20′ E.. |
| 10 | ....do.....59... | $8\frac{1}{2}$ | $745\frac{11}{16}$ | N. 20° E..... |
| 11 | ....do.....60... | $12\frac{3}{4}$ | $758\frac{71}{160}$ | N. 53° E..... |
| 12 | ....do.....61... | $15\frac{1}{2}$ | $773\frac{81}{160}$ | N. 41° 40′ E.. |
| 13 | ....do.....62... | 13 | $786\frac{81}{160}$ | N. 19° 25′ E.. |

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*Bearings, &c.*—Continued.

| Meteorological observations. | | Variations of compass. | Camping places. |
|---|---|---|---|
| Wind. | Weather. | | |
| Northwest. | Cold and cloudy. | ..... | Affluent of Pash-a-ho-no. |
| West ..... | ...do.....do ... | ..... | Do do |
| Southwest. | Warm and clear.. | ..... | Affluent of Brazos. |
| Northeast .. | Cold and cloudy. | ..... | Pash-a-ho-no. |
| Southwest. | Clear and warm; windy. | ..... | Spring, (sulphurous.) |
| North. .... | Cold, cloudy, & windy. | 10° 40′ | Affluent Brazos. |
| North..... | Cold "norther" 48 hours. | ..... | Do |
| South ..... | Clear and mild.. | ..... | Do |
| South ..... | ...do.....do ... | ..... | Do |
| North. .... | Cold rain and snow storm. | ..... | Do |
| North..... | Clear and cold .. | ..... | Qua-gua-he-no (Pecan timber.) |
| West ..... | Clear; frost during the night. | ..... | Spring Brook (tributary Clear Fork.) |
| North. .... | Clear and warm. | ..... | Do do do |
| West..... | ...do.....do ... | ..... | Do do do |
| West ..... | ...do.....do ... | 10° 20′ | Rio Brazos. |
| Southeast . | ...do.....do ... | ..... | Affluent of Brazos. |
| Southeast . | ...do.....do ... | ..... | Affluent of Trinity. |
| Southwest. | Warm and clear. | ..... | Affluent of Trinity. |
| Southwest. | .....do..... | ..... | Do do |
| South. .... | .....do..... | ..... | Affluent of Little Washita. |
| Southwest. | Clear and mild.. | ..... | Do do |
| South. .... | .....do..... | ..... | Affluent of Trinity. |
| South. .... | Clear with strong wind. | ..... | Affluent of Elm fork of Trinity. |
| Southwest. | Warm, with do.. | ..... | Do do do |
| South..... | ...do....do..... | ..... | Do do do |
| South..... | Warm and cloudy | ..... | Affluent of Red river. |
| Southwest. | Cloudy and showers. | ..... | Do do |
| West..... | Clear and mild.. | ..... | Do do |
| Southeast.. | .....do..... | ..... | Fort Washita. |
| ..... | Cloudy..... | ..... | "Blue" (tributary to Red river.) |
| ..... | Cold rain all day. | ..... | Boggy depot. |
| ..... | Clear ..... | ..... | Little Boggy (affluent of Red river.) |
| ..... | ..do..... | ..... | Do do do |

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*Table of distances*

| Date. | | Place of observation. | Distances by chain in miles. | | Average bearing from camp to camp. |
|---|---|---|---|---|---|
| | | | From camp to camp. | Total distance from Donna Ana. | |
| 1849. | | | | | |
| Nov. | 14 | Camp No..63... | 17½ | 803 $\frac{91}{150}$ | N. 18° 20′ E.. |
| | 15 | ....do.....64... | 15 | 818 $\frac{91}{150}$ | N. 30° 40′ E.. |
| | 16 | ....do.....65... | 24 | 842 $\frac{91}{150}$ | N. 83° 30′ E.. |
| | 17 | ....do.....66... | 15 | 857 $\frac{91}{150}$ | N. 80° 20′ E.. |
| | 18 | ....do.....67... | 23 | 880 $\frac{91}{150}$ | N. 81° E..... |
| | 19 | ....do.....68... | 14 | 894 $\frac{91}{150}$ | N. 34° 30′ E.. |

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*bearings*, &c.—Continued.

| Meteorological observations. | | | |
|---|---|---|---|
| Wind. | Weather. | Variations of compass. | Camping places. |
| ..... | Clear..... | ..... | Prior's (affluent of Gaines's creek.) |
| ..... | ..do..... | ..... | South Fork of Canadian. |
| ..... | Rain..... | ..... | Cooper's creek. |
| ..... | Clear ..... | ..... | Coon creek. |
| ..... | ..do..... | ..... | Agency. |
| ..... | ..do..... | ..... | Fort Smith. |

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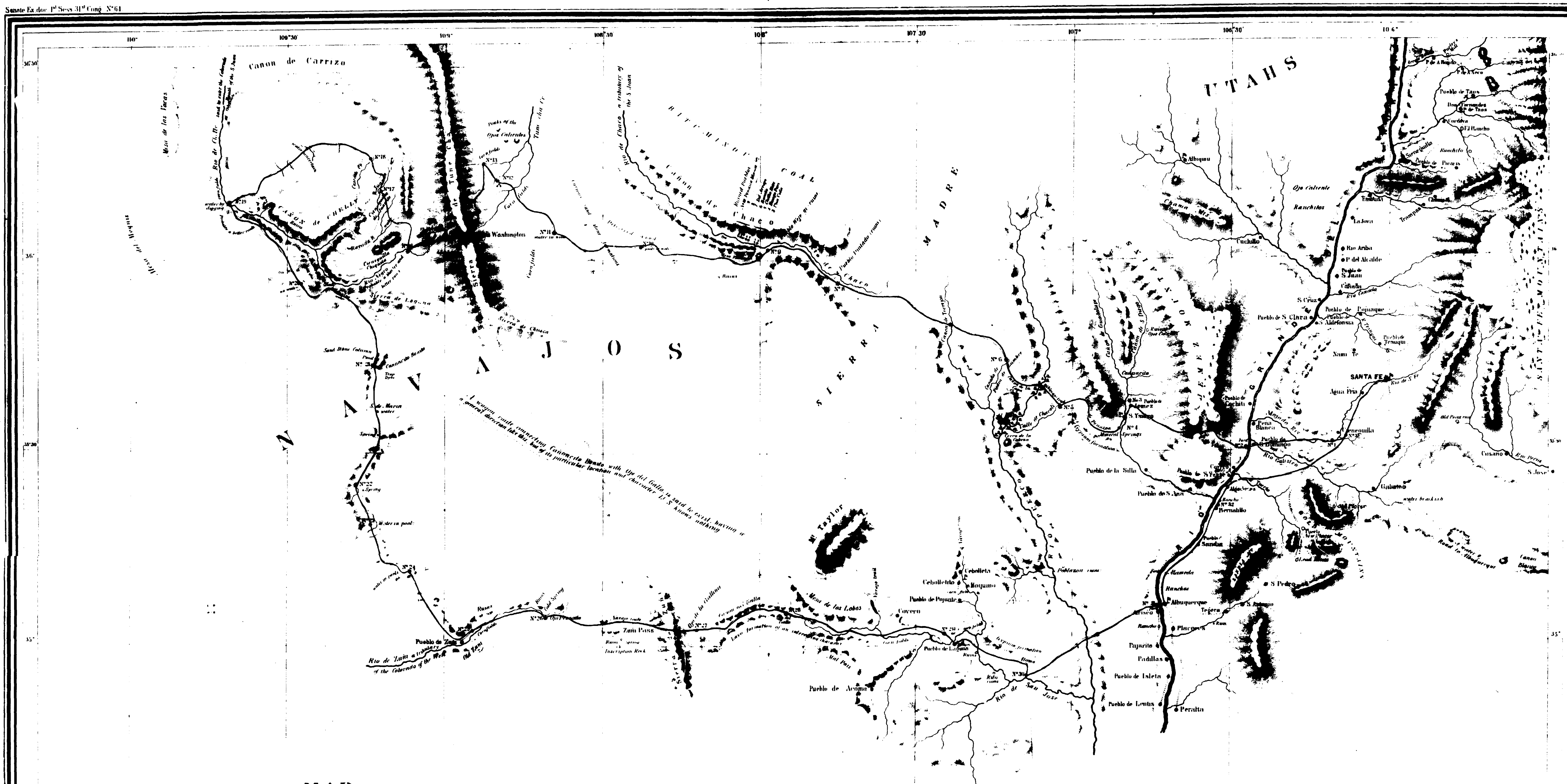


# MAP

of the Route pursued in 1849 by the U.S. Troops,

under the command of

## Bvt. Lieut. Col. JNO. M. WASHINGTON, Governor of New Mexico,

*in an expedition against the Navajos Indians*

BY

**JAMES H. SIMPSON, 1st LIEUT. T. ENGRS**

Assisted by Mr. Edw. M. Kern.

Constructed under the general orders of

Col. J.J. Abert, Chief Topl Engrs

*Drawn by Edward M Kern*

Santa Fe, N.M 1849.

*Scale of Miles*

10 5 0 10 20 30 40

P S Duval's Steam Lith. Press Philada

### NOTES.

*For some of the data in reference to the portion of the map along the Rio Grande, Lt S is indebted to the Surveys of Bvt. Maj. Emory and of Lieuts. Abert and Peck*

—— *Indicates the route pursued by the Troops, the Nos designating the Camps. ..... occasional deviations from the route by the Topl party*

● *Denotes the points determined by astronomical observations*

*At all the camps sufficient pasture was obtained for the animals except at camps Nos 11 12 and 13 and here corn fodder was procured from the Navajos. Fuel was found at or in the vicinity of every camp and water abundantly except in the instances stated under head of Table of Distances*

*Magnetic variation at Santa Fe, 12° 13' East*

*Mouth of Canon of Chelly, 11° 13' East*

*Route practicable for wagons from Santa Fe to camp No 12*

*from mouth of Cañon de Chelly to Santa Fe by return route the first 5 miles being deviated from as indicated on the map in order to avoid some rocky hills*

*Indicates the points at present occupied by troops*

*Doubtless the route to Chelly by way of Pass Washington might be shortened by cutting across from Camp No 16 to Sierra Laguna and intersecting return route, as marked on the map, next camp then should be at place marked "Halt".*

*With the command were 1 Six pdr. and 3 mountain howitzers, which traversed the whole route*

*The Indian Towns of New Mexico are all indicated by the Prefix Pueblo, as Pueblo de Sto Domingo, Pueblo de Jemez &c*

### TABLE OF DISTANCES, WITH REMARKS IN RELATION TO THE ROUTE.

| No of Camps | | Distances from Camp to Camp. | Distances from Santa Fe. | Remarks |
|---|---|---|---|---|
| Camp | No 1 | Miles | 16 02 Miles | |
| .. | 2 | 14 85 | 30 87 | |
| Near Jemez | 3 | 26 60 | 57 47 | |
| mp | 4 | 5 78 | 63 25 | |
| .. | 5 | 16 27 | 79 52 | Water only to be depended on during the wet Season |
| .. | 6 | 13 27 | 92 79 | do |
| .. | 7 | 13 55 | 106 34 | do |
| .. | 8 | 21 45 | 127 79 | |
| .. | 9 | 14 86 | 142 65 | do |
| .. | 10 | 24 53 | 167 18 | do |
| .. | 11 | 14 60 | 181 78 | do |
| Tune Cha | 12 | 17 21 | 198 99 | |
| Camp | 13 | 4 32 | 203 31 | This Camp is unnecessary, a more direct route to camp 11 from camp 12 is attainable |
| .. | 14 | 10 00 | 213 31 | |
| .. | 15 | 6 00 | 219 31 | |
| .. | 16 | 12 00 | 231 31 | |
| .. | 17 | 13 43 | 244 74 | |
| .. | 18 | 7 39 | 252 13 | |
| Cañon de Chelly | 19 | 26 45 | 278 58 | Water got by digging |
| Camp | 20 | 20 50 | 299 08 | No water at this camp can be found 7 miles farther |
| .. | 21 | 24 83 | 323 91 | |
| .. | 22 | 23 02 | 346 93 | |
| .. | 23 | 8 29 | 355 22 | Water in pools uncertain |
| .. | 24 | 12 08 | 367 30 | do |
| Near Zuñi | 25 | 17 45 | 384 75 | |
| Camp | 26 | 13 71 | 398 46 | |
| .. | 27 | 27 14 | 425 60 | |
| .. | 28 | 18 49 | 443 09 | |
| Near Laguna | 29 | 28 93 | 472 02 | |
| Camp | 30 | 18 51 | 491 53 | Water uncertain |
| Albuquerque | 31 | 28 33 | 519 86 | |
| Camp | 32 | 20 70 | 540 56 | |
| Delgados | 33 | 30 75 | 571 31 | |
| Santa Fe | | 15 80 | 587 11 | |

110° 109°30 109° 108°30 108° 107°30 107° 106°30' 106°

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