

usually seated himself on the tongue of the wagon, his time divided between belaboring his beasts and scratching his head. In one of these a violin was being played, and the women who were sitting on their feet, made the most of the music by brandishing their bare arms and moving their heads to the cadence. At night there was a theatrical representation in the public square. The piece dramatized was from the Old Testament.

During the day I had been puzzled by seeing at regular intervals on the wall surrounding the capilla, and on the turrets of the capilla itself, (which be it remembered is of mud,) piles of dry wood. The mystery was now to be cleared up. At a given signal all were lighted, and simultaneously a flight of rockets took place from every door and window of the chapel, fire-works of all kinds, from the blazing rocket to children's whirligigs, were now displayed in succession. The pyrotechny was the handicraft of the priests. I must say the whole affair did honor to the church, and displayed considerable chemical knowledge. Most of the spectators were on mules, each with his woman in front, and it was considered a great feat to explode a rocket under a mule's belly without previous intimation to the rider.

September 8.—Long shall I remember the fête of Tomé, a scene at once so novel and so striking. To-day, my duties called me off early in the morning.

I had to examine guides in reference to the route to California, and engage such as I might think fit for the trip.

My last interview of this kind to-day was in a species of public building, or guard-house, where a number of Mexicans had collected with arms. Several written tablets hung round the walls, but they were perfectly illegible. Our business was cut short by the sound of passing music. A strange sight presented itself. In a sedan chair, borne by four men, was seated a wax figure nearly as large as life, extravagantly dressed; following immediately were three or four priests, with long tallow candles, a full yard in length. Some American officers followed, each holding a candle. Unfortunately I emerged just as this group was passing; there was no escape, and the moment I joined a grave Mexican (apparently a man in authority,) thrust a candle into my hand. I thought of my coat, my only coat, the coat which was on my back, and which must take me to California, and back again into the interior of Mexico! Suddenly there was a halt without any word of command, and in the confusion we jostled against each other and distributed the tallow in great profusion.

It was thought proper that the officers should show every respect to the religious observances of the country, consequently they did not decline participation in these ceremonies.

The procession ended at the church. After the services there were concluded, we repaired to the house of the padre, where we found a collation.

We had proposed attending a theatrical representation going on in the open air, but a heavy squall of wind and a few drops of rain put a stop to this amusement, and all retired to dress for the

fandango, which is the name given to all collections of people where there is music and dancing.

A cotillion was attempted in honor of the Americans present, but this cold and formal dance soon gave way to the more joyous dances of the country, the Coona, the Bolero, and the Italiana. Every variety of figure was introduced, but the waltz was the basis of all, except the Bolero, which, as danced here, resembles our negro jig.

At the dance we found a very plain, but very intelligent woman, the sister of Armijo, who said he would return as soon as he settled his affairs in Chihuahua.

September 11.—Returned to Santa Fé.

September 15.—Sent Lieutenant Warner, with a party consisting of Lieutenant Peck and three men, to determine the latitude of Taos and the topography of the road.

From the 15th to 25th September I was busily engaged in fitting out for California.

Lieutenant Abert, who was left dangerously ill at Bent's Fort, had not arrived on the 25th, but accounts reached me that he was convalescent, and on his way to Santa Fé, where he might shortly be expected. Lieutenant Peck was also an invalid, and neither being able to accompany us to California, I left, by the general's direction, the subjoined order for them to make a map of New Mexico, based upon the astronomical points and measurements determined by myself, and to furnish from the best statistical sources, an account of the population and resources, military and civil, of the province.

SANTA FE, September 14, 1846.

SIR: I am charged by the general commanding to inform you that you will remain for the present in the territory of New Mexico, and should your health, or that of Lieutenant Peck, be sufficiently restored to return to duty, that you will continue the survey of this territory commenced by myself, and follow it to completion, provided it does not interfere with other military duties which may be required of you by the officer left in command of the territory.

With the limited number of instruments that can be placed in your hands, it is not expected that you will conduct the survey on strict geodetic principles, yet it is believed that sufficient precision can be attained to answer all the requirements of the military and civil service.

The country from Taos to Fra Cristobal contains nearly all the ground that is under cultivation, and nearly all that is worth cultivating; and for this whole distance it is open and bounded by high and conspicuous peaks, affording great facilities for conducting your operations.

I have established the astronomical positions of six points in this territory, viz: camp 42, at Vegas; camp 43, Vernal springs, Santa Fé; camp 55, $1\frac{1}{4}$ miles south of the church of San Felipe; camp

49, at the Alameda; camp 51, at Peralta, at the mill, and I shall establish two more, one at Taos, and the other at Secoro.

These points are quite sufficient, and will be the base of your operations; and upon them you will form a trigonometric canevas. For this purpose the rule requiring every angle of the series to be greater than 30° , may be wholly disregarded. And after having determined by triangulation the position of any three conspicuous peaks, the position of any other points, which are in view of the three first named, may be determined by the problem of three points, as is practised in hydrographic surveys. Many such points will present themselves.

The canevas completed, the course of the Del Norte, that of its tributaries to the base of the mountains or beyond the settlements; the width of the valleys; the quantity of land under cultivation; the position of the towns, churches, hills, and all other topographical features of the country, can be determined with the Schmalcalde's compasses.

If your force is sufficient, the operation described in this last paragraph may be carried on simultaneously with the triangulation. You are aware that I have no theodolite at my disposal, the triangulation must, therefore, be made with the sextant.

The population, number of cattle, horses, and sheep, and the quantity of grain and other agricultural products, the facilities and best localities for water power to propel machinery, and also the mineral resources of the country, it is very desirable to know. You will, therefore, give particular attention to acquiring all the information on these subjects which the present statistical knowledge in the country will afford.

A requisition for five thousand dollars will be made on the Bureau of Topographical Engineers for the survey, to be placed to your credit with Mr. Robert Campbell of St. Louis, upon whom, I should think, you might safely draw, without waiting to hear from Washington.

I made a requisition on the bureau, dated June 18, 1846, for a transit instrument, and also for an instrument to obtain the magnetic dip and declination. Should these arrive, you will unpack them, mount the instruments near the place where I observed in Santa Fé, and commence a series of observations for longitude by moon culminating stars, and for the magnetic dip and declination.

The series for longitude will be continued for at least three lunations, and, should an opportunity present itself, I wish the observations and results to be communicated to me in California.

I am, very respectfully, your obedient servant,

W. H. EMORY,

First Lieut. Corps Top. Engineers.

Lieutenant J. W. ABERT, or, in his absence,

Lieutenant W. G. PECK.

General orders were issued designating the force to march on California. It consisted of three hundred United States 1st dragoons, under Major Sumner, who were to be followed by the battalion of Mormons, five hundred in number, commanded by Captain Cook.

Colonel Doniphan's regiment was to remain in New Mexico until relieved by Colonel Price's regiment, which was daily expected to reach there from the United States, when Colonel Doniphan's regiment was directed to effect a junction with General Wool at Chihuahua.

Major Clarke's two batteries of artillery were divided—one company, Captain Fisher's, to be left in New Mexico; the other, Captain Weightman's, to accompany Colonel Doniphan. The battalion of foot, under Captain Agney, was directed to remain in Santa Fé.

Thus was the army of the west divided into three columns, to operate in regions remote from each other, and never to unite again in one body.

September 25.—I received notice that the general was to march at 2, p. m., for California. His force consisted of three hundred dragoons, to be followed by a battalion of Mormons on foot that had not yet arrived in Santa Fé.

My requisition for twelve pack-saddles and eight mules not being filled, I determined to delay starting for an hour or two, and did not reach my camp, sixteen miles distant, till long after dark. I found my tent pitched, my supper smoking, and corn secured for my mules; this was gratifying, and I congratulated myself on the reorganization of my party, at least so far as the *personel* was concerned, for I had never found my camp so well attended to.

The day was excessively hot, the night very cold, the thermometer 32 degrees.

Memorandum.—My party is now organized as follows:

Lieutenant Warner, topographical engineers, &c.

J. M. Stanly, draughtsman.

Norman Bestor, assistant.

Men.

James Early, driver to instrument wagon;

W. H. Peterson, in charge of horizon box and cantina for sextants;

Baptiste Perrot, driver of transportation wagon;

Maurice Longdeau, in charge of spare mules;

François de Von Cœur, in charge of spare mules;

Frank Ménard, assistant teamster;

James Riley, assistant to Bestor;

Dabney Eustis, assistant to Stanly,

and the private servants of Lieutenant Warner and myself.

Our road is over the ground heretofore travelled and chronicled as far as Tomé.

As an evidence of the ignorance of the people here respecting

the topography of the country, and also the ignorance of foreigners who have lived fifteen or twenty years in Santa Fé, no one could tell me where the Rio Santa Fé debouched into the Rio Grande.

I may here remark, that every night I furnished the distances travelled over to General Kearny at headquarters, and very often (whenever required) the latitude of the camp. In many cases these and the distances have been published; I shall, therefore, not repeat them. The latitudes in some cases have been incorrectly reported, and in others recomputed, and are therefore now given as final results.

September 26, 27, 28, 29, and 30.—We marched over the same ground already travelled over and described, between the 2d and 7th of September.

Below Zandia we were attracted by a great noise. It proceeded from a neighboring rancheria, where we saw eight or ten naked fellows hammering away in a trough full of cornstalks, as I had never seen Mexicans exert themselves before. The perspiration from their bodies was rolling off into the trough in profusion, and mingling with the crushed cane. This was then taken out, boiled, and transferred to a press, as primitive in construction as any thing from the hands of Father Abraham.

The hopper was the trunk of a scooped cotton wood tree, into this was inserted a billet of wood, upon which the lever rested about midway. Men, women, and children were mounted on each end; all see-sawing in the highest glee. I suggested, as an improvement, that one end of the lever be confined, and the whole of the living weight be transferred to the other end. "No! No!" said the head man, "if I do that, the fun of see-sawing will be over, and I can't get any body to work." The man was a disciple of Charles Fourier, and desired "to make labor attractive."

The morning of the 29th opened with a grand trade in mules and horses. A few days' experience was quite enough to warn us that our outfit would not answer, and the general directed that all the poor mules and horses should be exchanged for fat ones. The scene reminded one more of a horse market than a regular camp. The more liberal were our offers for the animals, the more exorbitant became the demands of the Mexicans.

At Albuquerque I was directed to call and see Madame Ar. mijo, and ask her for the map of New Mexico, belonging to her husband, which she had in her possession. I found her ladyship sitting on an ottoman smoking, after the fashion of her countrywomen, within reach of a small silver vase filled with coal. She said she had searched for the map without success; if not in Santa Fé, her husband must have taken it with him to Chihuahua.

We crossed the Rio Grande del Norte at Albuquerque, its width was about twenty-five yards, and its deepest part just up to the hubs of the wheels. It is low at present, but at no time, we learned, is its rise excessive—scarcely exceeding one or two feet.

We encamped a little more than half way between Albuquerque and Pardillas, on a sandy plain, destitute of wood, and with little grass.



A NEW MEXICAN INDIAN WOMAN.

C. B. Graham, Lith.

We saw myriads of sand crane, geese, and brant.
 September 30.—Feeling no desire to go over the same ground twice, I struck off on the table lands to the west, and found them a succession of rolling sand hills, with *obione canescens*, *franseria acanthocarpa*, *yerba del sapa* of the Mexicans, and occasionally, at very long intervals, with scrub cedar, about as high as the boot-top.

I saw here the hiding places of the Navajoes, who, when few in numbers, wait for the night to descend upon the valley and carry off the fruit, sheep, women, and children of the Mexicans. When in numbers, they come in day-time and levy their dues. Their retreats and caverns are at a distance to the west, in high and inaccessible mountains, where troops of the United States will find great difficulty in overtaking and subduing them, but where the Mexicans have never thought of penetrating. The Navajoes may be termed the lords of New Mexico. Few in number, disdaining the cultivation of the soil, and even the rearing of cattle, they draw all their supplies from the valley of the Del Norte.

As we marched down the river to meet Ugarté and Armijo, the Navajoes attacked the settlements three miles in our rear, killed one man, crippled another, and carried off a large supply of sheep and cattle. To-day we have a report, which appears well authenticated, that the Mexicans taking courage at the expectations of protection from the United States, had the temerity to resist a levy, and the consequence was, the loss of six men killed and two wounded.

They are prudent in their depredations, never taking so much from one man as to ruin him. Armijo never permitted the inhabitants to war upon these thieves. The power he had of letting these people loose on the New Mexicans was the great secret of his arbitrary sway over a people who hated and despised him. Any offender against Armijo was pretty sure to have a visit from the Navajoes.

I stopped at the little town of Isoletta, to visit my friend, the alcalde, who has the reputation, Indian though he be, of being the most honest man and best maker of brandy in the territory. Mr. Stanly accompanied me, for the purpose of sketching one of the women as a specimen of the race. I told the alcalde our object, and soon a very beautiful woman made her appearance, perfectly conscious of the purpose for which her presence was desired. Her first position was exquisitely graceful, but the light did not suit, and when Stanly changed her position, the charm of her attitude was gone.

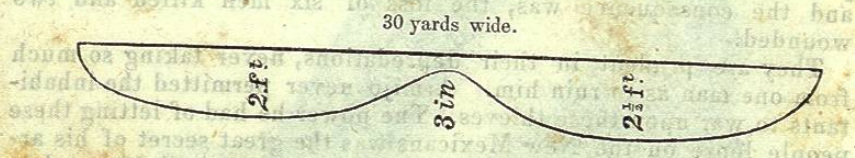
We came down from the table lands through a ravine, where the lava, in a seam of about six feet, overlaid soft sand-stone. At the point of junction, the sand was but slightly colored. The lava was cellular, and the holes so large that the hawks were building nests in them.

At this ravine the Navajoes descended when they made their last attack; at the same moment the volunteers were ascending the other slope of the hill, on their way to garrison Cibolletta.

The camp of this date (September 30) is near the camp of September 6; and my observations this evening verified, in a very satisfactory manner, the travelling rate assumed for the chronometer 783. The longitude of camp of September 7, given by chronometer, is $7h. 07m. 00s.5$; that of this present camp, which is one mile west of it, is $7h. 8m. 00s.$. Here, in addition to my usual observations for time and latitude, I took a set of lunar distances, with east and west stars.—(See Appendix.)

Above this camp, there is on the river a considerable growth of cotton-wood; among which are found some "signs" of beaver. The plains and river bottoms were covered with much the same growth as that heretofore noted; to which may be added an erythera, a handsome little gentian-like plant, with deep rose-colored flowers, and a solanum, a kind of wild potato, with narrow leaves, which Dr. Torrey says is different from any in the United States.

October 1.—To-day, for the first time for six days, I was able to rise from my bed without assistance. The air was elastic, and fragrant with the perfumes of the wild sage from the adjacent hills. Every thing was, in truth, couleur de rose; for the sun beamed out bright and red, infusing the same tint over the landscape, till near meridian. I crossed to Tomé, in search of some non-complying guides. We recrossed at Tomé, and measured the section of the river. Accordingly, we found the Rio Grande del Norte, many hundred miles from its source,



This section is about the same as at San Felipe and Santo Domingo. If to it we add the section of a stream of water carried off by two large zequias, each nine feet by two, we shall have an estimate of the volume of water discharged by this famous river, for 150 miles, through the most populous and fertile part of its valley.

Below Tomé, for a few miles, the valley widens, the soil improves, and the cultivation is superior to any other part, particularly that of the rancherias around the pleasant little village of Belen.

October 2.—This morning we passed the pretty church in the village of Sabinal, after which the settlements became very few and far between. We encamped opposite La Lloya, at the bend of the river Del Norte, where the low sand hills on either side seem to unite and shut up the valley.

We received a message from the major domo of the neighboring rancheria, cautioning us to be watchful of our animals, that forty of the Navajoes had passed the river last night. The incursions of these Indians have prevented the settlement and cultivation of this part of the country.

The sand bank, at the foot of which we are encamped, is filled with serpentine, harder than that which is dug in such quantities from the site of Fort Marcy, near Santa Fé.

Now and then we came to spots from which the waters were prevented from escaping by the sand, and had evaporated, leaving saline incrustations; about these we found growing abundantly atriplex and salicornia.

We found to-day lycium in great abundance, senecis longilobus, martynia proboscidea, (*cuckold's horns*), and a small shrub with flower like convolvulus.

October 3.—The wagons from the rear not being up, we laid by all day, in hourly expectation of their arrival and an order to march. An express from Colonel Price came up, informing us of his arrival in Santa Fé.

About 12 o'clock in the day, a Mexican came into camp, with his horse foaming, to say that the Navajoes had made an attack on the town of Pulvidera. One company of dragoons was immediately despatched to the place, about twelve miles distant.

This camp was one of the prettiest of the whole march, on the curve of the river, fringed with large cottonwoods growing at intervals. The air was mild and balsamic, the moon shone brightly, and all was as still as death, except when a flock of geese or sand-cranes were disturbed in their repose. Several large cat fish and soft-shell turtle were caught, and we saw blue-winged ducks, plovers, doves, and a few meadow larks.

No fact proves the indolence and incapacity of the Mexican for sport or for war more glaringly, than that these immense flights of sand-cranes and geese are found quietly feeding within gunshot distance of their houses and largest towns. Going into Albuquerque, I started a hungry-looking wolf in a water melon patch, close under the walls of the town.

October 4.—The wagons mounted the sand hills with great difficulty. The river impinges so close on the hills as to make it necessary, on the western side, to mount the table lands. These plains, reaching to the base of the mountains, are of the same character as heretofore mentioned, of rolling sand hills, covered with obione, canescens, prosopis glandulosa, (*romeria*), riddellia tagetina, paga-paga—an abundant shrubby plant, belonging to the family of the amarantus, but a genus not yet described—a new dieteria, a new fallugia, baileya multiradiata, abronia mellifera, and a few patches of grama. This last is the only nutriment the plains afford for horses and cattle; but mules and asses, when hard pressed, will eat thetrato and the romeria. The chamisa grows to a considerable height, and the stalk is sometimes two or three inches in diameter; a fire can be made of it sufficient to boil a kettle or roast an egg. To-day I eat, for the first time, the fruit of the prickly pear, the "yerba de la vivera," of the Mexicans; as I was thirsty, it tasted truly delicious, having the flavor of a lemon with crushed sugar.

Below La Joya two sand hill spurs, overlaid with fragments of lava and trap, project from the east and west, closing the valley, just leaving sufficient space for the river to pass between. The

river winds below in a beautiful semicircle, bending to the west. On either side is excellent grass, apparently untouched, and shaded by large cottonwoods. To the west, the hills of Pulvidera form an amphitheatre. The whole picture, the loveliest I have seen in New Mexico, loses nothing by being projected, from where we stood, against the red walls of the Sierra Grande, which extend from Zandia southward, dividing the waters of the Puerco, of the east, from those of the Rio Grande.

I longed to cross these mountains and explore the haunts of the Apaches, and the hiding place of the Camanches, and look up a nearer route home by the way of the Red river, which the hunters and voyageurs all believe to exist. But onward for California was the word, and he who deviated from the trail of the army must expect a long journey for his jaded beast and several days' separation from his baggage. We were not on an exploring expedition; war was the object; yet we had now marched one thousand miles without fleshing a sabre.

Arrived at the town of Pulvidera, which we found, as its name implies, covered with dust, we received full accounts of the attack made on the town by the Apaches the day before. The dragoons arrived too late to render assistance.

About one hundred Indians, well mounted, charged upon the town and drove off all the horses and cattle of the place. The terrified inhabitants fled to their mud houses, which they barricaded. The people of Lamitas, a town two miles below, came to the rescue, and seized upon the pass between the Sierra Pulvidera and the Sierra Secoro. The Indians seeing their retreat with the cattle and goats cut off, fell to work like savages as they were, killing as many of these as they could, and scampered off over the mountains and cliffs with the horses and mules, which they could more easily secure.

This same band entered the settlements some miles above when we were marching on Santa Fé, and when Armijo had called all the men of the country to its defence. In this foray, besides horses, they carried off fifteen or sixteen of the prettiest women.

Women, when captured, are taken as wives by those who capture them, but they are treated by the Indian wives of the capturers as slaves, and made to carry wood and water; if they chance to be pretty, or receive too much attention from their lords and masters, they are, in the absence of the latter, unmercifully beaten and otherwise maltreated. The most unfortunate thing which can befall a captive woman is to be claimed by two persons. In this case, she is either shot or delivered up for indiscriminate violence.

These banditti will not long revel in scenes of plunder and violence. Yesterday Colonel Doniphan's regiment was directed to march into their country and destroy it. One of their principal settlements, and farming establishments, is said to be nearly due west from here, about two days' march; the road leading through the formidable pass above noted.

Yesterday and to-day we came across some unoccupied strips of ground. Their number yesterday was greater than to-day; for, since we passed Pulvidera, the sand hills encroach on the river and

leave the valley scarcely a mile wide. The cottonwood, however, is getting more plentiful, and we have not been obliged to use the "bors de vache" in cooking for some days.

To-night I measured two sets, or 18 lunar distances, east and west of, 12 altitudes of polaris, 10 of andromedæ, and 8 of alpha lyræ.

The resulting latitude $34^{\circ} 07' 39''$.

Longitude $7h. 07m. 54s.$

October 5.—Camp near Secoro.—Last night a Mexican came into camp, and said we should now leave the river and strike for the Gila, nearly due west. He was one of the men engaged by me as guide while on the first trip to Tomé. We accordingly moved only six miles to-day, and encamped a little north of Secoro, preparatory to taking the hills to-morrow. The prospect is forbidding; from the Sierra Escadron, opposite the amphitheatre, as far south as the eye can reach on the western side of the river, is a chain of precipitous basaltic mountains, traversed by dykes of trap. Through these we are to pass.

I rode to the base of the Sierra Secoro, overhanging the town of that name, and about three miles distant from the river. It is a confused mass of volcanic rocks, traversed by walls of a reddish colored basalt and seams of porphyritic lava and metamorphic sand stone. In one or two places, where the water had washed away the soil near the base, I found specimens of galena and copper ore very pure; but of the extent of these beds I can form no opinion, nor can I say positively they were not erratic. The ore in this mountain is said at one time to have been worked for gold, but the difficulty of getting quicksilver induced the operator to move to a mine on the opposite side of the river, near Manzanas, where, it is said, quicksilver is to be found; but the specimens from that place, of what the inhabitants exhibited as rock containing quicksilver, on analysis, was found to contain none. Should the command halt to-morrow to prepare for the mountains, I shall be enabled to give the place a more thorough examination.

To the east, close to the banks of the river, still runs the Sierra Grande, which commences at Zandia with such towering heights, but here tapers down to moderate sized hills. The formation is apparently of different colored sand stone, and wherever the stratification shows itself, dipping about 25 degrees to the south and east; but in some places it is horizontal, and in others showing great disturbance. With the glass may be seen walls of light-colored stone, basalt or trap, running off for miles in a straight line nearly north and south. The town of Secoro, containing about one hundred inhabitants, is prettily situated in the valley of the river which is here almost circular, and about three or five miles in diameter. The church, as usual, forms the salient point, which meets the eye at a great distance.

The growth on the sand plains to-day was chiefly *iodeodonda**

* Since writing the above, the following extract of a note from Dr. Torrey was received in reference to this plant, which is so remarkable, and extends over so great a surface.
"The *iodeodonda* I find described in a late work by Moricand, entitled '*Plantes nouvelles ou rares d'Amerique*.' It is described by him as a new genus, under the name *larrea*. It is well figured in his 48th plate as *Larrea Mexicana*. In its affinities it is allied to *guaiacum*."