

October 15.—Marched at 8, and after four miles of rough traveling we turned more to the west, and took a final departure from the Rio Del Norte: its rugged gravel hills and harsh bottom grass, tasting of salt, has not made us regret leaving it. We ascended near two hundred feet at once, to an elevated plain, deeply cut with the cañons of this stream, which we came to, encamping on the third: these proved to be great obstructions, and would have detained us very long if we had brought our wagons. The gravel on the slopes of the banks was at an angle of about thirty degrees, and it would be difficult to get a passage around it. The guides of Captain Cooke went to seek a crossing for these creeks near their junction with the Del Norte. From the south bank of the third creek on which we encamped, no doubt a practicable wagon road could be obtained to the banks of the Del Norte. The table land is fine, and upon it a good route could be made. We entered upon a country to-day with many varieties of plants strange to us, and of a more tropical aspect—a new variety of walnut, oak, hackberry, birch. The gravel beds of alluvion near camp have turned to stone, and a deep cut or cañon, of fifty feet deep and twenty feet wide, affords a passage for the stream on which we have encamped, which, for a short distance, is a fine leaping mountain stream, with overhanging trees and fish playing in its waters; it then sinks in the sand, and all is arid again. Distance 24 miles to one creek; 1 mile to second; 14 miles to third; 6 miles. Course SSW.; the trail is very plain.

October 16.—Marched at 8, and found ourselves approaching the lesser peaks of the Sierra de los Mimbres, and, passing through them, we found the country very beautiful, with mountain streams at intervals of four or five miles all day, and a smaller growth of walnut and a sort of live oak shaded the rivulets; all else was prairie covered with the finest grama grass. We occasionally found the road rocky, but it was very good. The growth of live oak, in stunted shrubs, covered some of the mountain peaks to their tops, others were entirely bare. The Mimbres chain to the west look black in the distance as the vegetation. The leaves of some cotton-wood and grape vine, and other vegetation, were yellow in the October sun; the grama grass looks faded, but it is now in the seed, and furnishes fine food for our animals. There are two kinds of grama grass—the summer and winter; the first is now too dry for much use as pasture; the latter may be said to be best. We passed limestone strata to-day, which had a dip east, and showed the action of heat; the limestone blue and compact. The hills appeared to be all scarped to the west, like the teeth of a saw. From a peak



two miles southeast of camp the view presented was very grand; and twenty to thirty miles wide, covered with grass lays below, the valley of the Del Norte widening to the south as far as El Paso,

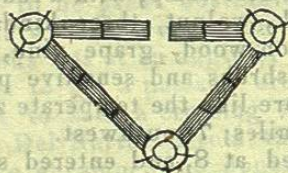
the peaks of mountains standing around in the distance like the frame of the picture. It is evident, at a glance, that the lower part of New Mexico is by far the most valuable. Mountains near camp are composed of blueish basalt and amygdaloid; these rocky masses were seamed with other material, the courses of which could easily be seen from the difference of the vegetation upon them. A root like a carrot was found near camp, with a reddish juice, but noxious to the smell; live oak, walnut, three kinds of acacia, ash, (new variety,) willow, cotton-wood, grape vine, canissa, and Spanish bayonet; several new shrubs and sensitive plants. On the whole, the country looked more like the temperate zone than that of yesterday. Distance 17 miles; 7 southwest.

October 17.—Marched at 8, and entered still deeper the mountains; the hills, as yesterday, were covered with grass, and occasionally patches of dwarf trees; the streams small mountain rivulets, with a fringe of trees along them of oak, walnut, and little cotton-wood; saw various new plants, among which is a mountain flax, with tall stem and large seed, some of which I saved; passed masses of amygdaloid; at one place, a whitish amygdaloid had a dip of 20 degrees to the south; we then crossed a chain of mountain of darker volcanic rocks; then an immense deposit of conglomerate, composed of the fragments of the adjacent volcanic rocks, partly rounded by attrition; we then came to the Rio Mimbres, and crossed it, and encamped three miles from it, among hills of volcanic rocks, some of them capped with trap; near camp, a mass of volcanic glass; camp on little creek, among cedar trees and little water; plenty of grass; bad road for wagons, but a good one could be made.

October 18.—Marched at 8, making smokes on the hills to let the Apaches know we were coming, and to invite them in; the mountain peaks on the left of the road were capped with trap, and the trees more numerous and lofty; we are approaching the mining region of the copper mines, and abundance of fuel is provided; east of the copper mines, is a high cap of trap rock, of blueish grey tinge, and irregular columnal structure. This same seam descends, and crosses the valley north of the copper mines; east of this is a dark seam of platic rock, resembling in appearance Quincy granite, but of different materials; and in the valley west of the hill of trap, a whitish rock, seamed like marble veins, with the ore of copper, furnishes the great cobre or copper mine. It once was worked extensively, and the metal was so rich in gold, that it bore transportation to the city of Mexico for the fining furnace; the remains of the establishment consist of a quantity of adobe houses, and piles of charcoal, and ashes and drifts.

October 19.—Visited the copper mines, and examined the old excavations; the veins of sulphuret of copper run through a whiteish silicious rock, like the blue veins running through white marble; they vary in their hues, but traverse the whole substance; the rock breaks easily, and the pick appears to be the only tool used formerly. Occasional veins of pure copper, very yellow from the

quantity of gold it contains, traverse the whole mass. I saw in the bollers lying over the mine, masses of the blue limestone, supposed to be cutaceous; the water had filled many of the abandoned chambers of the mine; in others, the flies had perched themselves in great numbers, to pass the winter. The fort which was built to defend the mines, was built in the shape of an equilateral triangle,



with round towers at the corners; it was built of adobe, with walls four feet thick; the fort was still in tolerable preservation; some remains of the furnaces were left, and piles of cinders, but no idea could be formed of the manner of smelting the ore, except that charcoal in quantities was used; several hundred dollars' worth of ore had been got ready for smelting when the place was abandoned. McKnight, who was for nine years a prisoner in Chihuahua, made a fortune here, and abandoned the mines in consequence of the Apache Indians cutting off his supplies; at one time, they took 80 pack mules from him, (authority Carson;) the mine is very extensive, and doubtless immensely valuable. Water is abundant, and pasture fine, and many lands which will furnish breadstuff by cultivation; wood is very abundant, and particularly in the vicinity. Leaving the copper mines, the rocky masses soon show iron in the greatest abundance; then going west, we came to the blue limestone, standing vertical, ranging south, and bent so as to lay level west; through the seams of this limestone, some igneous rocks had been interjected, and occasional masses of iron ore, similar to that seen on the blue and false Wachita rivers; then we came to a mountain mass of the same rock as of the copper mines; from this, westward, we came upon an amygdaloid of all sorts of igneous or volcanic rocks; the hills were not very lofty, so that, gradually, we passed the great backbone of America without perceiving it—the dividing ridge between the Atlantic and Pacific. The general set out to march 15 miles, to San Vicentia spring; but, finding no grass, he came on, expecting to find water, a Spanish guide said, at three leagues, but it proved to be 15 miles further; where we all arrived after night. Before we left the copper mines, some Apaches showed themselves; and, as we came off, they rode upon a hill, made a smoke, and as we got opposite them on the road, commenced calling out to us "not to be afraid, but come on;" we replied, "it is you that are afraid; why don't you come on?" they then approached, but motioned us all back but the guide, (Carson,) until he had a talk, and satisfied them. Some of our mules gave out to-day; three Apaches came to camp. Distance, 30 miles.

October 20.—The Apaches came to us this morning, as we did not start until late. Red Sleeve came with fifteen or twenty per-

sons—some women; they ride small but fine horses. The high roads leading from this mountain to Sonora and California show whence they came; they are partly clothed like the Spaniards, with wide drawers, moccasins, and leggings to the knee; they carry a knife frequently in the right legging, on the outside; their moccasins have turned up square toes; their hair is long, and mostly they have no head-dress; some have hats, some have fantastic helmets; they have some guns, but are mostly armed with lances and bows and arrows; their arrows pointed with stone points about this



size. Carson remarked yesterday, that he never knew how fine a weapon the bow and arrow was until he had them fired at him in the night; at that time they are more sure than firearms, for they are fired by the feel rather than the arms. The vegetation westward from the copper mines grows thinner until we get to the sierra Del Burro, which is a mountain covered black with forest growth. The pine is found hereabouts, live oak, (three kinds,) the grama grass, and other fine grasses, some resembling timothy. A rain storm passed by the heads of the Gila last night; it is the first we have seen since we left Santa Fé, although high winds and heavy lightning betokened distant storms once or twice before, we have not yet been sprinkled upon. Trading mules is dull work with the Apaches. Red Sleeve, Black Knife, and Lasady, are the three principal chiefs of the Apaches on the west of the Del Norte; Gomez is the head man of those on the east of the Del Norte. There is another band about southwest of this; on the Purgatory mountain is another band. The Apaches near Taos are of the same stock with these; their whole people have not been together for a long time. The general gave Red Sleeve and two other chiefs papers to show he had talked with them, and that they had promised perpetual friendship with the Americans; they seemed all anxious to conciliate the Americans; and they did not forget the Shawnees. The copper mines are in their country, which lies north of the thirty-second degree of north latitude.

Marched at 12, meridian, and descended a narrow, winding valley, with a brisk running stream two or three feet wide meandering through it, with a few trees occasionally, and very tall grass; we found two small patches where the Apaches had made corn. The hills were high on each side, composed of rugged masses of volcanic rock, and very few trees. We followed this creek for five miles, and fell upon the famous Gila, a beautiful mountain stream about thirty feet wide and one foot deep on the shallows, with clear water and pebbly bed fringed with trees and hemmed in by mountains, the bottom not more than a mile wide. The signs of beaver, the bear, the deer, and the turkey, besides the tracks of herds of Indian horses, were plain to be seen on the sand. We came down the river two and a half miles more, about south, and encamped at the head of one of its cañons, preparatory to a long journey over rocky hills to-morrow. Northward from where we struck the river is an open country lying west of a very high mountain, called the Gila mountain, in which it is said the salt

forks also head. Our camp was well supplied with a fine fish from the river resembling a little the black bass; its flesh was not firm but very delicate. The California quail abounds in the bottoms. A new sort of sycamore tree made its appearance here; it has a bark precisely like our own sycamore tree, or button-wood, and a leaf resembling the maple; the leaves are now yellow with the frost, as they are of the most deciduous plants. Found some of the fruit of the black walnut of this country; it is about half the size of our black walnut, and not rough on the outside as ours, but shows the veins of the seams of the outer bark. The roses, the hops, musquitoes, and poison oak looked familiar, and some other plants known in the United States, names unknown. Just as we were leaving camp to-day, an old Apache chief came in and harangued the general thus: "You have taken Santa Fé, let us go on and take Chihuahua and Sonora; we will go with you. You fight for the soil, we fight for plunder; so we will agree perfectly. Their people are bad Christians; let us give them a good thrashing, &c." Marched seven and a half miles, and encamped at the upper end of a cañon, through which we could not travel to-night; grass good.

October 21.—Marched at half-past seven, and, going down the river a few miles, we commenced climbing a rugged mountain of basaltic rock, where our mountain howitzers will find trouble in climbing; for seven miles our track lay over the mountain, up and down steep declivities. At one point we had a magnificent view down the Gila, which lay before us, running southwest. At a long distance south, the horizon was limited by mountain peaks between us and them, and to the limits of the horizon until we came to the Sierra Del Buro, southeast there was a vast plain of diluvion covered with grama grass. This plain connects with that of the Del Norte, so that one can ride south of the Sierra Del Buro from the Del Norte to the Gila without crossing a single mountain. In passing the mountains to-day we encountered the usual basaltic rocks, then sienite, then basalt, then feldspathic granite, then red sandstone, (small specimen;) this was standing northwest to southeast, vertical across our route, and a cliff overhung us, probably of the same rocks, with a dip to the northwest, dipping from the Sierra Del Buro; then to feldspathic granite again like that of the Wishita salt, very easily disintegrated. The live cedar and a tree resembling oak on the hills, but scattered; grama and other grasses quite abundant; saw one deer and one flock of partridges; saw a dwarf species of mulberry on the hills; the miseltoe abounds; also, the sweet cotton-wood and willow thinly scattered along the river; very little brush in our way. The poison oak must be for some wise use, for it grows here too. A sort of wild squash, which grows from Bent's fort to Red river, is also found here. Our mules began to show symptoms of failing. We passed to-day very little land that would bear cultivation even by irrigation; the upland is gravel and sand, the bottoms a sort of volcanic dust, made very loose by the undermining of myriads of rats and mice of new varieties. Caught two new kinds of fish in the clear waters of the Gila, baiting with grasshoppers. Our howitzers did not get up this night,

Lt. Davidson being in charge of them, lay out at the base of the mountains; after dark, one of his howitzers and a mule rolled down a steep declivity and disappeared in the dark in a ravine, where he had some difficulty in finding them; it was, however, uninjured. Camp on plenty of grama grass; distance 18 miles.

October 22.—The howitzer arrived, and we marched at 10, crossing the Gila several times, as we move down it for four miles; we then crossed it, and made a circuit of 14 miles to the south side, to get around a cañon through which the river flows; our road was bad, from the number of gutters cut deep through the diluvion, of which the whole country, except the mountain peaks, is composed; it forms the substance of the plains of the Del Norte and the Gila; and, from its general level, no doubt, was deposited in the bed of an ocean. We passed a number of smaller mountains or hills, apparently composed of black basalt; and the cañon of the Gila here is caused by a seam of it crossing the course of the river, through which the water has cut a way; under this seam of basalt, there lies a succession of white sandstone rocks, with a dip to the north, and incurved east and west. The character of these rocks is the same as that which occurs on the Del Norte at our camp on the 11th October; and in general the formation of the country, so far, on this river, is similar to that on the Del Norte. The vegetation, to-day, is more of a tropical character: the large prickly pear, with a tree-trunk six or seven feet high, made its appearance; a new shrub made its appearance; it appeared to be without leaves, and looked like large bunches of the green thorn which defend the trunks of the young honey-locusts in Ohio; it bore a smell like blackberry; there were two new varieties of cactus on the road, and the Spanish bayonets grew in great abundance; encamped on the bluffs, 180 feet above the water, the grass being scarce in the bottom. Distance, 18 miles.

October 23.—I went back after my mule, which old Rob had let get away from him; found it by travelling where we left the Gila yesterday; discovered that the diluvion is formed into stone on the banks of the Gila above the cañon, forming perpendicular walls, upon which, for 30 feet above the level of the stream, the action of water was plainly visible; returned to the old camp, and slept; the troops moved at 9, and continued down the river, on a good road, coming into a plain with the salt grass upon it; the road side was strewn with pieces of broken pottery, which led to examination, and the evidence of a large village was plain; one foundation was found, 80 feet by 40; a *fleur de terre*; and there were piles of round stones, which had been used in former buildings; the place must have been occupied for a long time, as the quantity of broken pottery was very great; the fragments were apparently just like those in the daily use of the present New Mexicans; I followed here to overtake the troops, and did not have time to make any searches who it was that occupied these places. Was it Spanish or the Aztecs, *quien sabe?* The buildings of adobe do not remain long as ruins; perhaps they were Spaniards, who worked mines in the neighborhood, and were subsequently driven out by the Indians, as they

were from a silver mine west of Santa Fé. The country is not much frequented by Indians now just along here, as Carson left some horses and mules, and found them here.

October 24.—Laid by in camp, the salt grass purged our horses, and gave some of them the cholera.

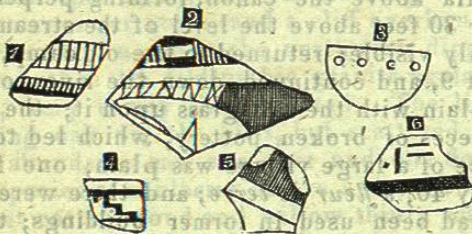
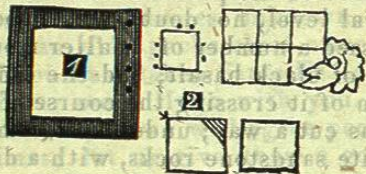
October 25.—Marched early, and made about 25 miles, over a very rough country approaching the third cañon of the Gila and San Pedro mountains; the black hills of basalt rise on each side, and deep cuts in the diluvion makes the country very rough; some vallies on the Gila are capable of cultivation, and at them found the ruins of a number of habitations. No 1 represents a ground

plan of the most northern, six miles out from camp. The outlines of the foundations were visible, as round stones had been used for that purpose. The houses, probably made of adobe, were long since washed a *fleur de terre*. The longer house was shaped like those of New Mexico in present use; the smaller ones had the appearance of some of the assemblages of houses occupied by the Pueblos of New Mexico. In the longer house were some cedar pieces of posts and joists, very much decayed. How long cedar would last in this dry atmosphere, I cannot tell; but presume if even exposed to the weather, it might lay like a stone for ages. Pieces of broken pottery strewed the ground in every direction, and fragments of black crystal, which no doubt were left from the manufacture of arrow points. The pottery seemed like that in present use among the New Mexicans. I raked the dirt in various

directions, in vain, to find some relic which might indicate the antiquity of the ruins; a number of broken stones to pound corn upon, showed that the people were agricultural. In the bottom was the ruins of a small house, probably used for guarding the fields. No. 2 represents a place two miles further down the river;

here there were fragments of broken pottery more ancient looking; one square room, with another house attached, with a hole in the ground within the foundation, about 20 feet square and now about eight feet deep; its only present inhabitant was a strange looking yellowish grey rat, which retreated to his hole; could I have followed him through his burrowings, I might have found some clue to the mystery of the former inhabitants. We soon after commenced approaching the third cañon of the Gila, and climbed mountains over paths which once had been used by this people. We diverged from the river again, and, after much rough travelling over broken volcanic rocks, we found a camp of grama grass about 400 feet above the river on a towering hill, with rough descent to the water: distance travelled about 20 miles. A horse which Carson had left here a week or two before, as he came from California, took fright at our approach and fled to the hills at the top of his speed, baffling all effort to retake him.

October 26.—Started at a quarter to 7; as we are warned of a troublesome march, it commenced as we descended to the river, and continued for about 14 miles, up and down steep declivities covered thick with fragments of black basalt, with scarcely a place where an animal could step without putting his foot on a loose stone, many of them angular and sharp. This terrible journey we had to take to get around the third cañon, which is impassable. As the van toiled along, rising hill upon hill, the rear fell behind, until, finally, they were lost to view; the head of the column reached the river about 3 o'clock, and at midnight the cattle and howitzer party came, Lt. Davidson reporting that his men and mules had given out, and had left the howitzers 5 miles back; some of the men did not come in until morning. At daylight (27th) we saw one of the dragoons perched on a cliff, with his kit on his back, just abandoning his mule, which he had led down towards our fire the night before, and found himself cut off by a precipice, he laid down and spent the night; and the next morning, not being able to get his mule back, he took off his saddle and retraced his steps with all his effects upon his back; the general had a party sent and rescued the animal from its perilous height. This journey can no doubt be avoided by leaving the Gila higher up, and taking more to the south around these basaltic peaks. The action of the water on the diluvion drift was plain for 500 or 600 feet, the pebbles for 400 feet, or thereabouts, being of varieties from a distance mixed with those of the locality; higher up, the stones, rounded by attrition, were wholly those of the locality. The hills were of conical form, piled upon each other; one of them with a cap of trap; all seemed to be solid basalt thrust up from beneath; a very few cedars and other shrubs; several large kinds of cactus and grass tuft between the rocks was all the vegetation, the grass growing finest on the north side of the hill. Having passed this rocky barrier, we find the grass scarce; the hills are green with the creosote bush; and, from this on to California, we may count upon but scanty picking for our poor animals. It is not improbable that in the volcanic convulsions which



Pottery.

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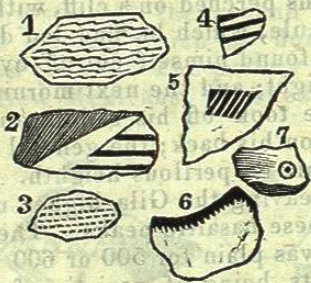
gave this country a form, some mephistic substance was produced in quantities to poison the soil for vegetation. This creosote plant shows something; and a shower of rain which fell upon us, although very slight, made the atmosphere smell of some vile gas. Opposite our journey, the Black and Blue rivers come on the north-eastwardly; the Black courses south, with a branch in the mountains called Bonita; the course of the Blue southeast: they head in the mountains north of the Gila, and may be 60 miles long; they come into the Gila about six and a half miles apart. Near our camp a small stream called the St. Charles comes in; all three of these streams flow through cañons. The diluvion here is very thick, and of a rocky nature, which, with the basalt, make the walls of the cañon vertical. Near our camp are old horse signs and trails, and old Indian wigwams of willows about 5 feet high, and covered with willows and grass. Near



where we left the Gila to-day was the ruins of two ancient houses, shown only by the foundation stones and the pieces of pottery. If I only had one of the young ones that had been boxed on the ears for some of the breakages!



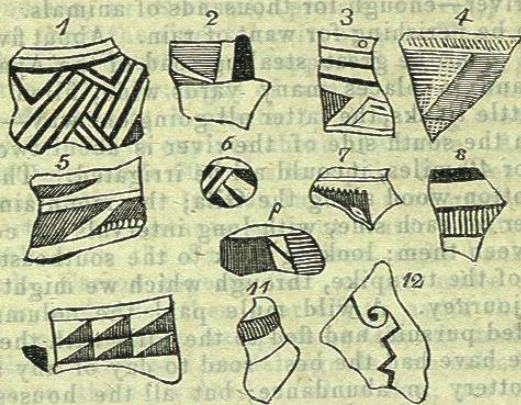
October 27.—Laid in camp on account of the fatigue of yesterday to the animals, and to get up the howitzers; near camp is an old ruin; the foundation of the building is as those given above; some



quantities of broken pieces of pottery were lying about it; I got two men and some spades, and dug about it, in hopes of finding something, but found nothing but pottery; it appeared to be very ancient.

October 28.—Marched at a quarter before 8; after coming two or three miles, we found the remains of an old settlement, the foundations of the houses covering a larger space than those before seen, but the plan of the houses only to be discovered by the rows of round stones; abundance of pottery; the place was overgrown with mesquite and chimezo; the rooms from 12 to 20 feet in dimensions; about 6 miles from camp, were other houses, the rooms of which—

some of them—appeared to have been round; a little further, and there was a circle of stones 90 paces in diameter, with an opening to the east, with the remains of a house near the centre, and some foundations outside; there were no remains of wood; a mile further, and remains of very extensive buildings were to be seen; the rooms—some of them—appeared to have been 40 by 50 feet; and, from the greater quantity of rubbish, the houses must have been much larger; the pottery abundant; pieces marked thus. Further



on, we came to a large plain at the junction of a creek which comes from the southeast; and here was found the remains of the most extensive settlement; the most of the houses had cedar posts in a state of decay, standing in the ground; a rampart had been raised in a circle of over 300 yards, and on parts of it, houses had been made; in the middle was a hole with three entrances or slopes down to the bottom of it; probably an old well filled up, as the surface was probably not over 15 feet above the level of the river; pottery very abundant; our road lay along the course of the Gila, which we crossed several times; the road was very dusty, so that our mules dug great holes as they stepped along, one after the other; the tracks of a Mexican cannon were plain to be seen on the trail we were following; some expedition last spring, probably against the Apaches, to the southeast; we can see a level country passing south of the Devil's turnpike; the creek coming from that direction can probably afford water; south of southwest of our camp is a high mountain, about five miles off, the top covered with trees; around the southeast base of this is a broad trail leading towards Sonora, where the Apaches go to steal; it leads across to the head of San Pedro. Our route showed the action of fire in the bottoms, which, in many places, had swept the growth of vegetation off, for years of what the earth had attempted to clothe herself with; the soil is so light, that fire kills the roots, as well as the tops of the trees; mesquite is abundant on the bottoms; and here it is a large tree, two feet in diameter, but not lofty; grass was scarce on our path, so that we had no place to camp except here; the grass coarse, and of