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1st Session. }

HOUSE OF REPRESENTATIVES.

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VOLUME XIV

## REPORT

UPON THE

# COLORADO RIVER OF THE WEST,

EXPLORED IN 1857 AND 1858 BY  
**LIEUTENANT JOSEPH C. IVES,**  
CORPS OF TOPOGRAPHICAL ENGINEERS,

UNDER THE DIRECTION OF THE OFFICE OF EXPLORATIONS AND SURVEYS,

A. A. HUMPHREYS, CAPTAIN TOPOGRAPHICAL ENGINEERS, IN CHARGE.

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BY ORDER OF THE  
**SECRETARY OF WAR.**

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WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1861.

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YOUNG from a sketch by H. F. MOLLHAUSEN

Inth. of Garony Major & Knapp, 44 Broadway NY

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CHIMNEY PEAK

**June 5, 1860.**

**Laid upon the table and ordered to be printed.**

**LETTER FROM THE SECRETARY OF WAR.**

**WAR DEPARTMENT, *June 5, 1860.***

**SIR:** I have the honor to transmit herewith the report of First Lieutenant J. C. Ives, topographical engineers, upon the Exploration of the River Colorado of the West, with the accompanying maps, called for by the resolution of the House of Representatives of the 1st instant.

Very respectfully, your obedient servant,

**JOHN B. FLOYD, *Secretary of War.***

**Hon. WILLIAM PENNINGTON,  
*Speaker of the House of Representatives.***

LETTER TO THE OFFICER IN CHARGE OF THE OFFICE OF EXPLORATIONS AND SURVEYS.

WASHINGTON, May 1, 1860.

Sir: I have the honor to submit the accompanying report upon the Exploration of the River Colorado of the West. The presentation of this has been delayed until the maps of the region explored should be completed. A preliminary report was handed in shortly after the return of the expedition from the field; and during the explorations the department was kept apprised of their general progress.

The main object of the work being to ascertain the navigability of the Colorado, detailed information upon that point was also forwarded as the examinations proceeded. It was my desire, in the communications referred to, rather to lay stress upon than to undervalue the difficulties encountered. At the same time the opinion was expressed that the delays and obstacles met with in the first experiment might be in a great measure avoided upon a new trial, conducted with the provisions that experience had suggested.

This view has since received ample confirmation. The outbreak among the Mojave Indians, and the consequent movement of troops into their territory, caused the navigability of the Colorado, at different seasons of the year, to be thoroughly tested. The result has been beyond my most sanguine estimate. The round trip between the head of the Gulf and the Mojave villages—which are 425 miles from the mouth of the Colorado, and but 75 miles from the point which I think should be regarded as the practical head of navigation—has been made in eight days.

I would again state my belief that the Colorado would be found an economical avenue for the transportation of supplies to various military posts in New Mexico and Utah. It may be instanced that the amount of land transportation saved by adopting this route would be: to the Great Salt lake, 700 miles; to Fort Defiance, 600 miles; and to Fort Buchanan, 1,100 miles. The estimate contained in the hydrographic report, of the cost attending the river service, is, I think, a liberal one. The first organization of transportation establishments, to connect the upper part of the river with the interior of the Territories mentioned, would be attended with expense and trouble; but I am convinced that it would ultimately be productive of a great saving in both. The results of the exploration, so far as they relate to the navigability of the river, will be found embodied in map No. 1 and in the hydrographic report.

The region explored after leaving the navigable portion of the Colorado—though, in a scientific point of view, of the highest interest, and presenting natural features whose strange sublimity is perhaps unparalleled in any part of the world—is not of much value. Most of it is uninhabitable, and a great deal of it is impassable. A brief statement could comprise the whole of what might be called the practical results of the land explorations. The country along the Colorado, however, with the exception of a few places, has been almost a *terra incognita*. Concerning the character and value of the portions previously explored, great differences of opinion existed. Between the mouth and the highest point attained are many localities unique and surpassingly beautiful. Some of the Indian tribes, of whom little has been known, are subjects for curious speculation; and it being doubtful whether any party will ever again pursue the same line of travel, I have thought it would be better, in place of condensing into a few lines the prominent facts noticed, to transmit the journal kept during the expedition.

This involves the presentation of what may appear extraneous, and perhaps beyond the

limits of a strictly official communication: but a record of the every-day incidents of travel, set down while fresh in the mind, serves to convey a general idea of a country that can scarcely be imparted in any other way, and can hardly fail of reproducing, to some extent, in the mind of the reader the impression made upon that of the traveller.

In passing from the Colorado eastward, an opportunity was afforded of forming a connexion between the Big Sandy, on Lieutenant Whipple's railroad route, and the point upon the river north of the Needles. The examination verified the judgment of Lieutenant Whipple, who, though prevented from actually passing over the country, had selected it for a railroad location. The distance by Whipple's travelled route between the above points was 180 miles, and over a rough and difficult region; by his railroad route it is 80 miles. For 35 miles the line is nearly level; for the remaining 45 miles there is a uniform grade of about 70 feet. During the whole distance there is scarcely an irregularity upon the surface of the ground.

The department of natural history was under the charge of Dr. Newberry, whose name is well known in connexion with such labors. His eminent fitness for the position will appear by an examination of what he has accomplished. His report upon the geology of the region traversed, I regard as the most interesting and valuable result of the explorations. In making the collections Dr. Newberry was zealously assisted by Mr. Mollhansen, who also prepared the greater portion of the views and illustrations taken during the trip.

The accompanying maps were made by Mr. Egloffstein, who went out with me as topographer. Some of the views, it will be perceived, are also from his pencil. The maps have been drawn directly upon the plates, which will obviate the ordinary expense for engraving. The style is partly new. The system of light and shade has been frequently adopted; but the application of the ruled tints—by which the light sides of the mountains are relieved, and the comparative altitudes of different levels exhibited—is original, I believe, with the artist. The beautiful and effective representation of the topography is the best encomium both upon the style and its projector. The privation and exposure to which Mr. Egloffstein freely subjected himself, in order to acquire topographical information, has resulted in an accurate delineation of every portion of the region traversed.

The survey of the navigable portion of the river was principally conducted by Mr. C. Bielawski, of San Francisco. The duties of meteorologists and assistant topographers were faithfully performed by Messrs. Taylor and Booker.

To Mr. Carroll, the engineer and constructor of the steamer, and to the pilot, Captain Robinson, are due, in great measure, the successful ascent of the Colorado. The report shows how large a share they had in the accomplishment of the work.

The mule train, while following the bank of the river and crossing the country, was in charge of Mr. G. H. Peacock, of California, whose good care and experienced management conducted it safely over as difficult a country as can perhaps be found upon any portion of the continent.

To Lieutenant Tipton, 3d artillery, who commanded the escort, I feel myself under many obligations for voluntary and important assistance rendered in the astronomical and meteorological departments, for the excellent order and discipline maintained throughout the trip among the individuals of his command, and for the uniform cordial co-operation which contributed so much to the pleasure and success of the expedition.

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

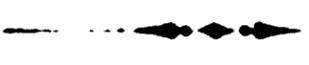
J. C. IVES,

*First Lieutenant Top. Engineers, Com'g Colorado Exploring-Expedition.*

A. A. HUMPHREYS, *Captain Top. Engineers,*

*In charge of Office of Explorations and Surveys, War Department.*

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COLORADO EXPLORING EXPEDITION, LIEUTENANT J. C. IVES, TOPOGRAPHICAL ENGINEERS, 1857-'58.

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# GENERAL REPORT.

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WASHINGTON, D. C.  
1861.

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# INTRODUCTION.

## COLORADO EXPLORATIONS.—ORGANIZATION OF THE EXPEDITION.— VOYAGE TO THE MOUTH OF THE RIVER.

POSITION AND EXTENT OF COUNTRY DRAINED BY THE COLORADO.—EARLY EXPLORATIONS OF THE RIVER.—EXPEDITION OF CORONADO.—OF DIAZ —OF FERNANDO ALARÇON.—OF CARDINAS —VISITS OF JESUIT MISSIONARIES.—FOUNDATION OF CATHOLIC MISSIONS.—EXPEDITION OF ESCALANTE.—ESTABLISHMENT OF FORT YUMA.—EXPEDITION OF LIEUTENANT DERBY.—OF CAPTAIN SITGREAVES.—OF LIEUTENANT WHIPPLE.—ACCOUNTS OF TRAPPERS.—ORGANIZATION OF COLORADO EXPLORING EXPEDITION.—PREPARATIONS TO TAKE THE FIELD —DIVISION OF PARTY AT SAN FRANCISCO.—VOYAGE TO THE HEAD OF THE GULF OF CALIFORNIA.—DESCRIPTION OF THE GULF.—APPROACH TO THE MOUTH OF THE COLORADO.

THE Colorado of the West is the largest stream, with one exception, that flows from our Territory into the Pacific ocean. It has its sources in the southern portions of Nebraska and Oregon, and in its course to the Gulf of California drains two-thirds of the Territory of New Mexico, and large portions of Utah and California, an area of more than 300,000 square miles.

Very little has been known concerning this river. Two streams, Green and Grand rivers, which flow through Utah in a southerly direction, have been supposed to unite somewhere near the southern boundary of that Territory and form the Colorado, but the point of junction has never been visited nor determined. For hundreds of miles below this point the stream has not been seen, till recently, by white men, excepting at one spot, and few Indians, for centuries past, have been near its banks. Notwithstanding this, some portions of the river were among the earliest parts of America to be explored. In less than fifty years after the landing of Columbus, Spanish missionaries and soldiers were travelling upon the Colorado, following its course for a long way from the mouth, and even attaining one of the most distant and inaccessible points of its upper waters. More information was gained concerning it at that time than was acquired during the three subsequent centuries.

In the year 1540 the viceroy of New Spain, interested in the accounts derived from a Franciscan monk of the latter's travels in the Territory now called New Mexico, sent an exploring expedition into that region under the command of Vasquez de Coronado. A detachment of twenty-five men, led by one Diaz, left Coronado's party and travelled westward. They discovered the Colorado and followed it to its mouth. Their description of the river and of the tribes they met upon it is not at all inapplicable to the condition of things at the present day, though the statements concerning the prodigious size of one community of Indians that they encountered are a little exaggerated. The Mojaves, whom, doubtless, they refer to, are perhaps as fine a race of men, physically, as can anywhere be found, but they do not quite come up, in stature and strength, to the descriptions of the Spaniards.

About the same time Captain Fernando Alarçon, by order of the viceroy, sailed up the Gulf of California and ascended the Colorado in boats for a long distance. The account of what he saw agrees with that of his cotemporary explorer.

Another of Coronado's captains, named Cardinas, with a party of twelve men, reached the pueblos of Moquis, and repaired from them, with Indian guides, to a portion of the Colorado, far distant from that seen by the others. The history states that after twenty days' march, over a desert, they arrived at a river, the banks of which were so high that they seemed to be three or four leagues in the air. The most active of the party attempted to descend, but came back in the evening, saying that they had met difficulties which prevented them from reaching the bottom; that they had accomplished one-third of the descent, and from that

point the river looked very large. They averred that some rocks, which appeared from above to be the height of a man, were higher than the tower of the cathedral of Seville. This was the first description of the famous Big Cañon of the Colorado.

Several times, during the succeeding two centuries, the lower part of the river was visited by Catholic priests. In 1744 a Jesuit missionary, named Jacob Sedelmayer, went thither, following the course of the Gila, and travelled extensively in both New Mexico and Sonora, and about thirty years afterwards the Jesuits established missions among the Yuma Indians, who live at the junction of the Gila and Colorado. The priests were subsequently massacred by the fierce tribe among whom they had located themselves.

In 1776 another Catholic missionary, Father Escalante, travelled from Santa Fé to Utah, and having explored the region south of the Great Salt Lake, pursued a southwesterly course, towards the sources of the Virgin, and then crossed to the Colorado, which he reached at a point that appears to have been almost identical with that attained, from the opposite direction, by Cardinas, more than two centuries before.

From this time the river was scarcely approached, excepting by an occasional trapper, or some overland party crossing the lower portion, *en route* to California. A considerable part of the emigration, induced by the gold discoveries in that region, passed through New Mexico, by way of the Gila, and the travellers were subjected to molestation from the Yumas. In 1850 a detachment of troops was sent to the mouth of the Gila to keep these Indians under control, and not long afterwards a military post, called Fort Yuma, was regularly established.

The difficulty of furnishing supplies to the garrison, across the desert, was such that, in the winter of 1850 and 1851, General Smith, commanding the Pacific division, sent a schooner from San Francisco to the head of the Gulf of California, and directed Lieutenant Derby, topographical engineers, to make a reconnaissance, with a view of establishing a route of supply to Fort Yuma, *via* the Gulf and the Colorado. The result of the reconnaissance was successful, and the route was at once put in operation. The freight, carried in sailing vessels to the mouth of the river, was transported to the fort—the distance to which, by the river, is one hundred and fifty miles—at first in lighters, and afterwards in steamboats.\*

In 1851, Captain Sitgreaves, topographical engineers, with a party of fifty individuals, made an exploration from Zuni westward. He struck the Colorado at a point about 160 miles above Fort Yuma, and followed the east side of the river, keeping as near to the bank as possible, to the fort. He encountered the Mojaves, and found their appearance and customs generally to agree with the descriptions of the early explorers. The descent was accompanied with hardship and danger. Both the Mojaves and Yumas were hostile, and the difficulty of travelling near the river was extreme, owing to the chains of rugged and precipitous mountains that crossed the valley. The summer heats had parched and withered the face of the country; the stream was low, and what was seen of it did not create a favorable opinion regarding its navigability.

In the spring of 1854 Lieutenant Whipple, topographical engineers, in command of an expedition for the exploration and survey of a railroad route near the 35th parallel, reached the Colorado, at the mouth of Bill Williams's Fork, and ascended the river about fifty miles, leaving it at a point not far below where Captain Sitgreaves had first touched it. The expedition was composed of nearly a hundred persons, including the escort. The Mojaves were friendly, furnishing provisions to the party, whose supply was nearly exhausted, and sending guides to conduct them by the best route across the desert westward. The river was probably higher than when seen by Captain Sitgreaves, and it was the opinion of Lieutenant Whipple that it would be navigable for steamers of light draught. The course of the Colorado northward could be followed with the eye for only a short distance, on account of mountain spurs

\* A fuller account of the opening of this route is given in a subsequent chapter.

that crossed the valley and intercepted the view. A high distant range, through which the river apparently broke, was supposed to be at the mouth of the "Big Cañon," which the Spaniards, in 1540, had visited at a place far above.

The marvellous story of Cardinas, that had formed for so long a time the only record concerning this rather mythical locality, was rather magnified than detracted from by the accounts of one or two trappers, who professed to have seen the cañon, and propagated among their prairie companions incredible accounts of the stupendous character of the formation, and it became a matter of interest to have this region explored, and to lay down the positions of the Colorado and its tributaries along the unknown belt of country north of the 35th parallel. The establishment of new military posts in New Mexico and Utah made it also desirable to ascertain how far the river was navigable, and whether it might not prove an avenue for the economical transportation of supplies to the newly occupied stations.

There was no appropriation that would enable the War Department to accomplish this service until the summer of 1857, when the present Secretary of War, having the disposition of a certain amount to be expended in field examinations, set apart a portion of it for the exploration of the Colorado, and directed me to organize an expedition for that object.

To ascertain how far the river was navigable for steamboats being the point of primary importance, it was necessary first to make provision for this portion of the work. The company employed in carrying freight from the Gulf to Fort Yuma were unable to spare a boat for the use of the expedition, excepting for a compensation beyond the limits of the appropriation. A boat of suitable construction had, therefore, to be built on the Atlantic coast and transported to San Francisco, and thence to the mouth of the river. In order that the survey should be made at the worst and lowest stage of the water, I had been directed to commence operations at the mouth of the Colorado on the 1st of December. This left little time for preparation, considering that it was necessary to build a steamer and carry the parts to so great a distance.

In the latter part of June I ordered of Reaney, Neafie & Co., of Philadelphia, an iron steamer, fifty feet long, to be built in sections, and the parts to be so arranged that they could be transported by railroad, as the shortness of time required that it should be sent to California, *via* the Isthmus of Panama. About the middle of August the boat was finished, tried upon the Delaware, and found satisfactory, subject to a few alterations only. It was then taken apart, sent to New York, and shipped on board of the California steamer which sailed on the 20th of August for Aspinwall. Mr. A. J. Carroll, of Philadelphia, who had engaged to accompany the expedition as steamboat engineer, went out in charge of the boat.

The transportation of the steamer was, to the parties concerned, a source of more trouble than profit, but the kind offices of the agents of the Panama Railroad Company, and of the captains of the steamships on both the Atlantic and Pacific coasts, united to the careful supervision of Mr. Carroll, enabled the awkward mass of freight to reach San Francisco in safety by the first of October.

Dr. J. S. Newberry was appointed physician to the expedition, and also to take charge of the natural history department. This gentleman had previously made extensive geological surveys in California and Oregon while attached to the party of Lieutenant Williamson, topographical engineers, in charge of the Pacific railroad surveys in those regions.

Mr. F. W. Egloffstein, who had been attached to Frémont's expedition of 1853, and had subsequently been employed with the party that explored the Pacific railroad route near the 41st parallel, was appointed topographer. Messrs. P. H. Taylor and C. K. Booker were the astronomical and meteorological assistants. A gentleman belonging to the household of Baron Von Humboldt, Mr. Mollhausen, who had been a member of the exploring party of Prince Paul of Wirtemberg, and also of Lieutenant Whipple's expedition, received from the Secretary of War the appointment of artist and collector in natural history.

The members of the expedition were assembled in San Francisco in the middle of October. The interest, which I would here gratefully acknowledge, displayed by General Clarke, commanding the department of the Pacific, and by the officers of his staff, in furthering the necessary preparations, enabled these to be soon completed. The party was divided into three detachments. One of them, in charge of Dr. Newberry, started on the 28th of October in the coast steamer to San Diego, at which place some mules were to be procured and taken across the desert to Fort Yuma. A second detachment, in charge of Mr. Taylor, went by the same steamer to San Pedro, from whence they were to repair to Fort Tejon, collect the remainder of the animals, and cross also to Fort Yuma. Mr. Carroll and myself, with eight men, were to go by sea to the head of the Gulf of California, there put the steamboat together; ascend the Colorado to Fort Yuma, and join the rest of the party. Lieutenant Tipton, 3d artillery, and twenty-five men, to be taken from the companies at Fort Yuma, were detailed by General Clarke as an escort to the expedition.

It was on the 1st day of November, 1857, that I sailed from San Francisco, for the mouth of the Colorado, in the *Monterey*, a schooner of 120 tons burden, employed to carry supplies to the head of the Gulf, for transmission to the garrison at Fort Yuma. There had been almost a full cargo taken in before any of the expedition property was put aboard, and to find room for the latter was a matter of considerable difficulty. There was no other way, however, of getting my party and stores to their destination, and the quartermaster, Colonel Swords, had, at some inconvenience to himself, kindly allowed me the use of as much shiproom as could possibly be spared. Every nook in the hold was closely stowed, and much of my property, including the parts of the steamer, had to be carried on deck. The eight sections of the hull were distributed along on either side of the masts, resting upon piles of lumber, amongst the pieces of the engine and wheel. The boiler, an unwieldy object, weighing rather more than three tons, was lashed as securely as it could be, amidships. Two skiffs, a long whale boat, and some boxes completed the deck load, leaving an area of only five or six feet square around the helm, and a still smaller space at the bow, unencumbered.

It was of course necessary that a certain number of mechanics and laborers should accompany me to the mouth of the river to put the steamboat together, and take me up to the fort, but Colonel Swords did not feel authorized to encroach upon the already limited accommodations of the captain and crew by quartering nine persons upon them, and I should have been much embarrassed but for the obliging offices of the master of the vessel, Captain Walsh, who, with much trouble, and at the risk of still more discomfort, succeeded in providing places for the party. His own small cabin he shared with Mr. Carroll and myself.

We sailed out of the harbor of San Francisco with a brisk breeze, which subsided soon after we had passed the headlands, and for twenty-four hours remained light, allowing but little progress to be made, but then a fresh northwester set in, and continued for several days, during which the *Monterey*, though not in sailing trim, made so good a run along the coast, that on the evening of the seventh day out the land near Cape St. Lucas, the southern extremity of the peninsula of Lower California, hove in sight.

This rapid accomplishment of the first two-thirds of the distance encouraged anticipations of a quick voyage not destined to be realized. The next morning the wind had died away, and a week of dead calms, of burning tropical days, and stifling nights, found us, at its termination, slowly rolling on the glassy swell, and still in sight of the lower end of the peninsula.

In the Gulf of California the currents of air generally set in the direction of its length, either up or down, according to the season of the year. During the month of November it appeared that what breeze there was blew *down* the Gulf, and we had to beat slowly up against it, making sometimes little more than twenty miles in the twenty-four hours. When near the end of the voyage the long-wished-for wind indeed came, and then it blew a gale, and for twelve hours a sea was running that occasioned, in the deeply laden schooner, considerable apprehen-

sion for the safety of the property of the expedition, to say nothing of its members; but the *Monterey* rode it through without serious damage, and a few evenings afterwards—three weeks having elapsed since Cape St. Lucas had first been seen—Captain Walsh informed us that we should reach the mouth of the river on the following day.

Tedious as was the last part of the voyage, it had not been entirely destitute of interest, for at no time during the day were we altogether out of sight of land. About Cape St. Lucas the country near the shore is uninteresting, but further north the scenery becomes bolder and more striking. The navigation of the Gulf is nearly free from shoals and reefs, and the sheet of deep water would be unbroken but for lofty volcanic islands, some one of which is nearly always in view. Their sides rise suddenly out of the water, and in thick or stormy nights a vessel might be driven into dangerous proximity to the rocky bluffs before the lead would give notice of their neighborhood.

North of Guaymas these islands are more numerous, and in one place, with narrow channels between, extend across the Gulf in an uninterrupted chain, presenting wild and abrupt outlines, as though formed by spouts of lava hurled up from mammoth submarine craters, and hardened in the air before falling. They are by no means destitute of vegetation, but appear to be uninhabited, and the unbroken solitude adds to their desolate grandeur. It is probable that upon many of their surfaces no human foot has ever trodden. They appear, indeed, almost inaccessible, though among the rugged cliffs an occasional break affords a glimpse of some green valley or cool sheltered glen inviting to the eye, or a narrow vista momentarily opens to view dark and mysterious looking recesses, suggesting the notion, in this region teeming with mineral wealth, that there may be among those secluded nooks places that it would be well worth while to explore.

The main land on the western side has a character very similar, but the bold precipices and steep shelving planes that girt the shore are crowned with jagged peaks piled confusedly above.

During the gale that we encountered, when near the end of the voyage, the remarkable phenomenon was presented of the heavy billows rolling towards us from the portion of the coast that was directly under our lee. I supposed at first that this might be due to some volcanic disturbance, but it is more probable that it resulted from the action of the tides and currents, which increase in strength as the head of the Gulf is approached. A very perceptible change takes place also in the temperature when the valley of the Colorado draws near. Though less warm—at least at the season of our visit—than the latitude of Cape St. Lucas, it possessed a fresh softness not experienced further south, and the islands and mountain peaks, whose outlines, as seen from the Gulf, had been somewhat dimmed by a light haze, appeared surprisingly near and distinct in the limpid medium through which they were now viewed. The whole panorama became invested with new attractions, and it would be hard to say whether the dazzling radiance of the day or the sparkling clearness of the night was the more beautiful and brilliant.

In closing this brief notice of the voyage to the mouth of the Colorado, the recollection of one of its features is so agreeable that I cannot refrain from referring to it. I allude to the hospitality extended to myself and companions by Captain Walsh during the whole of the trip.

In a vessel loaded almost beyond the limits of safety; with a hampered deck, impossible to be kept in order; a crowded cabin, and an inconvenient number of idlers filling up the circumscribed space, enough of the disagreeable must have occurred during the long passage to render it the most uncomfortable experience of seafaring life that our captain had probably ever encountered, and we therefore appreciated the more the unflagging kindness and good humor which contributed so much to our comfort and enjoyment during the thirty days that we were cooped up together on board of the schooner *Monterey*.

## CHAPTER IX.

### SAN FRANCISCO FOREST TO MOQUIS.

PARTRIDGE VALLEY.—RIDGES IN CEDAR FOREST.—SCENERY ALONG 35TH PARALLEL.—BILL WILLIAMS'S MOUNTAIN.—SAN FRANCISCO FOREST.—SAN FRANCISCO MOUNTAIN.—LEROUX'S SPRING.—DESCENT TO FLAX RIVER.—FLAX RIVER VALLEY.—EXAMINATION OF TRAIN AND SUPPLIES.—DIVISION OF PARTY.—CROSSING OF RIVER.—BUCHANAN'S BOAT.—TRIP NORTHWARD.—PAINTED DESERT.—RETURN TO FLAX RIVER.—SALT SPRINGS.—TRAIL TO MOQUIS.—ANOTHER BELT OF DESERT.—BLUE PEAKS.—POTTERY HILL.—LIMESTONE SPRING.—MOQUIS CITIES AND VALLEY.—APPROACH TO FIRST PUEBLO.—ENCOUNTER WITH MOQUIS INDIANS.—DESCRIPTION OF TOWN AND ADJACENT LOCALITIES.—MOQUIS DWELLING.—LOCATION OF SEVEN PUEBLOS.—INCURSIONS OF NAVAJOES.—VISIT OF CHIEF TO CAMP.—ARRANGEMENTS FOR THE TRIP NORTHWARD.

*Camp 80, Bill Williams's Mountain, April 25.*—Partridge ravine widened as it was descended, till it became a beautiful valley, covered with grassy slopes and clumps of cedars. It contained neither springs nor a running stream, but among the rocks along the base of the bluffs many pools were discovered. The pasturage was excellent. The place is a great resort at this season for grizzly bear, antelope, deer, and wild turkeys, large numbers of whose tracks were seen leading to and from the water holes.

For ten or fifteen miles we followed the course of the valley, and then, allowing the mules a day to rest and graze, struck off directly to the east. The surface of the ground was sprinkled with lava rocks. Before advancing far a steep bluff obstructed the way. The growth of cedars was so dense that we could scarcely get the riding animals and packs through, much less see to select a good place to ascend. Dismounting and going directly at the face of the precipice we clambered blindly up, driving the mules ahead. The sharp stones made the footing additionally insecure. Breathless and exhausted, at last we attained the summit, and found that it was only the first of a series of similar ridges that were also to be crossed. Descending to the ravine we were soon engaged in another upward scramble, and the process had to be repeated till animals and men were scarcely able to stand.

The eastern crest overlooked a beautiful rolling country, in the midst of which towered the volcanic mountains that have long formed so conspicuous a feature in the scenery. A pool of water surrounded by grass afforded a good camp.

This morning we re-entered the region of pines, and have travelled all day in the midst of picturesque and charming scenery. The valleys are covered with a bright green sward, and open groves are disposed gracefully upon the lowlands and ridges. Heavy masses of snow are still piled upon the San Francisco summit, and this close proximity of winter heightens and gives a zest to the enjoyment of spring.

Our camp is in the midst of an extensive meadow at the northern base of Bill Williams's mountain. This peak, though the second in importance of the cluster, is far less lofty than its colossal neighbor, and the snows that whitened its crest a few weeks since have nearly disappeared. A sparkling brook now dashes down the ravine and meanders through the centre of the meadow, which contains perhaps five hundred acres, and is covered with a luxuriant growth of grama grass. Stately pines and spruce are scattered upon the surrounding slopes, and afford a delightful shade. We found in possession of the spot a herd of antelope that scoured over the mountain like the wind when they saw the train approaching.

To eyes that have been resting upon the deserted and ghastly region northward this country appears like a paradise. We see it to the greatest advantage. The melting snows

have converted it into a well-watered garden, and covered it with green meadows and spring flowers. The grass, even when dried by the summer's sun, will remain nutritious. The groves of trees will at all times give the region a habitable appearance, and, though it is not known how great the supply of water would be during the summer, the country can never present the arid wastes that are spread along the belts of territory both north and south. One only source of trouble is that which we anticipated encountering. The vitreous rock rasps off the hoofs of the unshod mules like a file, and they will be disabled if we have long to travel over the lava region.



Fig. 37. Bill Williams's Mountain.

*Camp 84, April 30.*—The route continued through an open park, dotted with flowery lawns and pretty copses, and then reached the edge of the great forest that surrounds the San Francisco mountain, and entered its sombre precincts. It was delightful to escape from the heat of the sun, and travel through the cool underwood. Across the dark shady glades a glimpse would sometimes be caught of a bright tinted meadow glowing in the sunlight. Antelope and deer were constantly seen bounding by, stopping for a moment to gaze at us, and then darting off into the obscure recesses of the wood.

Half-way to the mountain we passed an open prairie—a natural clearing in this vast expanse of pines—and camped upon the eastern edge. Water was found in a ravine close by. The amount of snow melted from the mountain sides during the past fortnight has been immense, and every water-course is filled with a cold, clear rill. During the march to-day the effects of the thaw have been found somewhat inconvenient. Some of the ground passed over has been comparatively low, and so soft between the rocks that the mules were in danger of miring at every step. Nothing frightens a mule or makes him more obstinate than this, and it was with great difficulty that we compelled the unwilling animals to proceed. As we approached the

great volcano, the jagged rocks, with which the surrounding surface was strewn, so bruised their feet that they were hardly able to walk.

Under the southwest base of the San Francisco peak we camped at a spring, known to be permanent. It is in a sheltered nook almost buried in the side of the impending mountain. There is abundant grazing. The water is cold and delicious. The surrounding forest furnishes shade in summer, and material for warmth in winter, and at all seasons of the year the place doubtless affords an excellent camp.

On the following day, while skirting the base of the mountain, the tender-footed beasts stumbled and staggered upon the sharp rocks till it seemed inhuman to drive them any longer, but the delays and short marches had so reduced our stock of provisions that it was absolutely necessary to keep on. As we turned our backs upon the impending pile the road became a little better, and by degrees the lava disappeared. The eastern border of the pine forest was reached, and a belt of cedars entered similar to that growing upon the other side.

The grass and the scoriæ go together, and after being rid of the latter the former also became scarcer. We made the first camp, after leaving the forest, with plenty of water, but with little pasturage. As the evening approached there was a sudden change of weather. From summer heat it became intensely cold. A roaring gale sprang up, accompanied with snow and sleet. Yesterday morning the ground was covered with snow to the depth of nearly a foot, and the storm was driving so furiously that it was impossible to move from camp. These violent transitions from a July to a January temperature are very trying both to men and animals. The half-frozen beasts were exposed to the keen blast for twenty-four hours without a mouthful to eat. That they were able, in their weakened and emaciated condition, to survive it was a matter of astonishment. Several times during the past two weeks they have appeared to be on their last legs, but an occult store of vitality has always turned up at the critical moment to meet the emergency.

The tempest had sufficiently subsided to-day to enable us to continue the journey. The storm had spread over only a small area, and the descent to Flax river being rapid, we were removed from its effects by a few hours of travel, and brought into a lower country and a less inclement atmosphere. We have camped at the first grazing place encountered, and expect to reach Flax river to-morrow.

Dense and black masses of clouds are still drifting past the San Francisco summit and the surrounding slopes, and icy cold blasts reach us at intervals from that quarter. The storm seems to have burst out again with increased violence, and we congratulate ourselves on having escaped from its influence.

*Camp 85, Flax river, May 2.*—The wide valley of Flax river could be recognized a long way off by the line of cottonwoods that skirt the banks of the stream. The river is smaller than the Colorado, but at this season, when the water is becoming high, much resembles the other at its low stage. There are the same swift current, chocolate colored water, shoals, snags, sand bars, and evidences of a constantly shifting channel. The width opposite to camp is about fifty yards, and the depth five or six feet. The banks and bottom are composed of quicksand, and we have been unable to find a ford. The bottom lands are in places several miles wide. Here and there are to be found patches of a coarse grass, which at this season is green and nutritious.

Before proceeding with the examinations northward, it became necessary to look into the condition of the train and the supplies. The inspection developed unsatisfactory results. Most of the mules are in such a state as to preclude the possibility of their going much further. Several that I was unable to supply with the Mexican pack-saddle, or arapaho, have had to carry army pack-saddles, which, according to invariable experience on long marches, have mangled their backs shockingly. The sudden and severe snow-storms, coming in the midst of hot weather, the scarcity, and, at times, absolute deprivation of food and water, the difficult

country and rocky surface, have reduced them to a sorry plight. They look and move like slightly animated skeletons.

The stock of provisions is nearly gone. While traversing the thick forests the branches have torn the packs and occasioned unavoidable wastage. There is barely enough left to take the party to Fort Defiance, which is the nearest military post. I am loth, however, to forego a short exploration of the country to the north, if only to visit the towns of the Moquis, which cannot be more than seventy or eighty miles distant. The impassable cañons west of the territory of these Indians have thrown them out of the line of travel and exploration, and there has been no record concerning them since the accounts of the early Spanish missionaries, who visited the country, and described the "seven cities" which they found there.

It has been finally arranged for Lieutenant Tipton to take the train and follow Lieutenant Whipple's trail to Zufii, and thence go to Fort Defiance, while Dr. Newberry, Mr. Egloffstein, and myself, with ten men and a few of the least exhausted mules, are to proceed northward. A reduction throughout the command in the amount of the accustomed ration will enable our small number to be kept in the field for a week or two longer than the time it would require to go directly to the fort.

The day has been passed in preparing to carry out this arrangement. The mules, provisions, &c., for the use of my detachment, have been crossed to the north side of the river. Owing to the quicksand, and the want of tools and materials to construct a raft, this would have been a difficult if not an impracticable undertaking, had we not been provided with one of Buchanan's portable boats.\* As it is, there has been no trouble. Enough pack-straps were tied together to reach across, and a single person could easily pull over the boat and a load weighing a couple of tons. The mules swam over. To enable them to reach and emerge from the river across the quicksand banks, an approach was prepared on either side with logs and branches of trees covered with earth.

The gale has blown itself out, and a cloudless sky has succeeded, bringing with it a return of summer weather.

*Camp 89, Flax river, May 6.*—We made an early start, and signalling good-bye to our friends upon the opposite side of the river, struck off towards the bluffs that border the bottom lands. The direction taken was a little east of north. The alluvial earth was soft and difficult to traverse; the slope that followed composed of material still softer, and when, after crossing several ridges, the top of the plateau was reached, the soil became so light and friable that every step of the way was attended with labor and fatigue. The day was the hottest that had been experienced.

The summit being attained, a vast extent of country—sweeping from Flax river around to the northeast—was brought into view. It was a flat table-land, from which wide tracts had been eroded to a moderate depth, leaving exposed lines of low bluffs and isolated fragments of

\* This admirable invention was patented by Colonel R. C. Buchanan, 4th infantry, in 1857. The boat consists of a portable skeleton frame, sheathed with *unprepared* canvas, secured to the framework by lashing. It was first used during the campaign in Southern Oregon against the Rogue River Indians, in 1856.

Expecting to carry everything, during my land explorations, upon pack-mules, I had a boat made of smaller dimensions than had been before constructed. It was eleven feet long, five feet wide, and about two feet deep. The frame was of pine, and the whole weight, including the canvas and cords, but 150 pounds—a light load for a single animal. Twelve men could cross a river in it with perfect safety. It could be unpacked and put together in about ten minutes.

A few years before I had had experience, while in the same country, and under much the same circumstances, of one of the ordinary pontoon boats. Its liability to rot, to get stuck together when packed and carried under a hot sun, and to be injured by the attrition of pack-ropes, other packs, and branches of trees, rendered it, after a short time, almost valueless.

The Buchanan boat was found to be free from these objections. After being packed for four months over a rough and wooded country, it was found in a perfectly serviceable condition. The canvas covering I used when required to protect the packs from rain. This rendered it unnecessary to carry a tarpaulin.

My experience has convinced me that the boat is admirably adapted for field service, and will be found to possess the advantages of lightness, durability, and staunchness, in a superior degree to any now in use.

the removed stratum. The scene was one of utter desolation. Not a tree nor a shrub broke its monotony. The edges of the mesas were flaming red, and the sand threw back the sun's rays in a yellow glare. Every object looked hot and dry and dreary. The animals began to give out. We knew that it was desperate to keep on, but felt unwilling to return, and forced the jaded brutes to wade through the powdery impalpable dust for fifteen miles. The country, if possible, grew worse. There was not a spear of grass, and from the porousness of the soil and rocks it was impossible that there should be a drop of water. A point was reached which commanded a view twenty or thirty miles ahead, but the fiery bluffs and yellow sand, paled somewhat by distance, extended to the end of the vista. Even beyond the ordinary limit of vision were other bluffs and sand fields, lifted into view by the mirage, and elongating the hideous picture. The only relief to the eye was a cluster of blue pinnacles far to the east that promised a different character of country. It was useless, however, to take the risk of proceeding directly thither. The experience of the day had demonstrated the hopelessness of trying to drive the mules for any length of time through an untrodden and yielding soil, and it was determined, as a last chance, to go back to Flax river and ascend the bank, at the hazard of having to make a long circuit, till some Indian trail should be encountered leading in the desired direction, and affording a beaten way practicable to be followed.

The night spent upon the desert showed that this condemned region was not entirely devoid of life. As the sun declined and a pleasanter atmosphere succeeded to the oppressive heat, scorpions, spiders, rattlesnakes, and centipedes emerged from their retreats to enjoy the evening air. A collector in that department of natural history could have reaped a harvest of these reptiles in almost any part of our camp-ground.

The next day we went back to the river, striking it ten miles above the place where we had left it. The return was attended with the same difficulties as the march of the day before, and I think nothing but the knowledge on the part of the thirsty mules that they were approaching water could have made them hold out till the distance was accomplished. The valley seemed like an Eden, in contrast with the region that had just been visited, though a sorry looking place if compared with the more favored parts of the continent.

During yesterday we have travelled up the river twenty-five miles. The valley is much cut up by ravines and sloughs. There are indications that, at some seasons, there are storms which send torrents of water from the plateau across the alluvial lands. The soil in many places is impregnated with alkalis and the surface covered with an efflorescence.

The blinding glare of the sun upon the white ground seriously affects the vision, and it has been found necessary to screen the eyes with muslin shades.

The bottom is filled with black-tailed deer. A buck was killed to-day measuring six feet from the nose to the base of the tail. The venison was of delightful flavor, and, though not in season, quite tender. Ruins of ancient pueblos have been passed. These vestiges of a former race of inhabitants, which are found so widely scattered over the table-lands of New Mexico, may be taken as evidence either that the country where they exist can or that it cannot now sustain a population; depending upon the theory adopted to account for the disappearance of the previous residents.

At noon to-day we came to the object of our search—a well-beaten Indian trail running towards the north. Camp was pitched at the place where it strikes the river, and it is the intention to make the second attempt to-morrow to penetrate the unexplored region. Near by are several salt springs, and scattered over the adjacent surface are crystals of excellent salt. This accounts for the position of the trail, for it is doubtless here that the Moquis obtain their supply of that article.

*Camp 91, Pottery Hill, May 9.*—The Indian trail pursued a straight line almost due north, and had been sufficiently used to form an easy, well-beaten path, which could be travelled without difficulty or fatigue. Eighteen miles brought us to the line of bluffs by which the

valley slopes are bounded. There was no appearance of a break till the face of the precipice was reached, when a narrow entrance was disclosed that conducted into a ravine bounded by walls of brilliant red marl. The road was level for some distance along the gorge, and then a steep ascent was reached which brought us, after some difficult climbing, to the summit.

About us and extending westward as far as the eye could reach, were the red bluffs, yellow sand, and all the direful features previously encountered upon the desert, but in front, only a few miles distant, a line of beautiful blue peaks stood like watch-towers upon the verge of a pleasant looking region. A green slope between two prominent summits directly ahead led



Fig. 38—Blue Peaks.

to an undulating ascent, seen in far perspective and dotted with fantastic crags, the most distant of which were tipped with snow. The cool, soft tints of this picturesque landscape were in refreshing relief to the glaring colors and desolate monotony of the foreground.

The march having extended to twenty-five miles, and darkness approaching, we were compelled to camp just before reaching the entrance to this land of promise. The day had opened bright and hot, but taught by experience we were not astonished when at noon a storm set in, accompanied with hail and rain and a piercingly cold atmosphere. The rain at night might have been an advantage had not the porous soil instantly absorbed every drop. We had nothing in which to catch enough water to supply the animals. The icy blast would have prevented them from grazing even had there been anything to eat, and they looked, if possible, more wo-begone than ever when morning came.

We gladly left the desert and ascended the slope. While advancing, the Blue Peaks rose up in front, like ships approached at sea—some in cones and symmetrical castellated shapes, and others in irregular masses. We had made six miles, and were looking out eagerly for water when we reached a little spring issuing from a rock by the side of the trail. At the

foot of the rock was an artificial basin nine or ten feet in diameter, which was filled with clear and sweet water. The mules slaked their thirst, the mules were led, and we proceeded on the way, but not with the same ease as the day before. The rain had softened the path and made it hard to travel. Eight miles from the spring half of the animals, having been without food for nearly two days, broke completely down, and camp was made at the base of a hill where a clump of cedars furnished a supply of fire-wood.

It was again necessary to rest for a day, and not knowing how far ahead it might be to the next water, in the early morning we sent the mules back to the spring to drink and graze. The men reported, when they returned with the herd this evening, that the spring had filled the basin so slowly as only to furnish water to one or two of the animals, and they must start thirsty on their journey to-morrow. The failure of the spring is a source of anxiety. We are forty miles from the river. Another day's journey without water would make it impossible to return, and at any risk it would be necessary to keep on.

The supposed position of the Moquis towns turns out to have been erroneous. We should already, according to the maps, be in sight of them; but a view from the top of the hill, by which we are encamped, discloses no signs of habitations. The Blue Peaks in the direction of the trail are nearly passed, and the country northward looks arid and unpromising.

*Camp 92, Limestone spring, May 10*—It was resolved to make a long march should no water be reached, and we started at an early hour. Three miles from camp, while passing through some hills that exhibited every indication of utter dryness and sterility, we found, at the bottom of a ravine, a growth of young willows surrounding some springs, and a patch of fresh, green grass. The packs were removed. A trench was dug across the ravine, which filled slowly, but in a few hours had enabled all the mules to drink. It did not take them long to eat up the grass, and an hour before noon the packs were replaced and the march resumed. The path had again become hard, and thirteen miles were accomplished without trouble. This brought us to a rough ravine that led through a limestone ridge to the edge of a broad valley. Some tolerable grass and a little spring of water offered sufficient inducement to camp.

As the sun went down, and the confused glare and mirage disappeared, I discovered with a spy-glass two of the Moquis towns, eight or ten miles distant, upon the summit of a high bluff overhanging the opposite side of the valley. They were built close to the edge of the precipice, and being of the same color as the mesa, it would have been difficult to distinguish them even with a glass, but for the vertical and horizontal lines of the walls and buildings. The outlines of the closely-packed structures looked in the distance like the towers and battlements of a castle, and their commanding position enhanced the picturesque effect. When darkness fell, camp fires—probably those of the Moquis herdsmen—could be seen scattered along the farther side of the valley.

*Camp 93, Moquis pueblos, May 11*.—The trail crossed the valley, making straight for the pueblos. For six miles not a sign of life was perceived; but while ascending a hill near the base of the bluff two mounted Indians and one small horse charged suddenly upon us, the riders shouting vociferous welcomes, and each insisting upon shaking hands with the whole company. One of them was respectably dressed. He had on a blue coat, cotton pants, a hat, a belt of circular brass plates, and a variety of ornaments. In his hand was a flint-lock musket of ancient pattern. The little horse they rode was nearly as thin as our mules, but garnished with red trimmings and a Mexican saddle and bridle. The most remarkable feature about both was their neatness. Their hair was finer than is usual with the race, and carefully combed. They were arrayed, to be sure, in their best attire, but cleanliness is seldom considered by Indians as forming any part of the most elaborate toilet.

I asked the leader to be directed to water, and he pointed to a gap where a ravine appeared to run up the bluff rather behind the pueblos, and signified that there we would find an abundance. He further informed us that there was an excellent grass camp at the same place. A great

deal of pantomime brought about this understanding, and then he signified that we must leave the trail and follow him, which we accordingly did, diverging a little to the left from our former course. It was the first time we had had a guide since the departure of Ireteba, and it was pleasant to be able once more to shift the responsibility of conducting the train to a third party.

Our new friend had a pleasant, intelligent face which expressed, however, misgivings as to our character and object in coming into that unvisited region. He rode along humming to himself, with a palpable affectation of being cool and unconcerned, occasionally glancing back with a dubious air to see what was going on behind. The two who had been selected to bear the brunt of the first interview had, I suppose, brought the horse as a means of escape, for soon others of the tribe, satisfied of our pacific intentions, came up on foot. All were running at the top of their speed. They approached to the very sides of the mules, greatly to the alarm of those animals, and suddenly brought up to shake hands, commencing with me, and continuing through the train. They were clean and nice looking; no particular costume prevailed. Every available article acquired by trading with other Indians—for they have no communication with whites—had been converted into raiment or material for personal adornment. Their figures were of medium size and indifferently proportioned, their features strongly marked and homely, with an expression generally bright and good-natured. Thirty or forty joined us, and the cortege in a little while became of considerable length.

The face of the bluff, upon the summit of which the town was perched, was cut up and irregular. We were led through a passage that wound among some low hillocks of sand and rock that extended half-way to the top. Large flocks of sheep were passed; all but one or two were jet black, presenting, when together, a singular appearance. It did not seem possible, while ascending through the sand-hills, that a spring could be found in such a dry looking place, but presently a crowd was seen collected upon a mound before a small plateau, in the centre of which was a circular reservoir, fifty feet in diameter, lined with masonry, and filled with pure cold water. The basin was fed from a pipe connecting with some source of supply upon the summit of the mesa. The Moquis looked amiably on while the mules were quenching their thirst, and then my guide informed me that he would conduct us to a grazing camp. Continuing to ascend we came to another reservoir, smaller but of more elaborate construction and finish. From this, the guide said, they got their drinking water, the other reservoir being intended for animals. Between the two the face of the bluff had been ingeniously converted into terraces. These were faced with neat masonry, and contained gardens, each surrounded with a raised edge so as to retain water upon the surface. Pipes from the reservoirs permitted them at any time to be irrigated.

Peach trees were growing upon the terraces and in the hollows below. A long flight of stone steps, with sharp turns that could easily be defended, was built into the face of the precipice, and led from the upper reservoir to the foot of the town. The scene, rendered animated by the throngs of Indians in their gaily-colored dresses, was one of the most remarkable I had ever witnessed. My state of admiration was interrupted by the guide, who told me, to my astonishment, that we had reached the camp-ground. Besides the danger of the mules trampling upon and ruining the gardens, it was no place to stop, inasmuch as there was not a blade of grass. I called the attention of the Indian to the latter fact, which he did not appear to have considered. While he was reflecting upon the matter, we were joined by a pleasant looking middle-aged man, with a handsome shell suspended to his neck, and a kind of baton in his hand, whom I supposed to be a chief. Like the rest, he shook hands all around, and held a consultation with the guide and with the crowd generally about the grass. They finally concluded that there was plenty a little further ahead, and we proceeded around the ascent by a side trail that led away from the pueblo. In ten minutes a spot was reached which all agreed was the best grazing camp the country afforded. I no longer wondered that their one horse looked so thin. A single animal could scarcely have existed for three days upon all the grass in the neighbor-

hood. Some distance back in the valley I had seen a small patch of grass, and now signified to the troubled looking Indians that I would send the train back, and let the mules be driven to the reservoir when they needed water. I also told them that Dr. Newberry, Mr. Egloffstein, and myself would visit their houses before following the rest of the party to the camp. This arrangement seemed satisfactory, and the chief, accompanied by several friends, led the way with an inconvenient alacrity, considering the steepness of the ascent. The stone steps being surmounted, we came upon a level summit, and had the walls of the pueblo upon one side and an extensive and beautiful view upon the other. Without giving us time to admire the scene, the Indians led us to a ladder planted against the centre of the front face of the pueblo. The town is nearly square, and surrounded by a stone wall fifteen feet high, the top of which forms a landing extending around the whole. Flights of stone steps led from the first to a second landing, upon which the doors of the houses open. Mounting the stairway opposite to the ladder, the chief crossed to the nearest door and ushered us into a low apartment from which two or three others opened towards the interior of the dwelling. Our host courteously asked us to be seated upon some skins spread along the floor against the wall, and presently his wife brought in a vase of water and a tray filled with a singular substance that looked more like sheets of thin blue wrapping paper rolled up into bundles than anything else that I had ever seen. I learned afterwards that it was made from corn meal, ground very fine, made into a gruel, and poured over a heated stone to be baked. When dry it has a surface slightly polished, like paper. The sheets are folded and rolled together, and form the staple article of food with the Moquis Indians.

As the dish was intended for our entertainment, and looked clean, we all partook of it. It had a delicate fresh-bread flavor, and was not at all unpalatable, particularly when eaten with salt. After we had eaten and drank, Mr. Egloffstein took a pipe from his pocket, which was filled and passed around. I noticed, then and afterwards, that the Moquis, when commencing to smoke, bow with solemnity towards each point of the compass. While they were engaged with the pipe we had a chance to examine the contents of the apartment. The room was fifteen feet by ten; the walls were made of adobes; the partitions of substantial beams; the floor laid with clay. In one corner were a fireplace and chimney. Everything was clean and tidy. Skins, bows and arrows, quivers, antlers, blankets, articles of clothing and ornament, were hanging from the walls or arranged upon shelves. Vases, flat dishes, and gourds filled with meal or water were standing along one side of the room. At the other end was a trough divided into compartments, in each of which was a sloping stone slab two or three feet square for grinding corn upon. In a recess of an inner room was piled a goodly store of corn in the ear. I noticed, among other things, a reed musical instrument with a bell-shaped end like a clarinet, and a pair of painted drumsticks tipped with gaudy feathers. Another inner room appeared to be a sleeping apartment, but this being occupied by females we did not enter, though the Indians seemed to be pleased rather than otherwise at the curiosity evinced during the close inspection of their dwelling and furniture.

While Mr. Egloffstein was making a sketch of the place and its owners, I had a talk with the latter. Spreading out a map of the country we had been exploring, I pointed out our route and the places with which I supposed they were familiar. They seemed to comprehend, and the chief designated upon the map the positions of the six Moquis pueblos. I told him that we wished to go further to the north, and he signified that four days' travel in that direction would bring us to a large river. Whether there were watering places between it was difficult from his signs to determine. I then asked for a guide, promising a mule to any one that would accompany me, whereupon he said that he would be ready to go himself early the next morning. A bargain was likewise made for some sheep, which they agreed to send to camp, receiving a blanket in exchange for each animal.

Then we went out upon the landing, and by another flight of steps ascended to the roof, where

we beheld a magnificent panorama. The San Francisco mountain, the valley and cañon of Flax river, and the plateaus to the north and east were all visible, the most distant objects appearing distinct and well defined through the transparent atmosphere. Several trails radiated from the foot of the bluff in perfectly straight lines; and could be traced a long way over the level surface. One conducted to the cañon of Flax river and doubtless to the Yampais village; another, the chief told us, was the trail of the Apaches; another, that of the Coyoteros; a fourth came from Zuñi, and still further east was the Navajo trail leading to Fort Defiance.

We learned that there were seven towns; that the name of that which we were visiting was Mooshahneh. A second smaller town was half a mile distant; two miles westward was a third, which had been seen from camp the evening before. Five or six miles to the northeast a bluff was pointed out as the location of three others; and we were informed that the last of the seven, Oraybe, was still further distant, on the trail towards the great river.

From these heights, the ascent to which is so difficult and so easily defended, the Moquis can overlook the surrounding country, and descry, at a vast distance, the approach of strangers. The towns themselves would be almost impregnable to an Indian assault. Each pueblo is built around a rectangular court, in which we suppose are the springs that furnish the supply to the reservoirs. The exterior walls, which are of stone, have no openings, and would have to be scaled or battered down before access could be gained to the interior.

The successive stories are set back, one behind the other. The lower rooms are reached through trap-doors from the first landing. The houses are three rooms deep, and open upon the interior court. The arrangement is as strong and compact as could well be devised, but as the court is common, and the landings are separated by no partitions, it involves a certain community of residence. The strength of the position unfortunately does not protect the animals upon the plains below, and our friends informed us, with rueful faces, that the Comanches and Navajoes had driven off a great deal of their stock during the previous year. The Moquis do not look warlike, and but for their natural and artificial defences would doubtless long ago have been exterminated by their powerful and aggressive neighbors.

Curious faces were peering at us from the openings and landings during these observations. Many of the women and girls made their appearance; all but one or two having previously kept out of sight. The hair of the young girls is gathered into large knots, or rather knobs, one at each corner of the forehead, which gives them an odd appearance, but their skins are rather fair and their faces pretty. They are quiet and retiring; were neat in their appearance, and prepossessing in expression and manner. The whole tribe are of a much lighter hue than any Indians met upon our route.

Having made a long visit, we descended to camp, inviting the chief and two of his friends to go with us, which they did, taking us down by a more direct route than that by which we had ascended. The sheep were soon forthcoming, according to agreement, and several brought bags of corn and little packages of dried peaches to trade. Some beautiful and really valuable Navajo blankets were also offered, and readily exchanged for a woollen shirt, or some common article of apparel.

The three who accompanied us down I invited into my tent and regaled with bread and molasses, which they ate greedily. They had scarcely commenced when as many as the tent could hold entered without invitation and joined in the repast.

Like the Zuñi Indians, the Moquis have albinos among them. A woman with a fair light complexion and hair has been in camp this evening. It seemed incredible that she could be of Indian parentage, but the cases are by no means rare in the pueblos of New Mexico.

Satisfied with the conduct of the chief, I gave him a red sash, which excited great admiration. He then departed, promising to be in camp early in the morning, ready to accompany us as guide.

The day has been still and clear, and the heat intense. It is hard to realize that the region about us was covered with snow but forty-eight hours ago, and that we were nearly frozen by the cold wind and pelting sleet.

## CHAPTER X.

### MOQUIS TO FORT DEFIANCE.—CONCLUSION.

DEPARTURE FROM FIRST TOWN.—MOQUIS VALLEY.—MODE OF AGRICULTURE.—ORAYBE.—INTERFERENCE OF CHIEF —REFUSAL OF MOQUIS TO ACCOMPANY PARTY —RENEWAL OF JOURNEY —ORAYBE GARDENS.—VIEW OF COUNTRY NORTHWARD.—ATTEMPT TO CROSS MOQUIS DESERT.—WANT OF WATER.—NECESSITY OF GOING BACK —COAL BEDS —TEGUA.—HABITS AND CHARACTER OF MOQUIS.—DIFFERENCE OF LANGUAGE —PEACH ORCHARD SPRING.—NAVAJOS.—WHITE ROCK SPRING.—NAVAJO TERRITORY.—LAKE AND STREAMS.—ARRIVAL AT FORT DEFIANCE.—THEFT AND RESTORATION.—TROUBLES WITH NAVAJO INDIANS —COMPLETION OF EXPEDITION.—RETURN OF PARTY TO EAST.—TRIP TO CALIFORNIA.—FORT YUMA.—STREAMER EXPLORER.—VOYAGE TO NEW YORK.

*Camp 94, Oraybe, May 12.*—This morning the Moquis were in camp exhibiting an insatiable curiosity to see everything that was going on. Our promised guide did not come with the others, and I supposed he was preparing himself for the journey. Corn meal was brought in for trade, and one individual opening his blanket disclosed a dozen fresh eggs, for which he found a ready sale.

The mules had to be driven to the reservoir, and it was late before the train was in readiness to move. The chief still did not appear. I began to fear he was going to disappoint us; and after watching the place of descent from the town for a quarter of an hour, finding that he did not come in sight, determined to wait no longer.

It was difficult to decide which direction to take. I inquired of the Indians for the trail to Oraybe, but they could not or would not understand, and no one would consent to lead the way. Concluding to pursue a northwest course, we started through the sand-hills; following, as nearly as possible, that direction, but had scarcely ridden a hundred yards when the chief appeared over the brow of a hill, running, as the Indians had done on the day before, at full speed. He rushed to the head of the train, shook hands, told me that he had to go back to his house, but would soon overtake us by a short cut; ordered a boy near by to guide us meanwhile, and disappeared as rapidly as he had approached.

Under the guidance of the lad we followed a sinuous and difficult road through the hills that form the slope from the bluffs to the plain below. The trail led close to a second town whose inhabitants were gathered on the walls and housetops to gaze at us as we passed.

Two more reservoirs were seen, and several gardens and peach orchards. A few miles of tedious travelling brought us to the edge of the valley. The chief here overtook us, and a mule was furnished to him upon which he mounted and led the way.

The country now traversed was the most promising looking for agricultural purposes of any yet seen. It had nearly all been under cultivation. Immense fields were passed, and our guide stopped constantly to gossip with his neighbors who were busy planting corn.

Their method of doing this was very primitive. With a sharp stick a hole was punched in the ground a foot deep, and the corn dropped in and covered up. No women were engaged in the labor. Unlike other tribes of Indians, the men do the out-of-door work, leaving to the females the care of the households, the spinning, weaving, sewing, &c. At the end of a few miles Oraybe came in sight; it was larger than the other pueblos. Though we had made but a short march, several mules gave out and could not be driven even without their packs. The scanty grass of the three preceding days had taken away the remnant of strength left to them. We had to camp, though the pasturage was neither good nor abundant.

The Oraybe reservoirs are a mile or two distant, but we shall pass one to-morrow and be

able to water the animals and fill the kegs as we go by. A large number of the citizens came to see us. I subsequently learned that one of them was the chief, but he did not accost any one nor seem desirous of making acquaintances. It was apparent that he was out of humor, and the chief that had guided us informed me that the other, who seems to be the senior of all, had objected to any of the tribe accompanying the expedition north, on the ground that there was no water, that the country was bad, that we would have to travel several days before we would come to a river, and that if we did reach it the mules could not get to the bank. Arguments and promises were vain. The Oraybe continued to express disapproval, and his influence seemed to be all-powerful. His ill temper increased as the discussion proceeded, and at last he left in a sulk and went home. I then had a talk with the other. He was friendly in his manner, but said that he could not go while his superior objected, and intimated, if I understood him aright, that the Oraybe captain had some reason for not being well disposed towards Americans. He said that there was a water hole a long day's journey off where we could get a small supply; that to this point he would guide us, and that there was a trail beyond which could be followed as well without guidance as with it. He persisted that there would be a march of three or four days without water before reaching the river. As nearly as I have been able to judge, they consider a day's march thirty miles. If his statement is true, the question of crossing this desert in the present condition of the mules may be considered as settled.

The Oraybe Indians are more quiet than their brethren of Mooshahneh. They collect in a circle to witness anything that may be going on, but are almost silent, and when they speak or laugh do so in a suppressed tone, like children under restraint. There is much uniformity of dress. All are wrapped in Navajo blankets, with broad white and dark stripes, and a crowd at a distance looks like the face of a stratified rock.

The external and internal arrangements of the houses are like those of the other town, but there is generally less neatness and thrift in the appearance both of the place and its inhabitants.

*Camp 95, Oraybe gardens, May 13.*—Neither of the chiefs appeared in camp this morning, nor many of their tribe. They are late risers, and we were off soon after sunrise. Not expecting to be furnished with a guide, it had been determined what course to take, and we skirted the eastern base of the bluff in order to follow a deep depression that has been noticed extending towards the northwest. We had proceeded a mile, when an Indian came running after us. He said that he had been despatched by the Oraybe chief to conduct us to the next water, and we began to think the old fellow less churlish than he had appeared, and gladly availed ourselves of his civility and of the new-comer's knowledge.

Selecting a course amongst numerous intersecting trails, that would have puzzled a stranger considerably, he led the way to the east of the bluff on which Oraybe stands. Eight or nine miles brought the train to an angle formed by two faces of the precipice. At the foot was a reservoir, and a broad road winding up the steep ascent. On either side the bluffs were cut into terraces, and laid out into gardens similar to those seen at Mooshahneh, and, like them, irrigated from an upper reservoir. The whole reflected great credit upon Moquis ingenuity and skill in the department of engineering. The walls of the terraces and reservoirs were of partially dressed stone, well and strongly built, and the irrigating pipes conveniently arranged. The little gardens were neatly laid out. Two or three men and as many women were working in them as we passed.

The steep hill completely broke down the animals, and we had to camp upon the brink of the mesa above. I rewarded the Indian handsomely, and tried to persuade him to continue with us to-morrow. He has consented, but looks as though he meant to break his word. Our Mojaves would have persisted obstinately in refusing, or, having once agreed to go, would have adhered to their bargain.

While on the road to-day the guide pointed out a place where the Navajoes had recently

made a descent upon the Moquis flocks. He had himself been herding at the time, and showed me two scars upon his sides from wounds received in the engagement. The herders had been utterly routed, and retreated to their pueblo, while the conquerers made off with all their stock.

The country to the north and northwest is rolling for some miles, and then there are elevated plateaus rising in successive steps. The most remote appears to be sixty miles off, and higher than any table-land that has been passed. Distant peaks can be seen a little east of north. The Indians have said that the trail runs northwest, and that it is the only practicable route by which upper portions of the river can be attained. Such a course would bring us, at the end of ninety miles, opposite to the point where we struck the Cascade river, and only about fifty miles distant from it, though we would have travelled, in heading the cañon and side cañons of Flax river, nearly three hundred miles.



Fig. 39.—View north from Oraybe Gardens.

*Camp 97, Oraybe gardens, May 15.*—No Indians came again to camp. The guide, before leaving, had told a Mexican that the distance to the river was more than a hundred miles, and that the only watering place was about twenty-five miles from Oraybe. Preferring to see for ourselves the condition of the country, we pursued the same general course as before, towards the northwest. The top of the mesa on which we had been encamped proved to be very narrow, and before we had travelled a mile we came to its northern edge, where there were the usual precipice and foot-hills forming the descent to a broad valley. Here, also, the bluffs had been formed into terraced gardens and reservoirs. The descent was steep and difficult. The valley furnished better grass than any seen since leaving Flax river, but the soil was soft and the travelling laborious. We crossed the low land and ascended the opposite mesa. The trail was found, and its course followed for ten or eleven miles, when most of the mules again

gave out, and became unable to proceed. It was cloudy and cool. They had had rest, tolerable grazing, and water during the previous day and night, but it was evident that their strength was gone.

There were no indications of water ahead. The country could be seen for a great distance, and, as far as the eye could reach, exhibited only line after line of arid mesas. In a ravine, not far from camp, appeared to be the watering place spoken of by the Moquis. Water had recently existed there, but there was none to be found now.

To fully test the practicability of proceeding further, and at the same time to avoid what might be an unnecessary march of the whole train northwards, two experienced water hunters, mounted on the least broken down mules, rode ahead to explore. If they found water they were to send up a smoke as a signal for the train to advance. They travelled about twenty miles, finding a deserted Indian encampment, where water had been at some seasons, but which was then perfectly dry. From the point where they halted, on the summit of a lofty plateau, the country could be overlooked for fifty or sixty miles, and there was every indication that it was a waterless desert.

There was no alternative but to return; and the next morning we retraced our way and encamped near the northern Oraybe gardens, at the edge of the large valley. We have remained here for a day to let the mules rest and graze before undertaking the trip to Fort Defiance. As it is, we half anticipate reaching that place on foot.

The Oraybe chief, gratified at the fulfilment of his prediction in regard to the impracticability of the trip northward, has been to visit us, and comported himself with much amiability. He told me that he would send a guide to show us the best route to Fort Defiance, and I accordingly regaled him with the best the camp afforded. He ate till he could eat no more, and then stowed away what was left in the folds of his blanket.

Several of the tribe have been working in the gardens and tending the sheep during the day. In the former labor the women as well as the men assist. The walls of the terraces and the gardens themselves are kept in good order and preservation. The stone and earth for construction and repairs they carry in blankets upon their shoulders from the valley below. The soil is of a poor character, and the amount which they extract from it speaks well for their perseverance and industry. Both turkeys and chickens have been seen in the pueblos. They have the material for excellent subsistence if they choose to avail themselves of it.

In the neighborhood are beds of coal, which Dr. Newberry thinks of a character to burn well, but they appear to have no idea of the value of these deposits, although wood for culinary and other purposes has to be transported from a distance of several miles. We have tried, but with doubtful success, to make them comprehend the worth of the fuel close at hand.

*Camp 98, near Tegua, May 17.*—Climbing the bluff south of camp and descending the opposite side of the mesa, we were joined by the promised Moquis guide, who came up, according to what appears an invariable custom, at the last moment and in a great hurry.

When the place was reached where the trail turned west to go to Oraybe, I asked the guide if he could not take a short cut to Tegua, (the most eastern pueblo,) which the Moquis chief had said was on the trail to Fort Defiance. He said that he could, and struck off toward the east. In ascending a mesa, five or six miles beyond, an almost impassable precipice was encountered, but the mules, after sundry falls, succeeded in reaching the summit. Beyond was a valley nine or ten miles wide, and upon the opposite side a plateau with three Moquis towns standing in a line upon the top. We camped three miles from them; sending the mules to their reservoir for water. The valley was well covered with grass. Large flocks of sheep attested the wealth of the citizens of this department of Moquis. Almost the entire population came to see us, evincing the greatest curiosity at everything they witnessed. In dress and general appearance they have a smarter look than the citizens of the other towns, and seem to be more well-to-do in the world. All the Moquis have small hands and feet, but ordinary figures. Their

hair is fine and glossy. Many have an Italian physiognomy. The men wear loose cotton trousers, and frequently a kind of blouse for an upper garment, over which they throw a blanket. The dress of the women is invariably a loose black woollen gown, with a gold-colored stripe around the waist and the bottom of the skirt. The stripe is of cotton, which they grow in small quantities. The material of the dress is of their own weaving.

They seem to be a harmless, well-meaning people, industrious at times, though always ready for a lounge and gossip. They are honest, so far that they do not steal, but their promises are not to be relied upon. They want force of character and the courageous qualities which the Zufians and some other Pueblo Indians have the credit of possessing. Their chiefs exercise a good deal of authority, but by what tenure they hold their power, or how many there are, we could not learn.

A singular statement made by the Moquis is, that they do not all speak the same language. At Oraybe some of the Indians actually professed to be unable to understand what was said by the Mooshahneh chief, and the latter told me that the language of the two towns was different. At Tegua they say that a third distinct tongue is spoken. These Indians are identical in race, manners, habits, and mode of living. They reside within a circuit of ten miles, and, save for the occasional visit of a member of some other tribe, have been for centuries isolated from the rest of the world, and it would seem almost incredible that the inhabitants of the different pueblos should not preserve a system of intercourse. If what they say is true, it would appear that this is not done. Tegua and the two adjacent towns are separated by a few miles from Mooshahneh and another pair. Oraybe is at a little greater distance from both. Each place, depending upon its internal strength, is independent as regards defence. The people are indolent and apathetic, and have abandoned the habit of visiting each other till the languages, which, with all Indian tribes, are subject to great mutations, have gradually become dissimilar.

*Camp 99, Peach Orchard spring, May 18.*—Passing by the reservoir to water the mules and fill the kegs, we were joined by the Teguan chief and several of his friends. The guide having disappeared during the night, I asked for him, and was told by the chief that it would be unsafe for one or two of them to take the trip alone, but that he himself and nine others were going to the fort as soon as they could have some corn ground, and make other preparations, and that they would join us at the first watering place, which we would reach about noon. There was little doubt in the minds of any who heard this statement that it was a wholesale fiction, but he pointed out the direction of the best route to Fort Defiance, and, bidding the Moquis good-bye, we followed the course that had been designated. The chief accompanied us a short distance, and at parting renewed the assurance that ten of his people would overtake us before night. Crossing the valley in a nearly easterly direction, at the foot of the bluff upon the opposite side we reached a large and excellent spring about the time our friend had indicated.

The ravine is the prettiest spot seen for many a day, covered with rich turf, shaded by peach trees and surrounded by large gooseberry bushes. The water is clear and cold; the trail from Tegua has been plain and deeply cut, showing constant travel. After reaching camp two Navajoes rode in upon horses that we had seen yesterday hobbled near the Moquis pueblo. I supposed at first that they had stolen them, but a soldier told me that he had seen one of the men at Mooshahneh, and that the Moquis had told him that there were two or three Navajoes there on a visit.

That the latter should have the face to go to Moquis so soon after the recent foray speaks well for their boldness, but does not indicate much spirit on the part of the others. The two that came to see us were merry, impudent looking knaves; they ate, and smoked, and laughed, and finally asked for a glass of liquor as independently as though they were at a tavern. It was impossible to put them down; favors or rebuffs made the same or rather no impression; they received all with a grinning indifference that would have been good-natured, had it not been

so impertinent. A third joined them after a while, also from the direction of Moquis, and the first two, after a rest, saddled their ponies and departed, informing me that the other would stay and accompany us. They perpetrated one act of civility, however, before leaving, presenting me with a cheese of dirty exterior, but almost white inside and very good. Two Moquis Indians came into camp at sunset and told us that they were going on with us.

*Camp 100, White Rock spring, May 19.*—We had proceeded but a few miles this morning when a shouting was heard behind, and looking back we saw the Moquis chief and eight of his followers running to overtake us. They had left Tegua before daylight; with the Navajo leading off upon his pony, the company of Indians formed a respectable looking retinue, doubling the size of the party. I was glad to see that each had brought his own provisions tied up in the corner of a blanket and swung over the shoulder. From their description we inferred that it was about fourteen miles to the next water; but that distance was accomplished, and the Indians being interrogated, said that it was still a little way ahead; mile after mile was passed, and still the water was a little way ahead, till we had at last made twenty-four miles, when they signified that it was the place to camp.

We were in a level, grassy ravine, a mile deep, with low rocky walls; an excellent spring was found at the lower end. The country crossed to-day has been a rolling mesa overgrown with cedars, which have contracted the view; occasional lines of bluffs break the smoothness of the surface. We are now in the Navajo region; a little way back of camp in a broad valley were herds of horses and flocks of sheep. A great many Indians have come into camp, both male and female, all mounted, the women riding astraddle like the men; there being little to distinguish them apart excepting that the former wear a blanket and carry the luggage when there is anything to be transported. They are rather a fine looking race, with bold features, but look like rascals, and undoubtedly are such. Fortunately our camp and grazing ground are enclosed on three sides by the walls of the ravine; the camp is pitched near the mouth; the mules are inside, and cannot be taken out without passing by us.

The Moquis and the Navajoes have the semblance of being on good terms, and have been talking and laughing together in the most friendly manner. But the Tegua chief privately informed me during the evening that these same men had stolen their stock, and that they were a bad set.

The spring is beneath a projecting rock of white sandstone that almost forms a cave. It is in a recess at the extreme end of the ravine, and the ravine itself is a mile from the trail, and surrounded by so many similar formations that we should have probably missed the place but for the Moquis guides. The Navajo left us on the opposite side of the valley as soon as he came in sight of his own territory. The green plain is studded with isolated white rocks—remnants of the mesa—which stand in bright relief upon the dark surface, and form the most striking feature of the landscape.

*Camp 101, Pueblo creek, May 20.*—Several Moquis who have been visiting the Navajoes swelled the train to-day. There are now twenty-three accompanying us, and as we proceed mounted Navajoes fall into the ranks till we find ourselves moving in great force. The Moquis assured me that the next water was but a little distance from the last camp, but we travelled nearly twenty miles before reaching it. We found there a pretty creek running between steep earth banks ten or twelve feet high. The water is good, though warm. The country passed over has preserved generally the same features—a rolling mesa covered with a cedar forest—the bluffs, however, being seldomer encountered than on the previous days. The crest of a plateau a few miles from the creek overlooked an extensive and lovely valley, a brilliant sheet of verdure dotted with clumps of cedars, and extending far to the north and south.

Countless herds of horses and flocks of sheep were grazing upon the plain. The Moquis said that we were entering one of the most thickly populated sections of the Navajo territory.

Hundreds have come into camp, and, considering their natural impudence and the weakness of our party, have astonished me by the correctness of their behavior.

One old fellow was pointed out by a companion who spoke pretty good Spanish as the chief. They were curious and a little concerned to know why we had come from the west. No party of whites had ever entered their country from that direction. The chief said that we must have just left the country of the Apaches, who had lately stolen the Moquis horses, of which act the Navajoes had been wrongfully accused; that the Apaches had plundered them also, and that, as our animals were safe, we must be friends to the Apaches, which proved that the Apaches, the Moquis, and the Americans were all leagued against "the poor little Navajoes," to use his own expression. The reasoning was logical, but the throng of saucy vagabonds that



Fig. 40. - Navajo valley.

were listening to the speech with grins that they took no pains to conceal were not calculated to enlist much sympathy, and we concluded that the pitiful harangue was intended for the benefit of the Moquis, to disarm them of their suspicions in regard to the perpetrators of the late theft. I perceived, however, that the Moquis were as unconvinced as ourselves by the plausible reasoning. We asked how far we had still to travel before reaching Fort Defiance, and they said that a single day's march would take us there. We supposed that it must therefore be about thirty miles distant. They had not heard of the arrival of any party of Americans from the direction of Zuñi.

The Navajoes displayed one trait of character which I had never seen exhibited by Indians. A crowd of women surrounded the place where the doctor and myself were sitting, and were amusing themselves by inspecting the remnant of the Indian goods and trinkets that had been brought along. Having no further occasion for the articles, as the expedition was now so nearly ended, and pleased with the unexpected civility we had experienced, I distributed

most of the things to those standing about. The women were highly delighted, and not long after some of the men, whom I supposed to be their husbands, brought into camp a quantity of cheese and joints of mutton—enough to have lasted our company a week. I offered to pay for what we required, but they insisted upon my accepting all as a gift.

*Camp 103, Fort Defiance, May 22.*—A mile or two from Pueblo creek the trail passed a little south of a lake more than a mile long and half a mile broad. A little beyond was a stream of considerable size, and sixteen miles further a ravine with a large deep body of water. The



Fig. 41--Valley of Fort Defiance.

region traversed was covered with well-beaten trails, and parties of Indians were constantly riding by. Near all the watering places were immense numbers of horses and sheep, attesting the wealth of the tribe.\* Pines were mingled with the cedars, and the latter became larger as we travelled east. At the end of twenty-three miles we camped. Fort Defiance is not yet in sight, but the Indians have pointed out the crest of a mesa a little way ahead which overlooks the post.

### CONCLUSION.

Early the following morning we reached Fort Defiance, and the field labors of the expedition terminated. Lieutenant Tipton with his detachment we found encamped in the valley a mile or two below the fort. The night but one before our arrival a Navajo had eluded the vigilance

\* An interesting and valuable memoir respecting the Navajo tribe was prepared a few years since by Dr. J. Leithman, assistant surgeon United States army, and published in the annual report of the Smithsonian Institution for the year 1855. It presents a graphic description of the character and habits of the Navajoes, as well as of the appearance and resources of the country which they inhabit, and conveys to the reader an excellent idea of a large portion of the Territory of New Mexico and its aboriginal inhabitants.

of the sentinel, and succeeded in abstracting from the camp a trunk containing a portion of the field-notes; but the energetic measures at once taken by Major Brooke, commanding the post, led to the recovery of the property, and the only result was a slight detention.

The Navajoes at this time began to exhibit symptoms of disaffection. Our arrival at Fort Defiance was none too soon. Only a fortnight afterwards hostilities broke out between the tribe and the United States troops, which would have seriously imperilled our safety had they commenced while we were passing through the Navajo territory. At it was, we reached the settlements upon the Rio Grande without interruption.

All of the party, excepting myself, continued on towards the east, crossing the plains from Santa Fé to Fort Leavenworth, and repairing thence to the seaboard. It was necessary for me to dispose of the steamer and certain property at Fort Yuma, and to settle the accounts of some members of the expedition who had gone back in the boat, and I accordingly took the stage from Santa Fé to El Paso, and from that place followed the southern overland mail route to San Diego.

Stopping for a day or two at Fort Yuma, I found Captain Robinson still in charge of the Explorer, and learned from him that the trip down the river had been accomplished without accident or any molestation from the Indians. In order not to run any risk of losing the collections and the field-notes, the descent had been made slowly and with great caution. Fort Yuma was reached on the 16th of April, twenty-five days from the time of starting.

After disposing of the little boat that had done us such good service to the transportation company at the fort, I bid farewell to Captain Robinson and the Colorado, and proceeding to San Francisco took the first steamer for New York.

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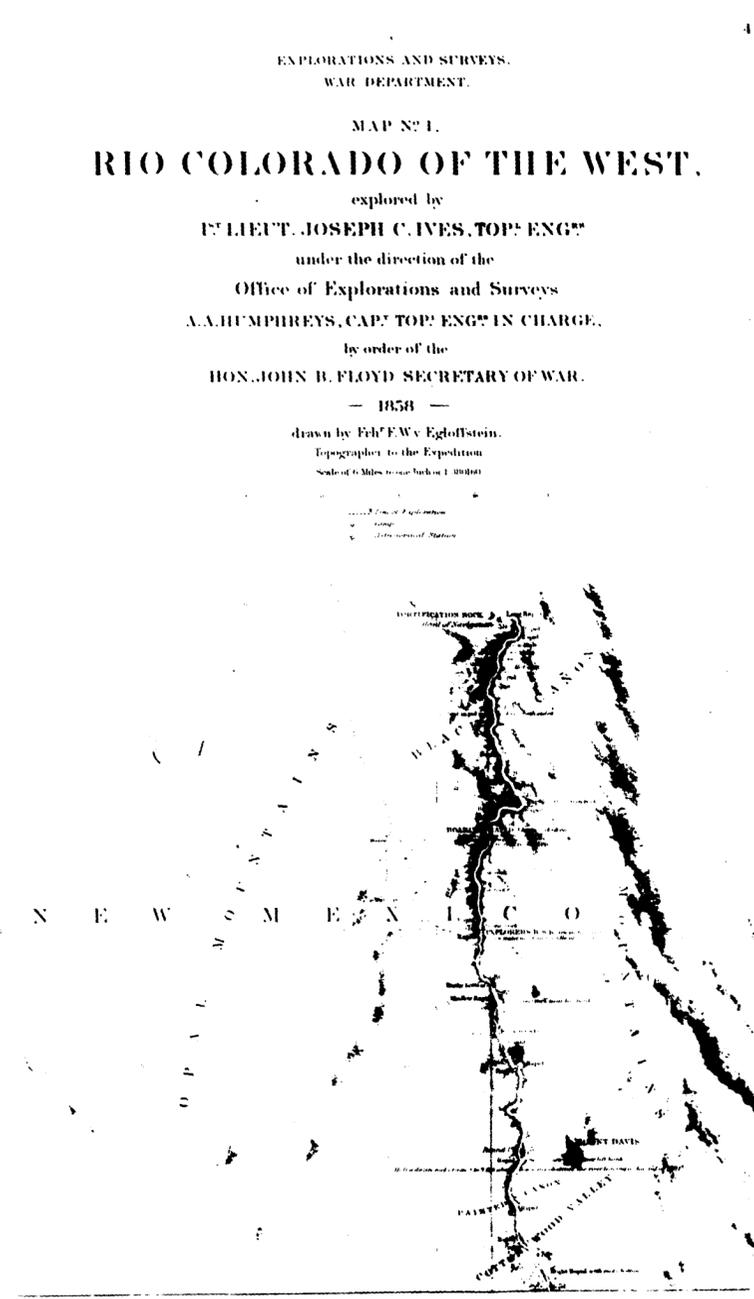
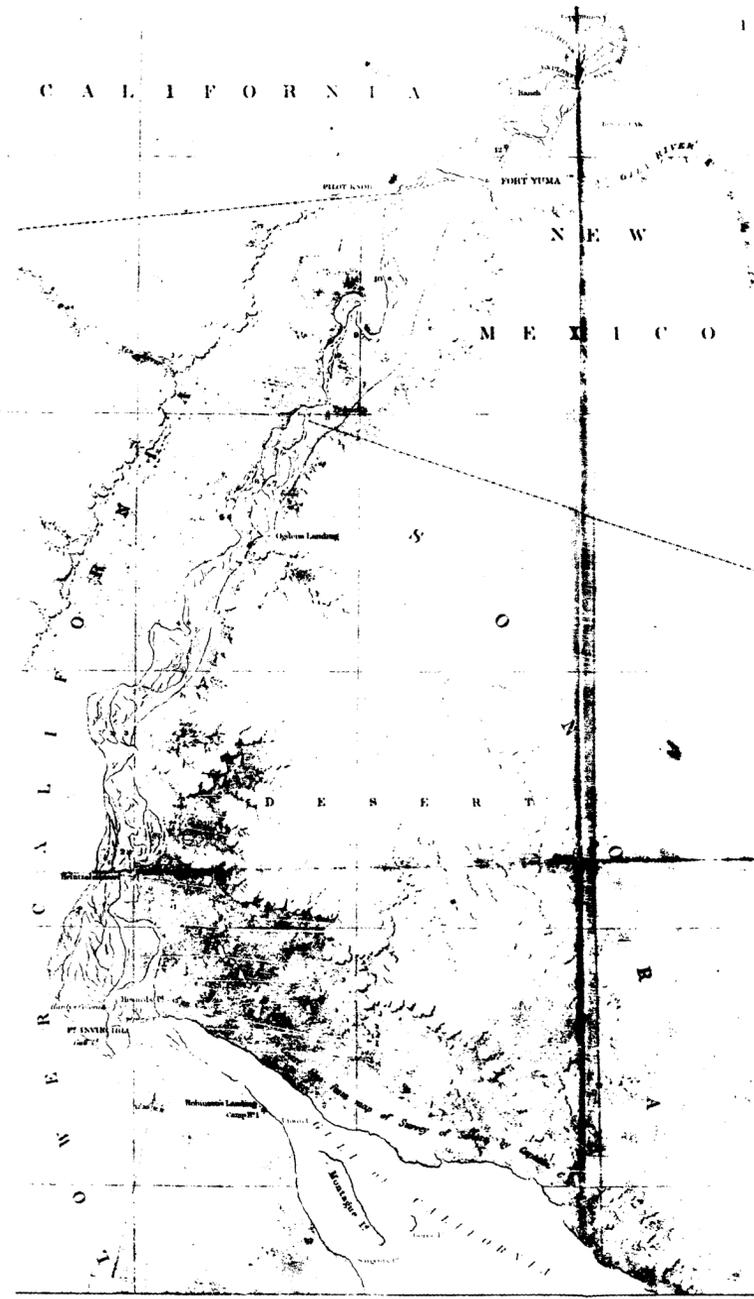
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\* Drawn by Mr. J. J. Young from sketches by Messrs. Mollhausen and Egloffstein.



EXPLORATIONS AND SURVEYS,  
WAR DEPARTMENT.

MAP No. 1.

**RIO COLORADO OF THE WEST.**

explored by  
LIEUT. JOSEPH C. IVES, TOP. ENG.  
under the direction of the  
Office of Explorations and Surveys  
MAJOR H. H. AMPHREYS, CAP. TOP. ENG. IN CHARGE.  
by order of the  
HON. JOHN B. FLOYD, SECRETARY OF WAR.

— 1858 —

Drawn by F. W. Egloffstein,  
Topographer to the Expedition.  
Scale of 6 Miles to an Inch (1:300,000)

1. Contour Lines  
 2. Elevation  
 3. International Boundary

UNITED STATES

EXPLORATIONS AND SURVEYS.  
WAR DEPARTMENT.

MAP No. 2.

RIO COLORADO OF THE WEST.

explored by  
LIEUT. JOSEPH C. IVES, TOP. ENG.

under the direction of the  
Office of Explorations and Surveys,  
A. A. HUMPHREYS, CAP. TOP. ENG. IN CHARGE.

by order of the  
HON. JOHN B. FLOYD SECRETARY OF WAR.

1858.

drawn by FRIEDRICH W. EGLOFFSTEIN,  
Topographer to the Expedition.  
Scale of 12 Miles to one Inch or 1:768,000.

Line of Expedition  
Camp  
Administrative Station

