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MAN AND WILDLIFE IN ARIZONA:
THE PRE-SETTLEMENT ERA, 1823-1864

by

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A Thesis Submitted to the Faculty of the
DEPARTMENT OF BIOLOGICAL SCIENCES
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF SCIENCE
WITH A MAJOR IN WILDLIFE BIOLOGY
In the Graduate College
THE UNIVERSITY OF ARIZONA

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ABSTRACT

A sufficient number of historical records survives to provide a description of Arizona's wildlife, from the viewpoint of abundance and distribution, as it appeared to American explorers and travelers before settlement began in earnest during the Civil War.

Until the outbreak of the Mexican War in 1846, American beaver trappers operated illegally in Arizona, which was Mexican territory after 1821. Written accounts of this period are rare; the few available indicate that wildlife was sometimes locally abundant but could not be depended on by mountain men as a regular source of meat.

Beginning with the Mexican War, a number of well-equipped U.S. government expeditions crossed Arizona, adding immensely to the scientific knowledge of a wilderness inhabited almost entirely by Indian tribes. Army surgeons, doubling as naturalists, left accounts of species like the grizzly bear, now extinct in Arizona, occupying much of the state in a wide variety of habitats. At the same time, Gold Rush emigrants and other prospectors, some staying on in Arizona, added vivid descriptions of the wildlife.

Many accounts of the landscapes indicate that Arizona had more water and more extensive grasslands before 1864 than she does today.

CHAPTER 1

INTRODUCTION

This thesis is an attempt to provide, through old newspaper articles and the journals of Americans present at the time, a general sketch of Arizona's fauna and landscapes before its widely scattered settlements received central government dispensed by a territorial legislature in Prescott. Before the late 1850's Arizona was still for the most part an unknown region, though it was exploited by self-reliant beaver trappers whose knowledge of woodcraft fully equalled that of the Indians, investigated by well-equipped government expeditions, or crossed by wagon trains of emigrants whose only desire was to reach California.

Most of these people passed like the wind in the grass, leaving the wilderness as they found it. (One exception would be the mountain men, who had a temporarily depressing effect on the beaver population.) All of this began to change with the establishment of mining communities, first in the southeastern part of the state and later at several points to the north and west. But before 1864 each community of ranchers or miners was largely a self-contained unit. Charles D. Poston, a pioneer mining executive, had this to say about the rabble of prospectors that settled at Tubac in 1856: "We had no law but love, and no occupation but labor. No government, no taxes, no public debt, no politics. It was a community in a perfect state of nature."

When the first Territorial Legislature met at Prescott on September 26, 1864, a new era began. Four counties were set up, a board of

regents for a proposed university was established, road companies were incorporated and railroads chartered. Fifteen hundred dollars were appropriated for public education. Most significant of all, a code of laws was compiled, and with it a court system.

In other words, by the end of 1864 Arizona had a government. The period of pure exploration was over. This did not mean that Arizona did not continue to be a raw frontier region for many years, with large blank spots persisting on the map. But 1864 is as logical a time as any to use as a cutoff point, calling everything before that the pre-settlement era.

What kind of land was Arizona between the 1820's and the mid-1860's to the pioneer or explorer with a yen for natural history?

Elliott Coues, the ornithologist, who first saw it in 1864, wrote thus:

The wild and primitive region which constitutes the Territory of Arizona exhibits a remarkable diversity of surface in its mountain ranges, grassy plains, and desert wastes; and its Fauna and Flora are varied in a corresponding degree. The traveller meets, at each successive day's journey, new and strange objects, which must interest him, if only through the wonder and astonishment they excite.¹

This diversity of ecological niches is illustrated by the fact that Arizona has plants and animals characteristic of the Rockies, the Chihuahuan Desert, and the Great Plains to the east, the Great Basin to the north, the Sierra Madre to the south, and the Sonoran and Mohave Deserts to the west.² In mammals alone, Arizona can claim 290 species

1. Elliott Coues, "The Quadrupeds of Arizona," Amer. Nat., i, (1867), p. 281.

2. Charles H. Lowe, The Vertebrates of Arizona (Tucson, 1964), pp. 15-83. Also, D.F. Hoffmeister and W.W. Goodpaster, "The Mammals of the Huachuca Mountains, Southeastern Arizona," Illinois Biological Monographs, v. 24 (Champagne, 1954), p. 25.

and subspecies, 23 families, and seven orders. This is exceeded only by California.³

Considering the broad spectrum of travelers who saw Arizona within the 40 years between the coming of the beaver trappers and the institution of a territorial government, it is not surprising that the attitude toward wildlife ranged from complete indifference to the high degree of perception typical of many 19th century naturalists. Most pioneers at least noticed game animals as a welcome source of fresh meat. But even skilled hunters could be sloppy observers; for instance, there was a prevalent belief that Arizona had three species of bear: the "black," the "cinnamon," and the "grizzly." Most records indicate that "cinnamon" bears usually turned out to be grizzlies. Being largely restricted to coniferous forests (although there were some interesting sightings in riparian growth along the lower Gila River), the shy black bear was not often seen by emigrants, who generally stayed on the plains or deserts, negotiating the mountains only when they had to.

There was also an exasperating tendency to lump all quail as simply "quail," mule deer and whitetails as just "deer," while coyotes and lobos were often categorized as "wolves." Sometimes the correct species could be ascertained by considering the geographical location and habitat described in an anecdote. But where two species overlapped, there was often no way to do this.

Will C. Barnes, an early Arizona rancher and forester, summed up the problems of assessing reports for their reliability in the following

3. E. Lendell Cockrum, The Recent Mammals of Arizona: Their Taxonomy and Distribution (Tucson, 1960), p. 2.

letter to Aldo Leopold: "I am sorry I cannot give you any information about the rest of the subjects you mention. The fact is that like most men at that time (Barnes saw much of Arizona as a soldier and rancher in the 1870's and 1880's) I was not a close observer and took no notes of the habits of game animals, as so many men have."⁴

Yet, while sifting the research chaff, I found enough in the way of well-written and plausible information to compensate for the many periods of frustration.

4. Will C. Barnes, letter to Aldo Leopold, October 7, 1924 (Box 4, Barnes Collection), Arizona Historical Society, Tucson.

CHAPTER II

THE LURE OF THE RIVERS, 1823-1846

The commercial enticement of the beaver attracted the first Americans to Mexico's southwestern holdings, including what is now Arizona. Before Mexico gained her independence from Spain in 1821, attempts by foreign trappers and traders to penetrate the region were generally thwarted. Unlike the British, who sought to discourage the northward expansion of the mountain men by trapping the beaver out of Oregon, the Spaniards - in historian William Goetzmann's words - "chose to leave the beaver in the streams and instead embarked on a plan to sweep the country of American adventurers."¹

The publication of Zebulon Pike's Journals in 1810 helped spread the word of the trading potential of the New Mexico market. The depression of 1819 left the Missouri frontier with a critical shortage of specie which forced many merchants out into Indian country where they could trade for furs those goods that no longer brought much cash in the settlements. When the Mexican War of Independence opened Santa Fe

1. William H. Goetzmann, Exploration and Empire (New York, 1966), p. 55. The first foreigner to reach Santa Fe was Baptiste La Lande, a French Creole who crossed the plains from Illinois in 1804. He had trade goods and was well treated (Ibid., p. 40). Americans who came after him were not so fortunate. James Purcell, a Kentuckian, was detained in Santa Fe in 1805. Others, intending to trap the upper Rio Grande, were imprisoned by Spanish authorities in 1812 and 1817. On the latter occasion, 30,000 dollars' worth of fur and supplies was confiscated from the trappers (Paul Horgan, The Heroic Triad, New York, 1954, p. 159). As Paul C. Phillips pointed out in The Fur Trade (Norman, 1961, 2 vols.), v. 2, p. 493, the unpleasant Spanish reaction to French and American intruders reflected a desire to protect the local fur trade, and took form as official adherence to mercantilism within the confines of the empire. Trappers soon learned that it was dangerous and unprofitable to poach on Spanish territory.

to American trade in 1821 the price of furs was already rising. Hatters in London and Paris, New York, Boston and Philadelphia still demanded immense cargoes of beaver pelts.

Meanwhile, news of virgin beaver streams in New Mexico spread rapidly, and about 120 Americans took the trail to Santa Fe in 1822 and 1823.² As a trapper named William Parker reported, one group that reached Taos in 1823 decided immediately to head about four hundred miles to the west to trapping grounds "which lay in that wild Mountainous tract of country that interrupts the Most westerly Spanish Settlements, and the Gulph of California."³ These Americans were stopped by a force of Mexican soldiers who probably encountered them while in pursuit of raiding Navahos somewhere along the San Juan River near the Chuska Mountains. The trappers were then taken back to Taos under arrest.

In 1823 there was still only a handful of mountain men operating in New Mexico. They concentrated on the Pecos and Rio Grande Rivers with such thoroughness, however, that within a year these streams were already depleted, and the Americans began to look west. A considerable movement toward the Colorado River began in the autumn of 1824. This followed a pioneer movement into the area the previous spring, when William Wolfskill, Ewing Young, and Isaac Slover outfitted in Taos in February, then trapped west along the San Juan.⁴

To a substantial degree, trapping conditions to the north were responsible for the rapidly developing encroachment on Mexican territory. General William H. Ashley, one of the giants of the fur trade,

2. David J. Weber, The Taos Trappers (Norman, 1971), p. 58.

3. Ibid., p. 61.

4. Ibid., p. 70.

had established a mobile rendezvous system as a substitute for the fixed trading post. This tended to discourage trappers wanting to work the southern Rockies from Taos on an independent basis. They were ultimately forced to trap on the Gila and Colorado drainages. In the northern Rockies, the American Fur Company and other large organizations made it difficult for free trappers to prosper. Stiff losses in the face of price-rigging tactics threatened small groups, many of which gave up and moved to the Southwest, where no one ever obtained a monopoly. Another aspect which induced many mountain men to look south was the fact that by 1826 beaver in commercially exploitable populations were gone from large areas of the Rocky Mountains.⁵

Many of these trappers, who included a considerable number of French Canadians, came across the Great Plains from the east, after first stopping to outfit in St. Louis, the springboard of the fur trade. After arriving in Taos, the seat of the northernmost government station in Mexico, they gathered further supplies for the trapping seasons on the Gila and Colorado Rivers and their tributaries. What might have been an easier and more direct route down the Green and Colorado Rivers from the north was ruled out by the treachery of navigation in the vicinity of the Grand Canyon.⁶

5. Forbes Parkhill, The Blazed Trail of Antoine Leroux (Los Angeles, 1965), p. 56.

6. F.S. Dellenbaugh, A Canyon Voyage (New York, 1908), p. 2. William H. Ashley, as described here, concluded that the deep river canyons of the Southwest had no beaver to speak of, besides being dangerous to negotiate. Thus, the Grand Canyon and much of the Colorado River remained virtually unknown until the Powell era.

After 1821, the people of Santa Fe gave a warm welcome to the Missouri pack trains and caravans, which came in ever-increasing numbers. However, the Americans quickly discovered that although trade was legal the authorities generally frowned on trapping. A Mexican decree of 1824 prohibited all trapping by foreigners, with a few exceptions. Sometimes the mountain men were asked to take along New Mexico natives on excursions after beaver in order to teach them the business. In rare instances, a friendly governor would furnish a special dispensation for a particular American who had gained his favor, such as the chronicler James Ohio Pattie, but most of the time the trappers waged a continuous war of wits with the Mexican government.

Permanent residents of New Mexico were allowed to trap and hunt, but licenses were required, and the number in a party was carefully fixed and recorded. Some Americans took out Mexican citizenship, but the licenses thus legally obtained exposed them to the heavy tax imposed on all beaver pelts brought to Santa Fe and Taos. To circumvent the system, many Frenchmen and Americans operated by subterfuge under passports secured from the Governor at Santa Fe for "trading" purposes. A few trappers risked arrest by buying licenses from local citizens, when concealed pelts would then be produced for sale on the open market. Bribing public officials was frequently attempted and was often successful, especially in Taos.

Of all the approaches used to enable a trapper to get his furs to market, smuggling was the most widespread. Many Americans stored caches in Jemez and other towns by working out arrangements with local residents for storage space on private premises. One smuggler in Taos

operated under cover of a still, which, as recounted by mountain man George C. Yount, had "an under ground passage, led to the grand subterranean cache, where goods, to an enormous number, were being secretly deposited."⁷ At the height of the fur trade, smuggling operations in New Mexico involved hundreds of thousands of dollars' worth of beaver pelts, and very little of the immense profit made by traders filtered into the hands of actual trappers.

There were exceptions. In 1830 a party of mountain men under Ewing Young (which also included young Kit Carson) buried their pelts in a deep mine shaft at the Santa Rita copper mines in southwestern New Mexico, then retrieved them for sale in Santa Fe. On this occasion the trappers sold two thousand pounds of beaver skins from the Gila River drainage. Since the market price for beaver was twelve dollars a pound, Young's men made 24,000 dollars from the expedition.⁸

Employing another artifice, a trapper might pretend to have purchased furs from Indians or native New Mexicans. These could be exported with an appearance of legality to a merchant who would take them on to the St. Louis market. Trappers and traders not only bootlegged furs out of New Mexico, but also profited by illegally importing trade goods without paying duty on them. They felt justified since they were competing under a handicap with fur traders who avoided duty payments entirely by entering the Rockies to the north of the Mexican settlements.

7. George C. Yount, George C. Yount and His Chronicles of the West, ed. Charles L. Camp (Denver, 1966), p. 64.

8. Dewitt C. Peters, Kit Carson's Life and Adventures from Facts Narrated by Himself (Hartford, 1873), p. 55.

During the 1820's Santa Fe and Taos were the headquarters of trading and trapping expeditions that covered the whole West south of what is now Wyoming. Taos alone became the most important market and supply depot for trappers between Fort Vancouver on the Pacific and St. Louis on the Mississippi.⁹ Here, a mountain man could sell beaver, obtain supplies, or pass a winter or summer in a relative state of civilization. More and more, former Ashley men from the Rockies drifted in, liked what they saw, and stayed. Furs could be taken out of Taos, or supplies smuggled in over the Santa Fe Trail without attracting the attention of authorities. And there was no longer any need to make the long trip back to the Missouri settlements for pleasures or necessities.

Between 1824 and 1826 the drainage of the Colorado River was thoroughly explored by the mountain men. Parties under such leaders as Sylvester Pattie, Ewing Young, Michel Robideau, and George Yount traversed the course of the Gila to its junction with the Colorado. They discovered and trapped all the tributaries of the latter river as well as the southern tributaries of the Green.¹⁰ By 1832 hundreds of trappers had dispersed to reach every stream in Arizona that contained beaver.¹¹

Typical of these trailblazers was Antoine Leroux, who first reached Taos as a young trapper about 1824. In later years he became a celebrated scout, guiding the Mormon Battalion across Arizona in 1846,

9. Weber, p. vii.

10. Robert L. Blomstrom, Fur Trading: Forerunner of Industry in Arizona (Tempe, 1963), p. 26.

11. Parkhill, p. 58.

and the surveying expeditions under Bartlett and Sitgreaves in the 1850's. In his own account, "I carried on the business of a beaver trapper for about fifteen years, generally on the waters of the Great Colorado of the West; and have trapped the whole country, every river, creek, and branch from the Gila to the head of the Grand River fork of the Upper Colorado."¹²

Leroux had little else to say about his career in Arizona. Most mountain men were taciturn at best; in the Southwest, where their activity was largely illegal, they were more close-mouthed than ever. Records are understandably scant, and most groups left no written accounts of their expeditions.

The free trappers, who characterized the fur trade in the Southwest, often functioned on an individual basis. They furnished their own equipment, trapped where they pleased, sold their furs to the highest bidder, and felt bound to no company or person. Payment for furs was received in the form of liquor, tobacco, and articles required for new outfits.

Sometimes a number of free trappers formed a band which, though much looser in organization than a company expedition, customarily elected a leader, drafted a set of regulations governing the conduct of the expedition, and provided stringent penalties for the violation of the rules. In the interests of self-protection, this type of group was a feature of the long journeys into Arizona. Each man's equipment under these conditions generally included a gun with two locks, a

12. Grant Foreman, "Antoine Leroux, New Mexico Guide," New Mexico Historical Review, XVI (October, 1941), pp. 367-377.

hundred flints, twenty-five pounds of powder, a hundred pounds of lead, a good powder horn, a double shot bag, a butcher or skinning knife, a tomahawk or shingling hatchet, and from four to six traps.¹³

The standard rifle, on which a man's life depended more than on any other piece of equipment, was a 40-60 caliber plains rifle often handmade in the renowned gun works of two brothers, Jacob and Samuel Hawken, of St. Louis.¹⁴ From 30 to 36 inches long, the barrel, of soft iron instead of steel, fired a long, heavy lead bullet. This firearm used from two to four times as much powder as the Kentucky rifle of Daniel Boone's heyday. The plains rifle could deal with grizzlies, elk, or mounted Indians and had an effective range of 200 yards.¹⁵

Because of the lack of navigable rivers in much of the Southwest, trappers had to use pack trains for transportation. These consisted of one or more riding animals equipped with saddles of Mexican design, and two pack mules or horses. Packed in the Mexican fashion, each animal carried from 200 to 250 pounds of supplies.

The livestock foraged for themselves, and when grass failed the inner bark of cottonwood trees served as an emergency food substitute.

There were a few occasions when the mountain men found boats useful. In 1827 an expedition that included George Yount reached the

13. Robert G. Cleland, This Reckless Breed of Men (New York, 1950), pp. 16-17.

14. Ibid., p. 29.

15. Ibid., p. 28.

Colorado River and built dugouts by scooping out cottonwood logs. With these they trapped upstream to the country of the Mohave Indians.¹⁶

Another party working the lower Gila in the same year found the current too broad and deep to ford with a horse. Therefore, they built makeshift canoes described by James Ohio Pattie, one of the members of the group: "A canoe is a great advantage, where the beavers are wild; as the trapper can thus set his traps along the shore without leaving his scent upon the ground about it."¹⁷

On reaching promising beaver country a trapping expedition usually established a base camp from which small parties or single trappers radiated out for many miles to carry on their operations. There was little ice or snow over large areas of the Southwest, so trapping continued through the winter.¹⁸ Trapping parties in Arizona consisted typically of old Rocky Mountain hands from Missouri and novices from the Southern states.¹⁹

The mountain man soon learned that Arizona beaver, the object of all his endeavors, possessed fall and winter pelts only slightly inferior to the northern variety. Since the trapping season was longer than in the Rockies, he could make up in quantity what might be lacking in quality.

16. Yount, p. 32.

17. James Ohio Pattie, The Personal Narrative of James O. Pattie, ed. William H. Goetzmann (Philadelphia, 1962), p. 124.

18. As Horgan states (p. 163), trappers in the northern Rockies went out in large parties: 50 to 100 men. Base personnel maintained camp for trappers and hunters who fanned out into the surrounding wilds. These trappers were contract employees for the big fur companies.

19. Phillips, v. 2, p. 516.

In the early 1820's beaver were common throughout the drainage systems of both the Colorado and Gila Rivers.²⁰ One group of seven trappers, working the San Francisco River in the fall of 1825, took 250 beaver in a matter of days.²¹ Two years later, on the lower Colorado, a party under Sylvester Pattie put out 40 traps and caught 36 beaver in one night.²²

In Arizona, beavers built lodges in suitable areas, but most records indicate that burrows tunneled into the banks of rivers were the most frequently encountered form of shelter.²³ The entrance to a burrow was a considerable distance below the water line, and the passage penetrated from five to 20 feet back, terminating in a home chamber several feet in diameter and above the water level. On the Colorado, beaver constructed piles of branches and poles above the chambers to prevent coyotes from digging away the roofs.²⁴ Back entrances on land, concealed in brush and weeds, were sometimes dug.²⁵

Where streams were shallow and flowed gently, or formed stagnant sloughs, lodges were built. The Colorado River is an example. Out on

20. E. Lendell Cockrum, The Recent Mammals of Arizona: Their Taxonomy and Distribution (Tucson, 1960), pp. 155-156.

21. Pattie, p. 51.

22. Ibid., p. 129

23. Cleland, p. 12.

24. A. Starker Leopold, Wildlife of Mexico (Berkeley, 1959), p. 381.

25. Edgar A. Mearns, Mammals of the Mexican Boundary of the United States (Washington, D.C., 1907), p. 359.

the main channel beaver tunneled into the soft alluvial soil of the banks, but in the backwaters away from the river lodges were fashioned from broken saplings and river driftwood.²⁶ Mountain streams feeding the headwaters of the San Pedro had beaver in abundance,²⁷ and this population tended to build lodges.²⁸ James O. Pattie also reports having seen lodges on shallow lakes south of the Gila River, probably in the San Simon Valley.²⁹

On the Verde River, where bank burrows predominated, one beaver nest was found in the decayed bole of a tree. The nest, made of the stalks and leaves of sedge, tule, and herbaceous plants, interwoven with dry leaves and fine rootlets washed bare by the stream, was in an area where a pool had undermined trees along a jutting bank.³⁰

Beavers characteristically built dams across small rivers, forming a series of deep pools. On streams in southeastern Arizona, such as the San Pedro River, these pools often spread out to help maintain extensive grassy marshes.³¹ Over part of its course the San

26. Joseph Grinnell, An Account of the Mammals and Birds of the Lower Colorado River Valley with Special Reference to the Distributional Problems Presented (vol. XII of Univ. of Calif. Publ. Zool.), Berkeley, 1914, p. 227.

27. Sarah G. Bakarich, Gun Smoke (Privately Printed, Tombstone, 1947), p. 126.

28. J.A. Allen, "On a Collection of Mammals from Arizona and Mexico Made by Mr. W.W. Price" (vol. VII of the Bull. Amer. Mus. Nat. Hist.), New York, 1895, p. 256.

29. Pattie, p. 59.

30. Mearns, p. 356.

31. Della Bohn Etz, Reminiscences, unpublished manuscript (Arizona Historical Society, 1939), 4 pp.

Pedro meandered through the marshes in a network of narrow, well-concealed channels.³²

However, beaver did not limit their activities to narrow streams. There are records of dams on good-sized rivers like the Verde,³³ the Virgin,³⁴ and the Little Colorado.³⁵ Because of its depth and the strength of its current, the Colorado River may well have been the only watercourse in Arizona that was beyond the engineering capabilities of the beaver.

Typical beaver habitat on streams in Arizona consisted of sloughs and stretches of quiet water densely fringed with tule (Scirpus sp.), backed in turn by a riparian growth of trees and shrubs. Of the latter, willows and cottonwoods were staple food items. Ash and oak were also eaten.³⁶

Although Beaver were abundant in the depths of the Grand Canyon (contrary to General Ashley's opinion), fur trappers found the gorge too inaccessible to make the effort to work it profitable. Cottonwood grew rapidly enough in the canyon to support a permanent beaver population. On the Colorado River, which is rapid and muddy, beaver found shelter on

32. James R. Hastings and Raymond M. Turner, The Changing Mile (Tucson, 1965), p. 3.

33. Mearns, p. 356.

34. Byrd H. Granger, Will C. Barnes' Arizona Place Names (Tucson, 1960), p. 214.

35. C. Hart Merriam, "Results of a Biological Survey of the San Francisco Mountain Region and Desert of the Little Colorado, Arizona" (N.A. Fauna No. 3, Division of Ornithology and Mammalogy, U.S.D.A.), Washington, D.C., 1890, p. 59.

36. Leopold, p. 381.

the rocky shores, since there was no place to burrow. Here, they feed extensively on arrowweed, Berthelotia sericea.³⁷ Beaver have also been observed crossing the hot sand at the bottom of the Grand Canyon to feed on mesquite bark.³⁸

On some streams, the Little Colorado being a notable example, water dried up for long distances during drought periods, leaving only isolated chains of stagnant pools. Yet beaver continued to prosper where cottonwood was abundant along with banks suitable for burrows.³⁹ The opposite extreme presented a problem of a different nature; floods often flushed beaver out of their tunnels.⁴⁰ But high water on the lower Colorado River sometimes brought a boon with it. Beaver did not need to fell their own trees because the constant undercutting of the banks dumped green trees into the water where they were easily salvaged for food.⁴¹

When trapping expeditions set out for Arizona from the New Mexico settlements, they generally followed two routes. One led north from Taos for about 50 miles, where, in order to throw off the Mexican authorities, a party would change direction abruptly to the southwest. The rest of the journey moved west across a series of watersheds: the Zuni, the Salt,

37. Russell K. Grater, "An Unusual Beaver Habitat," Jour. Mammalogy, XVII, 1936, p. 66.

38. Donald F. Hoffmeister, Mammals of Grand Canyon (Urbana, 1971), p. 123.

39. Will C. Barnes, "The American Beaver," Barnes Collection Box 13 (Arizona Historical Society), p. 7.

40. Mearns, p. 357.

41. Joseph Grinnell, Joseph S. Dixon and Jean M. Linsdale, Fur-Bearing Mammals of California (2 vols., Berkeley, 1937), v. 2, p. 726.

the Verde, the Gila, and the Colorado. Other groups moved down the Rio Grande from Santa Fe, then struck southwest for the Santa Rita copper mines. From there it was a short distance to the headwaters of the Gila, which was followed downstream, with side excursions up its various tributaries. Here again the Colorado was often the ultimate objective.

These parties usually headed for beaver country in autumn, ever on the alert for Indians, grizzlies, and other trappers, with whom they might be competing. This state of awareness was well described by the English adventurer George Frederick Ruxton: "A turned leaf, a blade of grass pressed down, the uneasiness of the wild animals, the flight of birds, are all paragraphs to him written in Nature's legible hand and plainest language."⁴² Nevertheless, because of Indians and grizzlies, James Ohio Pattie estimated that on one expedition only sixteen men out of 116 survived their first year's trapping in the Southwest.⁴³

Once on his own, away from camp, the trapper lived mainly off the land. He traveled lightly, carrying scant provisions of salt, flour, tea and coffee. Deer, antelope, elk and bear kept him supplied with meat. Beaver tail was relished, but the rest of the animal figured only in times of want.

The mountain man in the wilderness was a self-contained figure, and the merchant trapper Rufus Sage has left a classic word picture of him:

42. George F. Ruxton, Adventures in Mexico and the Rocky Mountains (New York, 1848), p. 235.

43. Cleland, p. 31.

His skin, from constant exposure, assumes a hue almost as dark as that of the Aborigine, and his features and physical structure attain a rough and hardy cast. His hair, through inattention, becomes long, coarse, and bushy, and loosely dangles upon his shoulders. His head is surmounted by a low-crowned wool hat, or a rude substitute of his own manufacture. His clothes are of buckskin, gaily fringed at the seams with strings of the same material, cut and made in a fashion peculiar to himself and associates. The deer...furnish him the required covering for his feet which he fabricates at the impulse of want. His waist is encircled with a belt of leather, holding encased his butcher-knife and pistols--while from his neck is suspended a bullet-pouch securely fastened to the belt in front, and beneath the right arm hangs a powder-horn transversely from his shoulder, behind which, upon the strap attached to it, are affixed his bullet-mould, ball screw, wiper, awl & c. With a gun-stick made of some hard wood, and a good rifle placed in his hands, carrying from thirty-five balls to the pound, the reader will have before him a correct likeness of a genuine mountaineer when fully equipped.

The mountaineer is his own manufacturer, tailor, shoe-maker, and butcher--and, fully accoutred and supplied with ammunition in good game country, he can always feed and clothe himself and enjoy all the comforts his situation affords.⁴⁴

Sometimes working in pairs, but often alone, mountain men usually carried six traps while searching for fresh beaver sign. Each trap weighed about five pounds as a rule and was worth from 12 to 16 dollars.⁴⁵ At a promising site, the trapper waded into the stream to hide his set traps. A trap was planted in three or four inches of water a short distance from the bank. It was attached by its chain to a strong stick, which the trapper drove into the bed of the stream a full chain's length

44. Rufus Sage, Scenes in the Rocky Mountains (Philadelphia, 1846), p. 18.

45. Hiram M. Chittenden, A History of the American Fur Trade of the Far West (Stanford, 1954, 2 vols.), v. 2, p. 820.

The Los Angeles County Museum has a trap used on the Gila and Colorado Rivers in 1827-1828 by a trapper named N.M. Pryor. It is considerably smaller and lighter than the average trap used in the West, but otherwise typical. Without a chain it weighs one and three-quarters pounds (Carl P. Russell, Firearms, Traps, & Tools of the Mountain Men, New York, 1967, p. 117).

from the trap. The chain was about five feet long, with a swivel near the end to keep it from kinking.

Immediately over the trap, a twig was positioned so that one end was some four inches above the surface of the water. The twig was smeared with a pungent musk from the beaver's castors, a pair of anal scent glands found in both sexes, but larger in the male.⁴⁶ Attracted by the musk, the beaver raised its nose to the twig, placing its feet so that one of them entered the trap, springing it.

Once caught, the frightened animal tended to rush for deep water, only to find itself held by the chain, which could not be gnawed through. The exhausted beaver eventually sank to the bottom and drowned. Sometimes it would rip the chain from the stake and drag the trap into deep water. Or it would head for the shore and become entangled in the undergrowth.⁴⁷

When the trapper recovered the carcass, the skinning was normally done on the bank nearby, although large expeditions sometimes hired men whose primary job was performing this chore in base camp.

The hide was first slit along the belly and along the inside surfaces of the four legs. Then it was carefully removed, dried on a

46. Ernest P. Walker, Mammals of the World (Baltimore, 1964, 2 vols.), v. 2, p. 748.

Musk from the castors is deposited by beavers at spots regularly visited by others of the species. The animals add mud, sand, dead leaves and other materials to form scent mounds. These hillocks, some a foot high, served the trappers as markers for beaver trails or runways (Cleland, p. 14).

The castor glands, used as trap bait, sold on the average for three dollars a pound (Chittenden, v. 2, p. 821).

47. Chittenden, v. 2, p. 820-821.

willow hoop, and scraped or grained to get rid of adhering flesh particles.⁴⁸

It generally took a full day for a trapper to find suitable areas in which to place his sets, make the rounds of the traps, skin the animals, and flesh the pelts. Besides the skins, the castor glands, tails, and sometimes all the meat were saved.⁴⁹

In the next phase of the operation, the hides were smoked on a framework of sticks planted around the edge of a hole containing a fire of rotten wood or punk. This procedure required ten to 12 hours. The skins were then folded with the fur inside and packed in bundles by means of a crude press. Each bundle was tied with green buckskin thongs, which contracted while drying and finally became almost as hard and inelastic as iron bands.⁵⁰

On long expeditions it was often to the advantage of the trapper to cache his food or pelts. In time of need he thus knew where to find a concealed stockpile of provisions, as well as sparing his pack animals the ordeal of carrying heavy burdens unnecessarily over considerable distances.

The method described by the veteran trapper George Yount was commonly used in Arizona. Outward bound from New Mexico, the mountain man selected a place near a river and unlikely to be visited. He marked

48. Cleland, p. 14.

49. Russell, p. 150.

50. Chittenden, v. 2, pp. 820-821. On the average, 80 skins comprised a pack weighing 100 pounds. The value of a pack varied from 300 to 500 dollars in the Rocky Mountains.

the site by making note of trees at random, in various directions and at measured distances, of which he kept a careful record. At the selected location on the ground he dug deep into the earth, enlarging the hole as he descended. Excavated soil was piled on blankets spread nearby, with superfluous amounts dumped into the river.

The supplies or skins to be cached were deposited at the bottom of the completed shaft and the soil replaced. Finally, the original patch of turf was put back in such a way that "every spire of Grass" was in its proper place.⁵¹ The trapper took lengthy pains to try to erase every bit of evidence that man had recently passed by. But despite these precautions, Indians sometimes discovered and uncovered the caches, and the most skillful concealment could not offset the disastrous effects of seeping water or floods.

Of the many hundreds of trappers who worked Arizona's streams before 1846, three men left more than the most cursory accounts of the flora and fauna. Two of these, George C. Yount and Job Francis Dye, made their primary impact on history as prominent California pioneers.⁵² Only James Ohio Pattie, whose Personal Narrative is one of the few detailed memoirs of trapper life, limited his career almost entirely to Arizona.⁵³ The young Kentuckian, accompanied by his father Sylvester Pattie, joined a party of 116 men under Sylvestre Pratt at Council Bluffs

51. Yount, pp. 63-64.

52. Like many mountain men who settled in California, Yount became a sea otter hunter. He invented a hunting boat made of elephant seal skins and modeled after the famous bull boats of the Missouri River drainage, fashioned from bison hides (Yount, p. xi).

53. Both Jedediah Smith and Thomas L. ("Peg-leg") Smith left memoirs, but neither one referred in any detail to Arizona.

in 1825. The objective: Taos. Over the next two years Pattie explored all of the Southwest from the Rio Grande to the Colorado, went on three expeditions into Arizona, and may have been the first American to see the Grand Canyon.

Pattie has been taken to task by historians because his chronology was sometimes questionable. But Reuben Thwaites, who interpreted and edited one widely read version of the Personal Narrative, was more responsible than Pattie for incorporating geographical inaccuracies. With matters of geography straightened out, much of Pattie becomes "straightforward and plausible," in the opinion of anthropologist Alfred L. Kroeber.⁵⁴ Another summing up comes from historian Robert G. Cleland, who felt that Pattie's diary gives an "authentic, overall picture of the early days of the fur trade in the extreme Southwest and a true account of some of its dramatic incidents....His descriptions of the country... are also too accurate and detailed (as the author can attest from personal observation in many instances) to be based on borrowed accounts of spurious experience."⁵⁵

Operating in all likelihood under a license obtained by Sylvestre Pratt, an expedition led by Sylvester Pattie left Santa Fe in November, 1825, and started south down the Rio Grande (see Fig. 1, p. 222). The group of seven men had agreed to head for the unknown wilderness of the Gila drainage rather than follow more familiar routes north out of Taos or on south into the mountainous country of northern Sonora and Chihuahua.

54. Clifton B. Kroeber, "The Route of James O. Pattie on the Colorado in 1826: A Reappraisal by A.L. Kroeber," Arizona and the West, VI (Summer, 1964), 122.

55. Cleland, p. 161.

Somewhere along the Rio Grande several more trappers doubled the size of the party, and at a point four days below Socorro they all struck west for the Santa Rita copper mines, leaving behind the thin band of riverbank settlements that comprised Mexican civilization in the Southwest. At the copper mines, which had been first worked by the Spaniards around the turn of the century, the expedition hired two Mexican guides and pushed on northwest to the headwaters of the Gila River, in what is now Gila National Forest. This was probably the first group of Americans to reach the Gila,⁵⁶ but James Ohio Pattie mistakenly believed that no other white men had ever visited the region. The Spaniards had known the area for a long time, and in 1757 one Jesuit missionary made note of "beavers which gnaw and throw to the ground the alder-trees and cotton woods."⁵⁷ However, the Spaniards did leave the Gila drainage as they found it--the same wilderness that the Patties observed.

The expedition soon fell into a pattern that was to hold on all future journeys: the two Patties always stuck to large permanent streams in their search for beaver (on their first night trapping the Gila the party caught 30 of the animals). James Ohio Pattie remarked on the beauty of the river near its head, where it ran swiftly between banks covered with tall cottonwoods and willows. Grass grew luxuriantly over

56. Dale Morgan believes that Jedediah Smith may have been the second American to lead an expedition into Arizona (Jedediah Smith and the Opening of the West, Indianapolis, 1953, pp. 193-200). While looking for the legendary Buenaventura River, alleged to lead to the Pacific, Smith descended the Virgin River to the Colorado early in 1826. He did not find many beaver, but he did pioneer a new route across the Mohave Desert to the California missions.

57. Weber, p. 112.

the timbered bottoms. On the adjacent mesas Pattie noticed an open woodland of scattered oaks, juniper and pinyon pines.

Along one stretch of the upper Gila, the mountain men passed a number of grizzlies, but left them strictly alone, since the bears also seemed willing to mind their own affairs. However, there were places where bluffs came to the river's edge, and the men often had to scramble through dense underbrush and grapevines. "Added to the unpleasantness of getting along in itself," commented Pattie, "we did not know, but the next moment would bring us face to face with a bear, which might accost us suddenly."⁵⁸ This fear stayed with the expedition while they pushed through the tangled bottomlands, but no dangerous encounters occurred.

One evening, while scouting the lower reaches of a small tributary, James Ohio Pattie was overtaken by darkness and had to make camp alone in a region where grizzly sign continued to be abundant. The night's events formed part of his diary:

I placed a spit, with a turkey I had killed upon it, before the fire to roast. After I had eaten my supper I laid down by the side of a log with my gun by my side. I did not fall asleep for some time. I was aroused from slumber by a noise in the leaves, and raising my head saw a panther stretched on the log by which I was lying, within six feet of me. I raised my gun gently to my face, and shot it in the head. Then springing to my feet, I ran about ten steps, and stopped to reload my gun, not knowing if I had killed the panther or not.⁵⁹

58. On the way to New Mexico with Pratt's expedition, James Ohio Pattie wounded a grizzly that had attacked the company's livestock one night outside camp. The bear mauled one of the trappers to death before Pattie killed it with a second shot. Grizzlies were so abundant on the Arkansas River that Pratt's men counted over 200 in one day (Cleland, p. 164).

59. Pattie, p. 49.

This incident, the first on record involving a mountain lion in Arizona, describes its characteristic curiosity and set the tone for man's future relations with the species.

As the trappers worked their way down the Gila they shot a few deer (species undetermined), but in general they seemed scarce. The season of the year was at fault, in Pattie's speculation.

Near disaster now occurred. Owing in part to a lack of coherence and discipline within the company, seven men deserted and trapped ahead on the river. They operated with such thoroughness that they virtually exterminated the beaver on a considerable stretch of the upper Gila in a few weeks.⁶⁰ By January 1, 1826, the remaining members of the party were close to starvation. Beaver meat sustained them for a while, but soon it became as unavailable as the larger game. For four and a half days, before the group reached the mouth of the San Francisco River, they had nothing to eat but part of a rabbit caught by the dogs.

At the San Francisco their luck changed. The river flowed southwest through an open forest of ponderosa pine interspersed with meadows. Wildlife appeared in abundance: waterfowl on quiet beaver ponds, wild turkeys, white-tailed and mule deer, Merriam elk, and bear of both species.⁶¹ There was mountain lion sign, and on the rugged cliffs that came down to the river Pattie saw "multitudes" of bighorn. "These animals are not found on level ground," he said, "being there

60. Cleland, p. 173. While skillful trappers, the mountain men were often ruthless and short-sighted. It was usual to aim for the maximum number of pelts in the shortest time possible.

61. Cleland, p. 174.

slow of foot, but on these cliffs and rocks they are so nimble and expert in jumping from point to point, that no dog or wolf can overtake them....Their meat tastes like our mutton."⁶²

Because the deserters had trapped out the Gila ahead of them, the Pattie company turned northeast up the San Francisco. They took 37 beaver the first night, an omen of good fortune that held true where trapping was concerned all the way to the river's headwaters in the Mogollon Mountains. Wild turkeys were particularly numerous on these upper stretches of the San Francisco, and several were shot by the party.

Near the source of this river the seven men in the company cached some 250 beaver pelts taken in the two weeks or so since they left the Gila. It was the middle of January, 1826, when they struck overland to the southeast and once more came to the Gila River. At one point, after the mountain men had started downstream, several horses disappeared in a snowstorm, and Pattie joined a search party that tracked them after the storm subsided. They followed the trail up a creek that emptied south into the Gila somewhere east of modern Clifton. Pattie spotted bear sign at a cave at the base of a cliff near the creek. Holding a pine torch, he entered the cave and shot a grizzly that was bedded down for the winter dormant period. It took several men to drag the bear out. In Pattie's words, "It was both the largest and whitest bear I ever saw. The best proof, I can give, of the size and fatness is, that we extracted ten gallons of oil from it. The meat we dried, and put the oil in a trough, which we secured in a deep crevice of a cliff,

62. Pattie, p. 51.

beyond the reach of animals of prey. We were sensible that it would prove a treasure to us on our return."⁶³

A few days later, farther along the river, Pattie noted tersely that the company "killed a bear, that attacked us." The animal was undoubtedly a grizzly.

In March the trappers worked their way up a semi-permanent stream joining the Gila from the south. They called it Beaver Creek because in a short time they took 200 pelts and loaded the pack horses to their limit. Pattie noticed this stream valley near its confluence with the Gila as being covered with cottonwoods and willows. Flanking the flood plain was a foothill region containing a strange plant which he described in some detail: "A species of tree, which I had never seen before, here arrested my attention. It grows to the height of forty or fifty feet. The top is cone-shaped, and almost without foliage. The bark resembles that of the prickly pear; and the body is covered with thorns. I have seen some three feet in diameter at the root, and throwing up twelve distinct shafts."⁶⁴ Pattie, unmistakably, is discussing the saguaro cactus. He later referred to lofty, snow-capped mountains rising beyond the valley.

This account of what is now known as the San Pedro Valley vindicates James Ohio Pattie as a basically accurate chronicler. No other stream flowed north to the Gila with the following combination of features: (1) it was semi-permanent, with a dependable flow of water all

63. Pattie, p. 54.

64. Ibid., pp. 62.

the way to the Gila for a good part of the year, (2) a Sonoran Desert community exists parallel to the river near its mouth, with saguaro cactus a dominant, (3) an abundance of beaver, (4) high mountains overlooking the valley. Both the Santa Catalinas and the Galiuros rise steeply from the lower San Pedro, and each range could have a noticeable snow cover in March.

Writing again within the realm of natural history, Pattie made another observation of the lower San Pedro Valley:

In these bottoms are great numbers of wild hogs, of a species entirely different from our domestic swine. They are fox-colored, with their navel on their back, towards the back part of their bodies. The hoof of their hind feet has but one dew-claw, and they yield an odor not less offensive than our polecat. Their figure and head are not unlike our swine, except that their tail resembles that of a bear...We killed a great many, but could never bring ourselves to eat them.⁶⁵

Probably to help sell the first edition of the Personal Narrative, Pattie overdramatized the javelina, or collared peccary, by describing its "enormous" tusks, and the animal's tendency to charge and tree people without provocation.

The expedition soon returned to the Gila and proceeded west. But a decision was made to backtrack to the San Pedro and try their luck farther up that stream. Late in March, somewhere on the lower San Pedro River, Apaches stole most of the company's horses, leaving the trappers with no choice but to start home largely on foot.⁶⁶ Pattie says they immediately had to ascend a range of "icy mountains" walling in the valley

65. Pattie, pp. 61-62.

66. The Patties had previously turned over some of the horses and supplies to some of the deserters, who had returned in a chastened state after being ambushed by Apaches. These men had since returned to New Mexico.

on the east. These must have been the Galiuros, which would have been anything but balmy in March. Since the party complained of the lack of water, the crossing was probably made well south of Aravaipa Creek.

The trappers descended the eastern slope of the Galiuros and came out onto a broad, grassy plain. This, in all likelihood, was the northern end of the Sulphur Springs Valley, which is dry today, although Pattie made a vague reference to the presence of water at that time. The company stopped for a while, and Pattie shot a pronghorn. His entry reads as follows:

Here we encamped the remainder of the day, to rest, and refresh ourselves. The signs of antelopes were abundant, and the appearances were, that they came to the water to drink; from which we inferred, that there was no other drinking place in the vicinity. Some of our hunters went out in pursuit of the antelopes. From the numbers of these animals, we called the place Antelope Plain. The land lies very handsomely, and is a rich, black soil, with heavily timbered groves in the vicinity.⁶⁷

Continuing eastward, the party crossed another high range, which, if Pattie's itinerary remains accurate, would have to be the Grahams. The mountain men then halted briefly to trap a shallow lake for beaver, to which they were attracted by the gabbling of ducks and geese. The exact location of this lake is difficult to ascertain, but the north end of the marshy San Simon Valley would be a logical area, assuming that the expedition had not yet reached the Gila River.

Having regained the Gila, probably near the site of modern Safford, the Pattie expedition headed straight for the Santa Rita copper mines. The journey was a difficult one, and the trappers once again came close to starvation; at one period they were reduced to eating

67. Pattie, p. 63.

ravens and turkey vultures. James Ohio Pattie left his father at the mines in April and returned to Santa Fe to requisition horses and supplies for another trip to the Gila, this time to reclaim the pelts buried at two caches. The expedition reached its objectives, but only a few furs were recovered from the cache on the San Francisco River, and the larger cache on the Gila had been broken into and stolen, presumably by Indians. Financially broken, the Patties settled for the next few months at Santa Rita, where they attempted to work the mines.

During the summer of 1826, the influx of trappers and traders into New Mexico continued undiminished. However, business in Santa Fe was at a standstill owing to an excess of foreign goods and a lack of capital among local merchants. William Becknell's great caravan of 1824 had drained the hard cash out of New Mexico.⁶⁸ Consequently, many traders could not sell their goods, and some of them joined trapping expeditions to recoup their fortunes.

That autumn, at least four groups of trappers--some 90 men all told--headed into the Gila River country, carrying passports issued by Governor Narbona, who was lenient about enforcing the decree of 1824. One of these was a party of French Canadians led by a seasoned mountain man named Michel Robidoux. In or about September, 1826, James Ohio Pattie joined this assemblage at the Santa Rita copper mines and accompanied them on a trapping venture down the Gila all the way to the mouth of the Salt River. Here, despite Pattie's remonstrances, Robidoux

68. Becknell's caravan to Santa Fe in 1824 consisted of the following: 83 men, 156 horses and mules, 35 wagons, and 30,000 dollars' worth of merchandise (Yount, p. 7).

camped at a Papago village whose inhabitants showed more evidence of treachery than the hospitality they at first professed. Pattie and one other trapper withdrew for the night some distance away. Their fears were realized; the Papagos massacred the entire party except for Robidoux himself, who escaped, badly injured, into the darkness. He eventually stumbled into the hiding place that concealed Pattie and his companion, and the three men successfully evaded the Indians.

An incredible piece of good fortune now befell them. The next night the three fugitives spotted the campfires of an expedition of thirty trappers under Ewing Young. They were made welcome and accepted the chance to continue trapping as part of the company.

Young's party had descended the Gila just behind Robidoux, and George Yount, one of its members, remembered at least two anecdotes involving wildlife. At some point in the gorge country of the upper Gila, probably just east of the Peloncillo Range, Yount referred to a stream named Hog Creek for its abundance of javelina. This may have been what is now called Apache Creek, but the location could just as well have been farther east into New Mexico. One evening, an apparently rabid wolf entered Young's camp on this creek and bit several dogs before being shot.⁶⁹

After reaching the Salt and picking up the massacre survivors, Ewing Young exacted a successful revenge on the Papagos: his company killed most of the warriors in an ambush, then burned the village. They now settled down to the routine of trapping beaver, working their way up

69. Yount, p. 28.

the Salt and Black Rivers to the head of the drainage in the Blue Range. Pattie found the whole region "to abound with beavers." His associates agreed; in fact, for the period between the 1820's and the 1840's, the mountain men regarded the Salt River as the most consistently productive beaver stream in Arizona.⁷⁰

Reunited once again at the confluence of the Salt and the Verde, Young's company descended to the Gila, which they trapped all the way to its mouth. They were probably the first Americans to reach the Colorado River by this route. As a good-will gesture, the mountain men gave beaver meat to the Halchadom Indians, who farmed corn between the Yuma and Mohave tribes.

It was now sometime in the spring of 1827, and the expedition turned north up the Colorado. On the stretch of the river below Black Canyon, the lagoons that flooded the bottomlands supported a high population of beaver. But the Mohave Indians resented the Americans trapping in their territory, and they had to weather a series of bloody skirmishes before escaping upriver. With a lull in the fighting, there was time for hunting, and in Pattie's words, "We killed plenty of mountain sheep and deer, though no bears."⁷¹ This occurred in the vicinity of Black Canyon, where the mule deer was the only representative of its family.

After passing the Mohave villages, the company stopped in the area of what is now Lake Mead. The trappers investigated the washes and

70. Cleland, p. 172.

71. Pattie, p. 87.

canyons leading up to the Grand Wash Cliffs, but they found little bottomland and few beavers. According to Thomas ("Peg-leg") Smith, the expedition separated near the mouth of the Virgin River. A small group that included George Yount had a falling-out with Ewing Young and turned directly east for New Mexico. Those loyal to Young, Pattie among them, continued up the Colorado.

Yount tells us that his party nearly starved before reaching Zuni. Even in pre-settlement times, there were periods and regions noted for the lack of enough game to support expeditions. One bright spot in the journey occurred while Yount and his companions were passing San Francisco Mountain. Here the chronicler shot a "large brown bear of more than four hundred pounds weight, and very fat--it afforded a rich repast."⁷² From this description there is no clue as to whether the animal in question was a black or grizzly bear. Both species were found in the area. Yount may have exaggerated somewhat when he referred to a bear killed in April as being "very fat." But the meat was certainly welcome, since lean times were to lie ahead for a considerable distance.

Meanwhile, hard times also awaited Young's group. Three trappers were killed by Havasupai Indians while reconnoitering either Havasu or Cataract Creeks, where there was sufficient cottonwood growth to sustain beaver in abundance.⁷³ Ill-clad and hungry, the survivors followed the edge of the Grand Canyon, probably along the north rim.⁷⁴ The mountain

72. Yount, p. 54.

73. Clifton B. Kroeber, Arizona and the West, vol. 6 (summer, 1964), p. 130.

74. Weber, p. 126.

men did not descend to the Colorado River until, in all probability, they reached the present site of Lee's Ferry. Both Robert Glass Cleland and Alfred L. Kroeber place Pattie on this section of the river when he made the following statement: "We likewise killed plenty of elk, and dressed their skins for clothing."⁷⁵ Olaus Murie indicates the mouth of the Little Colorado as being the proper location,⁷⁶ but if David J. Weber's exhaustive analysis of Pattie's route is correct the trappers passed well to the north of the confluence on the other side of the Colorado River.

The Paria River (Paria means "elk water" in Paiute) flows into the Colorado from the north at Lee's Ferry, and early records state that elk were common on this stream and on the adjacent Paria Plateau until the mid-1850's.⁷⁷ Why they disappeared so early is problematical, but, assuming that this was a marginal population, these elk might have been vulnerable to heavy hunting pressures from both Indians and trappers.⁷⁸

After leaving the general region of the Grand Canyon, Ewing Young's party took a brief side trip up the San Juan, returned to ascend the Colorado, and eventually turned east into the Rockies in some region as yet undetermined. The Personal Narrative is hopelessly vague in its geography from here on, but the trappers came down to Taos from the north

75. Pattie, p. 89.

76. Olaus J. Murie, The Elk of North America (Harrisburg, 1951), p. 21.

77. Granger, p. 81.

78. According to G.S. Miller, Jr., and R. Kellogg ("List of North American Recent Mammals," U.S. Nat. Mus. Bull., 205: 796-797, 1955), the Paria Plateau would have been well north of the range of Cervus merriami. There is a strong likelihood that the population Pattie referred to consisted of Cervus canadensis nelsoni near the extreme southwestern limit of its normal distribution.

sometime in the summer of 1827. They soon shared the same fate as Yount's group, which had reached Santa Fe in May: all pelts were confiscated by Mexican officials. Together, the two halves of the expedition amassed about 20,000 dollars' worth of beaver skins. Despite the probable keeping of accurate account books, the furs were seized on the disputed grounds that the trappers had no proper licenses.⁷⁹

Temporary bankruptcy did not deter the Patties. By September, 1827, they were ready to take the field again, this time leading a group of 24 men south out of Taos. This would be the most ambitious undertaking yet, with Mexican California the probable goal, right from the beginning. Rumors had been circulating among the mountain men that American traders, operating from offshore vessels, were offering higher prices for furs than the merchants of Santa Fe.

Following the established route to the copper mines and beyond, the trappers began working the upper Gila again. "But our stay on this stream was short," recalled Pattie, "for it had been trapped so often, that there were but few beavers remaining, and those few were exceedingly shy."⁸⁰ With local exceptions, the Gila probably had been excessively exploited, especially during the season of 1826-1827. After that, there

79. Account books were probably kept in the self-interest of each party, to keep a record of skins taken or contributed by themselves as credits, or of company supplies charged to them. Lacking such a record, the mountain men would be unprotected at the final settlement of accounts. A mere tally score would be vague and unverifiable months later, so presumably there would be a date entered with each batch of skins.

80. Pattie, p. 121.

were only a few records of mountain men working in the area except for those who used it as a road to California.⁸¹

The luck of the expedition turned when it reached that old reliable, the San Pedro River. Beaver still survived there in "considerable number," according to Pattie. But the familiar specter of starvation awaited the trappers; with a scarcity of game to contend with, they had to eat six horses and all the dogs during October. Conditions were better back on the Gila, and trapping became lucrative again in the vicinity of the Maricopa villages. George C. Yount, who was once again part of the company, made reference to a small slough on the south side of the river where the beaver produced dark pelts of an unusually "splendid lustre."⁸² Downstream, the party continued to take beaver, especially when they approached the confluence of the Gila and Colorado Rivers.

At about this time, all but six of the trappers revolted against the authority of Sylvester Pattie, and the highly individualistic mountain men once again broke up into separate detachments. George Yount joined the larger group, which ascended the Colorado a short distance, then journeyed overland to Taos by way of the Hopi villages, Zuni, and Laguna. They cached their furs on the Jemez River before entering Taos. Afterwards, they safely smuggled the pelts in.

Below the mouth of the Gila, misfortune again plagued the eight men of the Pattie company (six, plus the two Patties). Yuma Indians

81. Weber, p. 220.

82. Yount, p. 33.

stole all their horses, and the mountain men had to compensate by hollowing out two cottonwood logs to serve as canoes. All the pelts and supplies were loaded into the dugouts, and the expedition proceeded downriver. They hoped ultimately to find a Mexican settlement in the delta of the Colorado, but meantime they worked energetically "to trap the river clear," as Pattie phrased it. Sometimes the trappers brought in as many as 60 beaver in a morning.⁸³ The river became circuitous, with many islands on which they set beaver traps with consistent success. Southward, the gallery forest on the banks comprised larger timber than farther upstream, being less of a jungle. And Pattie remained alert to the fauna around them:

There are but few wild animals that belong to the country farther up, but some deer, panthers, foxes and wildcats. Of birds there are great numbers, and many varieties, most of which I have never before seen. We killed some wild geese and pelicans, and likewise an animal not unlike the African leopard, which came into our camp, while we were at work upon the canoe. It was the first we had ever seen.⁸⁴

The last animal described probably represents the first mention in literature by an American of a jaguar in the Southwest. It is unlikely that ocelots were ever recorded this far west, but the possibility cannot be ruled out.⁸⁵ The "panthers" Pattie mentions refer to

83. Pattie, p. 130.

84. Ibid., p. 131.

85. As late as 1922, Aldo Leopold in Sand County Almanac (New York, 1966), p. 143, states that the jaguar still prowled the dense tangle of mesquite and willow that separated the delta channels from the thorny desert beyond.

a well-marked desert form, the Yuma mountain lion, Felis concolor browni.⁸⁶

One morning, as the party was paddling south in the two canoes, some trappers detected two Yuma bowmen waiting to ambush them from the tops of cottonwoods overlooking the river. The mountain men sat, rifles primed, until they were within 100 yards of the ambushade, then, in Pattie's words, "brought them both tumbling down the branches, reminding us exactly of the fall of a bear or a turkey. They made the earth sound when they struck it."

As the trappers approached the delta country the landscape became flat and waterlogged. Beaver remained abundant until the expedition reached tidewater, below which point they soon disappeared.⁸⁷ Pattie reported: "The land is exceedingly marshy, and is the resort of numerous flocks of swans, and blue cranes. The rackoons are in such numbers, that they cause us to lose a great many beavers, by getting into our traps and being taken instead of the true game. They annoy us too with their squalling when they are taken."⁸⁸

After it became evident that there were no Mexicans in the undated wilderness of the Colorado delta, the mountain men considered

86. In 1910, according to Joseph Grinnell, lions were fairly common in the bottomland thickets along the lower Colorado. They apparently swam at will back and forth across the river (Grinnell, Lower Colorado, p. 252). C. Hart Merriam suggested that the Yuma mountain lion, being quite small, with small teeth, may "indicate that he preys on smaller animals than the deer-killing Cougar of the uplands" (Grinnell, Dixon and Linsdale, Fur-Bearing Mammals, v. 2, p. 587).

87. Daily Alta California, July 2, 1865.

88. Pattie, p. 136.

retracing their steps upriver. But winter floods had so swollen the current that it was impossible to pole or paddle against it. One day a huge tidebore from the Gulf of California submerged the camp, nearly drowning the whole party. The trappers now had no choice but to cache their furs and start walking directly for the Pacific. Miraculously, they survived the desert only to be arrested and imprisoned by the Mexican authorities in Baja California. After a period of hardship in which Sylvester Pattie died, the men were finally released. James Ohio Pattie returned to Kentucky by way of Vera Cruz and New Orleans, after which he vanished from history.

For another year, George C. Yount trapped out of New Mexico, but excited by the prospects of mule trading in California, he headed west. He was never to see Arizona again.⁸⁹ Over the years, Yount dictated his memoirs to various friends, primarily the Reverend Orange Clark. He spent the last years of his life as a respected rancher in the Napa Valley.

Kit Carson, who is perhaps best remembered as a guide and Indian fighter, was an experienced mountain man by the age of twenty. His dictated reminiscences are detailed, but include mostly sketchy information about the fauna of Arizona during his trapper days. Reaching Taos in 1826, he spent his apprenticeship as a cook and teamster before joining one of Ewing Young's expeditions in 1829 as a full-fledged trapper. This party swung southwest to the upper Salt River, which they trapped down to

89. In California alone, and particularly in the Napa Valley, George Yount gained a reputation as a celebrated grizzly bear hunter. He claims to have killed hundreds (Yount, p. xvi).

the mouth of the Verde. From here, they ascended the Verde to its headwaters, where the company divided. One group returned to Taos with pelts and to replace traps stolen by Indians, while Young led 17 men due west, pioneering a difficult new route to California. Before setting out, the latter contingent killed three deer, jerked the venison, and converted the skins into "tanks" or water bags by casing them with tallow.⁹⁰ The venison had to go a long way, Carson remarking that game was generally scarce between the Verde and the Grand Canyon.

Young's company trapped the San Joaquin Valley in 1830 before returning to New Mexico. On the way back, they worked the Colorado River down to tide water, then ascended the Gila and proceeded to the copper mines, where they cached their furs. A number of trappers went on to Santa Fe to inform the Mexican officials that they wished to purchase licenses to trade with the Indians. When the furs hidden at Santa Rita were smuggled into Santa Fe, the authorities assumed they had been taken in legal trade.

Meanwhile, at least along certain stretches of the river, the beaver population on the upper Gila was showing signs of recovery by 1830. In August of that year four veteran trappers went south from Santa Fe to try their luck in Sonora. They did poorly on the Yaqui River, so headed northwest until they reached the San Pedro, which they followed to the Gila. An attempt to head downstream was thwarted by the hostility of the Papagos and Maricopas, so the party turned east again. In the words

90. Cleland, p. 229.

of Robert Isaacs, one of the trappers, "Beaver sign...was abundant. The banks of the river were literally smooth from the small trees and timber which had been slid down them, for the construction of their dams."⁹¹ The four men stopped and put out sets, but on the first night Indians stole their horses and traps, and for the next two days the little company was fighting for its life in a running battle. However, they not only managed to get back to the copper mines with their lives, but with most of their furs as well. A year later, the trader William Sublette paid Isaacs 2,260 dollars, which probably represented payment for beaver pelts.

In 1869, the Sentinel of Santa Cruz, California, printed the memoirs of an old trapper named Job Francis Dye. It was entitled "Recollections of a Pioneer, 1830-1852," and among the reminiscences of early California, it described a trapping expedition across Arizona in 1831. A latecomer to the fur trade in the Southwest, Dye joined a company of aspiring mountain men assembling at Fort Smith, Arkansas, in 1830. Some 43 men strong, this group ascended the Arkansas River to the Rockies, had most of their provisions stolen by Indians, but managed to push south through deep snow to Taos in the late autumn. Within a year, Dye enlisted for a venture to California led by the perennial Ewing Young. Trapping beaver on the way, the 36-man expedition probably spent some time on the headwaters of the San Francisco River after

91. Weber, p. 221.

leaving Taos in the fall of 1831.⁹² Dye recalled that the mountain men found "beaver plenty and caught a great number of them."⁹³

Like so many predecessors, Dye also remembered a scarcity of game. The upper San Francisco flows through rugged country, and the trappers were hard put to live off the land. On one occasion a dozen wild turkeys were shot (Pattie had recalled them as being common in this region in 182⁶). Deer sign was encountered, and several herds were seen at a distance, but no one was able to bring in venison. One large bear (probably a grizzly) charged the party after she and her two cubs were wounded. She veered off and escaped after being missed by a second fusillade.

On a subsequent hunt, Dye and Ewing Young spotted a large grizzly climbing a ridge. They circled around on horseback and worked to within rifle range. After Young wounded the bear in the neck, it stopped, turned and stood up. Dye's shot then struck the animal in the forehead, the ball glancing off. The bear ran off down the mountainside, and Dye tracked it to a patch of scrub oak. This time it charged furiously, but Dye kept his horse safely beyond reach until the wounded grizzly turned off and started up the mountain again. Following closely, Dye got off

92. Although Dye speaks of trapping on the Black and Salt Rivers after passing through Zuni, the expedition's geography becomes hopelessly confused if he is accepted at face value. Young's men may well have worked these rivers, but not in the sequence suggested by Dye. It would have been impossible to descend the Salt to the Gila, then follow the Gila downstream through a "horrid canyon" to the mouth of the San Carlos. Assuming that the expedition did descend a river to the gorge of the Gila, which is upstream from the San Carlos, the only possible choice is the San Francisco. See Job Francis Dye, Recollections of a Pioneer, 1830-1852 (Los Angeles, 1951), pp. 19-27.

93. Ibid., p. 19.

three more shots, the last one killing the bear. In Dye's words, the bear, dressed, weighed "five or six hundred pounds, which was highly prized, in our camp, and was really worth more, in our famished condition, than its weight in silver, as it was the only meat we had tasted for several weeks, except beaver--a very poor substitute for hungry trappers."⁹⁴

The bear hide was cut into two sacks, each holding about 300 pounds of meat, which were carried several miles to camp. Dye also used the hide to make temporary moccasins to replace the ones that had been worn out in the chase.

When the trappers descended the Gila to its confluence with the San Carlos, Apaches stole a number of traps and pack mules. However, the company was able to replace the provisions at the Pima villages near the mouth of the Salt River. With what traps remained, the mountain men worked the Gila all the way down to the Colorado. They then crossed the Mohave Desert without serious mishap, arriving in Los Angeles in March, 1832. For Dye this was a one-way journey. His first experience with the Arizona wilderness was never to be repeated.

Up until about 1832, fur trapping in the Southwest continued to be a highly profitable enterprise. One Mexican legislator estimated that at its height trappers shipped about 200,000 dollars' worth of beaver pelts annually from Abiquiu and Taos.⁹⁵ In 1828 beaver fur brought \$3.50 a pound at New Mexico prices. This was slightly more than the

94. Dye, p. 23.

95. Cleland, p. 153.

"mountain" price of three dollars, which remained constant between 1823 and 1833. Meanwhile, trade in horses, equipment, and provisions at Taos alone amounted to some 50 or 60 thousand dollars a year. When the authorities attempted to interfere with this trade by confiscating furs and merchandise, American traders retired to the interior beyond the reach of Mexican law and established fortified posts like Bent's Fort on the Arkansas River. Trapping and trading operations, largely geared to exploiting one natural resource--the beaver--diverted so much potential revenue from Mexico that to a degree the Southwest became an American economic colony long before the Mexican War.

With the growth of the China trade out of England and New England, the world market in beaver began to break. The early 1830's witnessed the clipper ships bring silk in great quantities to manufacturing cities everywhere. Fashion changed, and silk was now offered for hats instead of beaver. After 1831, as trappers began to rely on intermontane trading posts as markets for beaver, and as the fur trade itself showed the first indications of decline, there was a slight advantage in an American becoming a Mexican citizen in order to trap legally. This trend changed even more drastically within the decade. With beaver fading out of the economic picture, many former trappers took up trading entirely.

As the era of the Taos trappers waned in the 1830's, two events came to dominate mercantilism in the Far West. One was the preeminence of the stationary trading post, and the other was a correlative rise in the demand for bison hides. For three decades after 1832 buffalo became the most sought after animals in North America. Few Indians had ever

trapped for beaver pelts, but buffalo robes were readily available through trade with the plains tribes. This made it possible for the fur trade to be carried out at strategically located fixed posts.

Economic decline was not the only reason that trappers were beginning to disappear from the Gila and Colorado drainages. As early as the period between 1829 and 1831, problems with hostile Indians had become so acute that mountain men on their way to California were already circumventing Arizona by following the Old Spanish Trail through Utah.

Parts of the upper Gila were an exception to the general situation. Some Apache bands in that region actually extended protection to beaver trappers, in part because the Americans brought trade goods in the form of arms and ammunition. But all this changed during the season of 1836-1837, when the bottom had nearly dropped out of the market anyway. American bounty hunters, seeking Apache scalps to turn in to the Mexican authorities, killed a number of friendly Indians, including a chief. From then on, no trapper was safe on the Gila.

Until the outbreak of the Mexican War, a few hardy adventurers continued to trap beaver in Arizona. The market price for pelts was low, but beaver had made a good recovery from the peak trapping years, and this handful of romantics had the field to themselves. In the season of 1840-1841, for example, mountain men found the trapping particularly good on the upper Gila. Game was abundant; bear meat and venison were dependable staples.⁹⁶

96. Vincent Colyer, Peace with the Apaches of New Mexico and Arizona (Washington, D.C., 1872), p. 5.

In 1846, when George Frederick Ruxton passed through New Mexico, he noted that "beaver has so depreciated in value within the last few years that trapping has been almost abandoned."⁹⁷ Beaver were then commanding 90 cents a pound in the southern Rockies.

The trappers who worked the rivers of Arizona left little impact on the land. But their mark on history is impressive. In the process of harvesting the beaver, they blazed a system of trails that linked New Mexico with the missions of San Gabriel and San Diego. A vast, unsettled region was opened to trade and enterprise. The basin of the lower Colorado was explored and a way prepared for its occupation by American forces. They showed, above all, that southern California was accessible to overland pack trains and that it need not remain isolated behind mountains and deserts.

97. George F. Ruxton, Ruxton of the Rockies, ed. LeRoy R. Hafen (Norman, 1950), p. 225.

CHAPTER III

PATHFINDERS IN BLUE, 1846-1864

When the Mexican War broke out in April, 1846, Arizona in itself was of little strategic value. However, by providing access to the Pacific Ocean it was vitally important. Beaver trappers had shown that it could be crossed in a direct line to the west coast, and the American appetite to possess California was thereby whetted. United States military leaders realized that a fixed route across southern Arizona was crucial for maintaining any future supply line to California and for protecting the southwestern border from Indian and Mexican attacks. Accordingly, a force of 1700 men with the grandiloquent title of the "Army of the West" was organized at Independence, Missouri, under the command of Colonel Stephen Watts Kearny. Kearny's immediate objective was the occupation of New Mexico, and after an uneventful march Santa Fe fell without bloodshed.

Following the surrender of Governor Manuel Armijo, Kearny divided his army into four separate commands. One stayed on in Santa Fe as an occupation force. Another under Colonel Alexander Doniphan was to march south, seize Chihuahua City, then turn east to link up with Zachary Taylor. A third, consisting of 300 dragoons under Kearny himself, would push west to occupy California, while the fourth, led by Captain Philip St. George Cooke, was to open a wagon road from New Mexico to California.

One of the primary missions of the California column was to create the first accurate map of the vast region lying between the Rio Grande and the Pacific Ocean. To realize this need, a unit of well-trained topographical engineers was essential. These men were provided, and their commander, a first lieutenant, was an aristocratic Marylander with flaming red whiskers named William Hemsley Emory. More than a competent engineer, Emory showed evidence of being an advanced scientific thinker. On the way out from Fort Leavenworth, where his unit joined Kearny's army, he concluded that continuous erosion had shaped the landscape. A "denuding process," in his perceptive interpretation, had left only the hard volcanic rock unworn.

On September 25, 1846, Kearny led his dragoons down the Rio Grande with the eventual intention of turning toward the Gila River. At Valverde he met the seasoned mountain man and explorer Kit Carson, riding east with dispatches stating that American forces had already gained control of key areas in California. Kearny was able to persuade Carson to wheel about and guide his column west, and the troopers set out along one of the traditional routes used so often by mountain men in the 1820's and 1830's (see Fig. 2, p. 223). Honed down to 100 men, plus Emory's 14-man contingent of topographical engineers (the other 200 dragoons were sent back to Santa Fe), the Army of the West marched first to the Santa Rita copper mines, now the site of a ghost town under the dominion of the Apache chief Mangas Coloradas. Kearny declined Mangas' offer to help against the Mexicans and moved on to the upper Gila. It was October when the Americans began descending the ever-deepening gorge cut by the river in its westward passage. Many men in the dusty, noisy column saw no

wildlife at all, though Emory commented on the abundance of deer and beaver sign. Wolves were also spotted on several occasions.¹

Emory was not the only literate observer on this expedition. James M. Cutts recorded seeing immense numbers of Gambel's quail on the bottoms of the upper Gila.² Of the river itself, Abraham Johnston, a member of the First Dragoons, had this to say: It was "a beautiful mountain stream about thirty feet wide and one foot deep on the shallows, with clear water and pebbly bed fringed with trees and hemmed in by mountains, the bottom not more than a mile wide. The signs of beaver, the bear, the deer, and the turkey, besides the tracks of herds of Indian horses, were plain to be seen on the sand."³ An army surgeon, John S. Griffin, commented on the abundance of deer and turkey tracks and the elusiveness of the animals themselves. He quoted Kit Carson as saying that he never knew a party not to leave the Gila in a starving condition.⁴ A few days later Griffin did see some ducks and geese on the river and heard that the artist John M. Stanley had shot two turkeys.

One member of the column who kept a particularly detailed journal was Henry Smith Turner. He was impressed by the continuous cover of good grass along the river, plenty to sustain the mules. Turner also found

1. William H. Emory, Notes of a Military Reconnaissance (Washington, 1848), p. 64.

2. James M. Cutts, The Conquest of California and New Mexico (Albuquerque, 1965), p. 186.

3. Abraham R. Johnston, Journal of A.R. Johnston, First Dragoons, 25 September to December, 1846 (Washington, 1848), p. 579.

4. John S. Griffin, A Doctor Comes to California (San Francisco, 1943), p. 25.

much evidence of wildlife along the upper Gila: not only Gambel's quail and turkey, but signs of deer, beaver, and bear.⁵ Nevertheless, the expedition's hunters did not bring in much game.

Farther downriver, as the canyon deepened, Dr. Griffin continued to notice deer and turkey tracks, but saw no game except Gambel's quail. Abraham Johnston got a look at the lower stretch of the San Francisco River when the Army of the West reached its confluence with the Gila. He reported a large number of beaver dams on this mountain tributary, with "flags and willows along the borders very thick," and majestic cottonwoods on the banks.⁶

Just past the mouth of Eagle Creek on the Gila, Turner entered in his journal some facts about the Gambel's quail: "A portion of our route today abounded with the partridges peculiar to this country-- never were partridges so numerous as in this--in the distance of half a mile we must have seen today from 800 to 1,000."⁷

At some point beyond the junction of the Gila and the San Carlos, Lt. Emory made note of the presence of javelina. He remembered that the Graham Mountains were distinct against the sky to the southeast. "Last evening about dusk (Oct. 29)," the entry reads, "one of my men discovered a drove of wild hogs....The average weight of these animals is about 100 pounds, and their color invariably light pepper and salt. Their

5. Henry Smith Turner, The Original Journals of Henry Smith Turner, ed. Dwight L. Clarke (Norman, 1966), p. 90.

6. Johnston, p. 587.

7. Turner, p. 91.

flesh is said to be palatable, if the musk which lies near the back part of the spine is carefully removed."⁸

For a short distance early in November Kearny struck southwest away from the Gila and came to the lower San Pedro, which the dragoons followed to its mouth. Dr. Griffin recalled that another name for the San Pedro was Hog River, because of the abundance of javelina on its well-wooded flood plain. In Emory's journal the valley of the lower San Pedro is described as being wide, with a dense growth of mesquite, cottonwood, and willow, "through which it is hard to move without being unhorsed."⁹

Back on the Gila, just west of the mouth of the San Pedro, Johnston also saw javelina in the dense riparian thickets.¹⁰ Lt. Emory jotted down his impressions of this part of the Gila, the date being November 7. The expedition observed "Flights of geese, and myriads of the blue quail, and flocks of turkies, from which we got one....The river bed, at the junction of the San Pedro, was seamed with tracks of deer and turkey; some signs of beaver and one trail of wild hogs."¹¹

For Lt. Emory, one of the most absorbing aspects of the journey was an opportunity to study the ruins of twelve ancient Indian towns, as well as abandoned irrigation systems. These investigations convinced him that no direct connection existed between the Pueblo cultures and the Aztecs and Mayas to the south.

8. Emory, p. 69.

9. Ibid., p. 75.

10. Johnston, p. 593.

11. Emory, p. 78.

Near the mouth of the Salt River, the expedition rested and traded among the Maricopas and Pimas, now peaceful farmers who grew crops of corn and cotton, planted to exploit seasonal overflows on the river bottoms. In the middle of November Kearny resumed the march down the Gila. Dr. Griffin observed that below the Salt the Gila River was about 80 yards wide, three feet deep, and rapid. Waterfowl teemed: ducks and geese of several species, and whistling swans.¹² Beyond the great bend, Lt. Emory referred to the river bottoms being "wide, rich, and thickly overgrown with willow and a tall aromatic weed." The Gila was covered in places with waterfowl, particularly snow geese, which Emory called "white brant," with black-tipped wings. Signs of mule deer and beaver were everywhere, and one member of the party shot a buck in the stream-side thickets.¹³

In what is now western Maricopa County, Turner noticed that the Gila was becoming much more like a real river. The width varied from 100 to 150 yards wide, with an average depth of four feet--"quite deep enough to float a steamboat." It flowed gently over a sandy bottom, while the banks, in Emory's terminology, were fringed with cane, willow, and myrtle. Farther on, at Painted Rocks, in modern Yuma County, Kit Carson shot a bighorn ram. Johnston remembered that the face of the mountain came close to the river bottoms, and that a flock composed entirely of males clambered with great facility up the cliff. Emory's notes state that the column named the site "Goat's Spur," after the

12. Griffin, p. 25.

13. Emory, p. 91.

bighorn. Near there, on November 19, "We encamped on an island where the valley is contracted by sand buttes in what had been very recently the bed of the river. It was overgrown with willow, cane, Gila grass, flag grass, etc. The pools in the old bed of the river were full of ducks, and all night the swan, brant, and geese, were passing, but they were as shy as if they had received their tuition on the Chesapeake Bay, where they are continually chased by sportsmen."¹⁴

Five days later the Army of the West came out on the banks of the Colorado River. Turner remarked on the good cover of grass under the woody growth along the shore, but the expedition feared losing the pack animals in the almost impenetrable riparian thickets of "mesquite and other thorny bushes." There were a few cottonwood trees at this point, but generally there was an absence of heavy timber. The Colorado reminded Turner of the Arkansas, being a little larger, but with the same "dingy red water."¹⁵

Near the mouth of the Gila a detachment under Lt. Emory captured an enemy courier with the news that much of southern California had been recaptured by Mexican forces. Kearny immediately crossed the Colorado and drove his army over the Mohave Desert in a series of forced marches. At San Pascual, outside San Diego, the exhausted and disorganized Army of the West suffered a sharp defeat at the hands of a unit of California lancers. A relief column from the coast eventually forced the Mexicans back, and in the end California was annexed by the United States. But in the main, Kearny's march down the Gila is remembered for the

14. Ibid., p. 92.

15. Turner, p. 119

achievements of Lt. William H. Emory. He drew the first accurate map of the region, a map that was not only the geographical base of the official report on the expedition, but was to prove invaluable to Gold Rush emigrants in 1849. In addition, Emory made detailed notes of the topography, geology (including fossils), plants and animals seen along the route. John Torrey studied the plants collected and described 18 new species. George Engelmann of St. Louis wrote the first scientific description of the sahuaro, Cereus giganteus. And a common evergreen oak of southern Arizona was named Quercus Emoryi.¹⁶

When Kearny marched out of Santa Fe, he left orders for Captain Philip St. George Cooke to form an adjunct to his column by blazing a wagon road connecting New Mexico with San Diego. Cooke's force--not a combat unit--consisted of 500 volunteers of the Mormon Battalion, whose pay was being used to finance the Mormon settlement of Utah. They were to act as shepherds for a wagon train to be used to test the feasibility of the route.

After leaving Santa Fe on October 21, the Mormon Battalion descended the Rio Grande, averaging some ten miles a day. On November 10 they left the river and set a course that would take them south around the Mimbres Range after first stopping at the copper mines (see Fig. 2, p. 223). The column kept to this route, came to the road from Janos, Chihuahua, and marched west past Playas Lake (in modern Hidalgo County, New Mexico). The next objective was a large ranch said to lie on the far side of a pass that the guides felt could be negotiated. Meantime,

16. William H. Goetzmann, Army Exploration in the American West, 1803-1863 (New Haven, 1959), p. 142.

the volunteers marveled at an abundance of game, especially mule deer and herds of pronghorn. One of the guides shot a grizzly bear, bringing in the meat to vary the camp fare.¹⁷

Cooke's contingent was assisted by an impressive assemblage of guides, all former beaver trappers. One was the inimitable Antoine Leroux. The others were Pauline Weaver, half English, half Cherokee, and Baptiste Charbonneau, son of Toussaint Charbonneau and Sacajawea, who played such notable roles in the Lewis and Clark expedition. There were also several Apaches assigned to the column by Mangas Coloradas, who had promised Kearny he would see Cooke through.

After crossing the Animas Valley, the Americans neared a steep jumble of hills said to conceal Guadalupe Pass, the gateway to what is now Cochise County, Arizona. Leroux convinced Cooke that a narrow horse trail would take them over the proper route. This turned out to be a mistake, and a Dr. Foster finally happened on the real pass. It turned out to be no bargain. In fact, an anonymous traveler called this passage "the worst place for wagons to travel over I ever saw." Nevertheless, the Mormon Battalion hacked a crude trail down the defile called today Guadalupe Canyon, hauling the wagons piece by piece with ropes, losing both wagons and mules in the process. Guadalupe Pass was no true wagon road, though Cooke retained the composure to stop and admire the scenery. Here too, in his official report, Cooke referred to a phenomenon that was to occupy the battalion's attention for days to come: "It was in the mountain pass that we first saw the wild bulls, from which the command

17. H.W. Bigler, "Extracts from the Journal of Henry W. Bigler," Utah Historical Quarterly, V (1932), 35-64, 87-112, 134-160.

obtained their exclusive supply of meat for about two weeks. They are the increase from the abandoned, when the two ranches of San Bernardino and San Pedro (on the river of the same name) were broken up, in consequence of incessant Indian attacks. They have spread and increased, so as to cover the country; they were as wild and more dangerous than buffalo."¹⁸

On December 2, the Mormon Battalion emerged from the Guadalupe Mountains and camped at the ruins of San Bernardino Ranch, the site of which is now just below the Arizona-Sonora border.¹⁹ Wild cattle were everywhere, and the guides shot three or four while the column was still filing out of Guadalupe Canyon. The San Bernardino land grant, which according to Cooke once extended to the Gila River, was deserted in the 1830's when constant Apache raids became intolerable. Possibly as many as 100,000 head of Andalusian cattle were left behind.²⁰ When the Mormon Battalion arrived most of the herds had been scattered or thinned by the Indians. The survivors were almost all bulls, usually running together.

18. A.W. Gressinger, Charles D. Poston, Sunland Seer (Globe, 1961), p. 45.

19. As early as 1694, 100,000 head of stock ranged northern Sonora. Within three years cattle were introduced at San Xavier del Bac. The heyday of economic success for the Spaniards in cattle raising was reached about 1751, when the mission period had ended.

Around the end of the 18th century, a number of Spanish ranches were operating in the valleys of the Santa Cruz, San Pedro, and San Simon. They included the following: San Bernardino, Babocomari, San Pedro, Arivaca, Calabasas, Saporí, Raventon, San Rafael de la Zanje, Sonoita and Tubac. There were also the Agua Prieta, Pueblo Viejo, and largest of all, the Sierra Bonita.

By 1811 the Apache terror had begun again, and this pastoral era began to come to an end. See J.J. Wagoner, History of the Cattle Industry in Southern Arizona, 1540-1940 (Tucson, 1949), pp. 14,27,36.

20. Ibid., p. 42.

The cows, which were more easily killed, had been largely culled from the population. The Americans noticed that these remaining bulls sported a variety of colors: black, brown, blue, or red, with black predominating. Their horns were trim and white, and their faces were covered with coarse hair.

One of the volunteers, Robert Whitworth, who kept a diary, remarked on the beauty of the San Bernardino Valley, which stretched away from the ranch on all sides. There was plenty of water, and the grass was "two feet high as far as the eye can reach." Mesquite was the only woody cover. Whitworth also noticed numerous herds of pronghorn.²¹

After the battalion had stopped to rest in the valley, preparations were made to bring in a supply of beef. One of the men participating was Sergeant Daniel Tyler, who has left a vivid account of hunting a species that qualified as big game in every sporting sense of the word.

One of the guides killed a wild bull and was found drying his meat on our arrival. A few hunters were immediately sent out, and more went out on their own responsibility, the author among the latter. Every now and then a bull bounded past him, having been routed by the hunters.

After following one and another, in the hope of getting a shot, he discovered one standing under a lone tree, at a distance of, perhaps, a mile. He crouched and sneaked along from bunch to bunch of the Mezquite until one half the distance was made, when the crack of a musket and a rather sharp screech or lowing of the animal proved that another hunter had discovered his quiet resting place. His thigh bone was broken. Another shot succeeded in bringing him to the ground. By this time I had approached within a few rods, when the well-known voice of Walter Barney, one of my messmates, directed me to stop until he fired again.

21. David B. Gracy II and Helen J.H. Rugeley, "From the Mississippi to the Pacific: An Englishman in the Mormon Battalion," Arizona and the West, VII (summer, 1965), p. 149.

Much of the San Bernardino Valley today is dominated by a Chihuahuan Desert plant community. Mesquite is still abundant, but open grasslands exist only in scattered mosaics.

I insisted, however, on going up and cutting the animal's throat to save the waste of ammunition, but as he claimed that there might be danger of the animal rising and goring me, I picked up a rock about the size of a man's fist and threw it a distance of, perhaps, ten feet, against the horn of the animal. Quick as thought he bounded to his feet, and, with a wild, shrill bellow, hobbled after me on three legs. I fired and he fell again, only to arise and pursue his intended victim with the more fury. I was below him on a hill-side; as he neared me I dodged him, and while he was turning round gained a few feet up the hill. My comrade fired again, and the animal once more fell to the ground. This time a bullet from my musket, a little below the curl in the pate, ended the battle. Six bullet holes, all in fatal places, showed that these cattle could endure as much lead as a buffalo. He had a very large body, with horns about two yards from tip to tip, and he was round and fat.²²

Tyler remained with the carcass until well after dark, when his companions returned with a pack mule. As he maintained, he "had but little fear of other wild beasts or Indians, although the country abounded with both."

The battalion remained at the abandoned hacienda for nearly two days, and Tyler's report states that the hunters brought in five days' allowance of wild beef as rations. While the volunteers spent the time constructing scaffolds on which to dry the meat, Cooke traded with the Apaches for mules. He also issued an order prohibiting the firing of guns after the resumption of the westward march, the idea being that wounding a bull was more dangerous than ignoring it. The men became uneasy, since in Tyler's words they were about to go among "thousands of wild cattle, ten-fold more dangerous than the buffalo." Consequently, a few volunteers, fearing unprovoked attacks, took matters into their own hands and shot some bulls in the vicinity of present-day Douglas. Only a few choice cuts were taken from these animals.

22. Sgt. Daniel Tyler, A Concise History of the Mormon Battalion in the Mexican War (Chicago, 1964), pp. 211-213.

On December 5 the Mormon Battalion probably camped on Whitewater Draw (the Americans called it Ash Creek from the predominance of ash, walnut and oak), at the south end of the Sulphur Springs Valley. Tall grass and mesquite dominated the adjacent flats. That night a teamster died, and as Tyler recalled: "The large wolves, probably scenting the corpse, made the night hideous with their howls. Their grum voices almost rent the air only a few feet from our camp."²³

Four days later, after passing the Mule Mountains, the battalion debouched once more into open country. Cooke describes the march to the west: "A vast unbroken slope of prairie was before us....After ascending somewhat, saw a valley indeed, but no other appearance of a stream other than a few ash trees in the midst; but they, with numerous cattle paths, gave every promise of water. On we pushed, and finally, but not until within twenty paces, I saw a fine bold stream! There was the San Pedro, so long and anxiously sought."²⁴ Everywhere, the volunteers saw herds of wild horses, cattle, and pronghorn.²⁵ Deer (species undetermined) were also abundant. As the column turned north down the river, near the site of Lewis Springs, dry wallows made by the wild bulls appeared on all sides. They reminded Cooke of buffalo wallows on the Great Plains. Henry Standage, another of the literary soldiers with this expedition,

23. Tyler, p. 216.

24. Philip St. George Cooke, The Conquest of New Mexico and California (Albuquerque, 1964), p. 144.

25. Robert S. Bliss, "The Journal of Robert S. Bliss, with the Mormon Battalion," Utah Historical Quarterly, LV (1931), p. 80.

observed many signs of grizzlies under the walnut trees that grew in places along the stream.²⁶

The Mormon Battalion was still marching north on December 11 when an encounter took place with bulls close to the future location of the mining town of Charleston. The events are related by a member of the contingent named Keysor:

The land on each side of the Pedro River bottom is a dense thicket of bramble bush, mostly muskeet, with which millions of acres are covered. Those in the Mormon Battalion who had yaugers (jaegers?) were permitted to go a hunting this morning. Shortly after we started, two wounded bulls came jumping into our marching column. One of them knocked down and run over Sergeant Albert Smith, bruising him severely; as soon as they passed the column, they received a volley which brought them to the ground. The Sergeant was put into a wagon and the command marched on; soon descending to the river bottom we halted to water our teams, where another couple of bulls raging and foaming with madness, charged upon us. One of them tossed Amos Cox of Company D into the air, and knocked down a span of mules, goring one of them till his entrails hung out, which soon died; Cox's wound was four inches long and three deep. While these two bulls were performing thus, others stood a few rods off seemingly unable to determine whether they should charge or await the issue; they chose the latter course; meantime, the two bulls retreated, closely pursued. Then our attention was turned to the bulls that were looking on. Some officers yelled "shoot them," others cried, "let them alone;" amid this confusion the wagons and part of the command moved on. The battle was renewed on our side and in a few minutes the enemy lay weltering in their blood. After advancing about half a mile another bull came rushing out of the muskeet thicket, and charged upon the hind end of a wagon, lifting it partly around, and knocking down a mule, but his career was short for all the command now had their muskets loaded, and soon greeted our fierce opponent with a shower of bullets. These bulls were very hard to kill; they would run off with half a dozen balls in them unless they were shot in the heart.²⁷

26. Henry Standage, The March of the Mormon Battalion, ed. Frank A. Golder (New York, 1928), p. 192.

27. Standage, pp. 193-194.

Tyler estimated that between 20 and 81 bulls were killed in the "battle." The element of surprise was with the animals, since they charged from the close-in cover of tall grass.

After leaving the San Pedro, the Mormon Battalion marched straight for Tucson, which it occupied without firing a shot, the Mexican garrison having evacuated the town before the forces sighted one another. The next phase of the journey took the Americans to the Gila, where they found the trail left by Kearny. The column reached San Diego on January 29, 1847, in a routine march, and nothing of significance was added to what was already known of the natural history of southern Arizona.

Cooke summed up what he considered the accomplishments of the expedition: "Marching half naked and half fed, and living upon wild animals, we have discovered and made a road of great value to our country."

During the summer of 1848, a final detachment of American troops crossed Arizona to carry out duties imposed by the Mexican War. Some 500 men of the Second Dragoons, commanded by Major Lawrence P. Graham, set out from Monterrey, Mexico, on a march to San Diego. Major Graham and many of the troopers were drunk much of the time after the column passed Janos, which explains in part why a flash flood near San Bernardino Ranch carried off wagons and mules. This event, probably occurring in either the Animas or Guadalupe Mountains, evoked a comment from Lt. Cave J. Couts, a young West Pointer with the expedition: "We also see a little game occasionally, and his good spirit (the commander of the

expedition) moved him through the influence of whiskey, to leave the harmless deer, antelope, turkeys, etc. unmolested."²⁸

The dragoons somehow retained their coherence for the rest of the journey, but not without some difficult periods. On the Gila River, about 100 miles above its junction with the Colorado, Coutts made the following entry in his journal: "If the game and fishing on the Rio Gila abounded as represented by the pop-gun stump speakers and demagogues of our fair and glorious Republic, the scarcity of provisions would not alarm us but every man who can hunt or fish, and I flatter myself as good if not the best in the command, is constantly out, and enough for one meal is doing remarkably well."²⁹ Coutts went on to observe that the Gila was running like a "wild torrent" over its extensive sand bottom and had overflowed to form "a great number of lakes, ponds, lagoons & c. and nothing else." Although this was written on November 8, no mention is made of the abundant waterfowl reported two years earlier by members of the Kearny expedition.

The Mexican War, which ended with the Treaty of Guadalupe Hidalgo, provided for the cession of Mexico's northern holdings to the United States for 15,000,000 dollars. All of Arizona north of the Gila River was included in the terms. Ratified on July 4, 1848, the Treaty necessitated a long and difficult boundary survey project, initiated a year later.

28. Cave J. Coutts, Hepah, California! The Journal of Cave Johnson Coutts, ed. Henry F. Dobyns (Tucson, 1961), p. 50.

29. Coutts, p. 72.

In the fall of 1849 the first members of the U.S. Boundary Commission reached Arizona after a march eastward from San Diego. The officer in charge, Lt. Amiel Weeks Whipple, was a topographical engineer with orders to survey and map the confluence of the Gila and Colorado Rivers. With him as an escort was Lt. Couts, now in charge of a company of the First Dragoons. Whipple, whose contributions to science in Arizona were just beginning, aroused Couts' scorn by using an ambulance as a base of operations and working in the field under an umbrella.

On October 2, the First Dragoons began construction of Camp Calhoun, a forerunner of Fort Yuma. The fort was intended to protect and assist soldiers and scientists of the Boundary Commission, keep an eye on the Indians, and help Gold Rush emigrants crossing the Colorado River on their way to California. Lt. Couts provides an interesting picture of the terrain near the site of the new fort: "I was endeavoring to reach the bank of the Colorado, and see where the mouth of the Gila was, and previously to reaching this large lagoon, which puts in here, passed through the dry bed of an immense slough, through which most of the water of Colorado must pass when high, and where I also saw cottonwoods not less than a foot in diameter, recently cut down by beaver."³⁰

Since the cost of supplying the new outpost by wagon from San Diego was prohibitive--amounting to 500-800 dollars per ton of provisions--the government decided to investigate the possibility of ships ascending the Colorado as far as the mouth of the Gila. Major General Persifor F. Smith, commanding the Division of the Pacific, in the fall

30. William McPherson, From San Diego to the Colorado in 1849, the Journal and Maps of Cave J. Couts (Los Angeles, 1932), p. 31.

of 1850 ordered Lt. George H. Derby to determine if this could be done. Derby sailed from San Francisco in the 120-ton schooner Invincible on November 1 and rounded Cape San Lucas, Baja California, on the 28th. On Christmas day the ship dropped anchor at Montague Island, off the delta of the Colorado. Sounding and survey operations were begun, and by December 27 the ship was edging upstream along meandering channels until it reached the head of navigation for ocean-going vessels at Howard's Point. Between January 2-11, the crew made short sallies upriver in a longboat, spending some time observing the peaceful Cocopa Indians.

At some point near the tide line, Derby took down some notes on the natural history of the region: "The banks are lined with rushes, cane, small willows and acacia, and occasionally we observed small cotton woods or poplars; the river was full of geese and ducks, and on the banks we observed many deer tracks of unusual size."³¹ A day or so later, a bit upstream, Derby found the banks increasingly more wooded, though with no large trees. Wildlife spoor continued to be abundant, with signs of black bear being particularly conspicuous.³²

On January 13, 1851, Lt. Derby, in charge of a party in a longboat, met Major Samuel P. Heintzelman, commander of Camp Independence,

31. George H. Derby, Derby's Report on the Opening of the Colorado, 1850-1851, ed. Odie B. Faulk (Albuquerque, 1969), p. 46.

32. Ibid., p. 46. Along much of the lower Colorado the dense riparian woodland was often miles in width, and it extended for over 100 miles between the mouth of the Gila and the tidewater region of the delta. Before this gallery forest was largely cleared out, it offered good bear habitat. Forty-niners saw black bears in similar vegetation along the lower Gila in 1849. See: Robert Eccleston, Overland to California on the Southwestern Trail (Berkeley, 1950), p. 227.

a new post across the river from Camp Calhoun. The rendezvous took place 80 miles downstream from the encampment. By February 1, the job of unloading 10,000 rations for the garrison was completed, and Derby started for home. His mission had been a success. In addition to completing accurate soundings and compiling data on winds and weather, he had redrawn an inaccurate map made in 1826 by Lt. Hardy of the Royal Navy. Derby's concluding statement about the Colorado River was to have particular significance for the forthcoming expedition under Joseph C. Ives in 1857-1858: "I have no hesitation in saying that it may be navigated at any season of the year by a steamboat of 18 or 20 ft. beam drawing 2-1/2 to 3 feet of water."

Despite being severely hindered by political infighting in Washington, the work of the Boundary Commission went on. William H. Emory and A.B. Gray, the commission surveyor, overcame desertion, lack of funds, and Indian hostilities to complete the job of running and marking the boundary across southern California in 1849. A year later a scholarly Rhode Islander, John R. Bartlett, was placed in charge of the entire Commission, with orders to proceed to El Paso as a first step. He sailed from New York for Texas in August, 1850, with a retinue that included a detachment of topographical engineers, a group of civilian surveyors, a contingent of mechanics, a collection of field scientists sponsored by learned societies, and an assortment of personal friends and relatives.

Bartlett's caravan crossed Texas at a leisurely pace, with the Commissioner reaching El Paso on December 3 to confer with his Mexican counterpart, General Pedro Garcia Conde, on the joint commission set up by the two countries. Conde was unhappy about the treaty provision

concerning the southern boundary of New Mexico, but Bartlett was conciliatory and willing to compromise. Both men took to the field with their respective parties and began surveying westward after Bartlett agreed to leave Mexico with a more northerly boundary than many Americans would have been willing to settle for (see Fig. 3, p. 224).

The Bartlett party established headquarters at the old Santa Rita copper mines and made progress despite a steady drain of horses and mules to Apache thievery. On the way across Texas, Bartlett had hunted from a four-horse rockaway carriage that he had virtually converted to an arsenal. He observed large numbers of white-tailed deer grazing on the treeless coastal prairies with cattle, and in April, 1851, mule deer appeared well out on the open flats of the Mimbres River valley of southwestern New Mexico. In Bartlett's account: "As we rode rapidly forward, we noticed a herd of about twenty black-tailed deer quietly grazing on the luxuriant grass of the valley. Disturbed...they dashed away over the plain in single file, led by a large buck....Nearer the river, other deer of the same species were seen browsing upon the willows."³³

In the area of the copper mines, grizzlies were numerous, and what Bartlett said about them there applied equally to adjacent eastern Arizona. Some of the bears shot in the Mimbres Range by members of the boundary commission weighed up to 800 pounds. Bartlett remarked that grizzlies were usually dangerous to approach, unless there were several well-armed men in a group. Even then, a safe place to retreat to should be picked out, if available. He also knew of several grizzlies that

33. John R. Bartlett, Personal Narrative of Explorations and Incidents, 2 vols. (New York, 1854), v. 1, p. 221.

received 12 or more rifle or pistol balls before falling, but one particularly large bear was brought down by a single shot from a well-aimed rifle, the ball passing the length of the animal, killing it instantly.

During a crossing of Guadalupe Pass that spring, the party sighted two bears on a hillside above Cooke's 1846 "wagon road." Several horsemen gave chase, but the grizzlies--"so large as to be taken at first for mules"--soon outdistanced their pursuers and escaped. Bartlett made note of the fact that this event took place in a region dotted with evergreen oaks and juniper, with a good cover of grass on the open patches.³⁴

Toward the end of the summer, Bartlett was leading a surveying expedition to the upper Gila, when another grizzly encounter took place, probably just east of the Peloncillo Mountains and close to the present Arizona-New Mexico state line. The group was resting on a dry hillside covered with small oaks, when, in Bartlett's words:

While seated on a rock...we were startled by the appearance of a huge grizzly bear, about fifteen rods distant, advancing in our direction. He discovered us at the same moment we did him, and seemed quite as much alarmed, for he suddenly sheered and made his escape at full speed along the base of the hill. We ran for our arms, which we had left with our horses a few yards below; but before we could get them he was too far off for a shot. He crossed directly in the rear of the train, when he made for the hills, followed by several of the party. Coming to a steep ascent, he ran up it with as much ease apparently as he did over level ground, and soon disappeared. The bear has a great advantage over his pursuers in this respect, as his large and pliable feet, and huge claws, enable him to climb up the steepest acclivity with the same facility as a cat. The color of this animal was of a silvery gray, with a darker or a black stripe down his back.³⁵

34. Ibid., v. 1, p. 252.

35. Ibid., p. 363.

On the first expedition out from Santa Rita del Cobre in the spring of 1851, Bartlett headed southwest, in part along the route of Cooke's wagon road. The vast grasslands of southwestern New Mexico and northern Sonora seemed largely devoid of game animals except for an occasional herd of pronghorn, "unapproachable by the hunter for the want of a tree or shrub behind which he may advance," in Bartlett's words. He was impressed by the beauty of the Animas Valley, a treeless plain separated from the San Bernardino Valley (now in Cochise County, Arizona) by the rugged Guadalupe Range: "So level was this valley, and so luxuriant the grass, that it resembled a vast meadow; yet all its rich verdure seemed wasted, for no animals appeared, except a few antelopes and several dog towns."³⁶

After emerging from Guadalupe Canyon, the party crossed a stretch of desert plateau before reaching the area of San Bernardino Ranch. Bartlett described the open country encompassing the ranch as a lush prairie some eight or ten miles long and a mile wide. However, on the west side of the San Bernardino Valley the expedition found mesquite thickets and extensive stands of ocotillo.³⁷ Like the Mormon Battalion five years earlier, Bartlett's contingent saw large numbers of wild cattle, usually in small herds of half a dozen or so. Bartlett hesitated to try a shot, since he seemed to be carrying only a double-barreled shotgun and some revolvers whenever he came across them.

The surveying party pushed on to Black Water Creek, at the southern end of the Sulphur Springs Valley and near the site of Douglas.

36. Ibid., v. 1, p. 248.

37. Ibid., p. 256.

Here, pronghorn reappeared in abundance on the grassy plains.³⁸ Bartlett shot a wolf from his carriage door and reports seeing a grave that had been excavated by "wolves" and the clothing scattered (see page 60). He complained about their "incessant yelping" at night, which, in combination with the bellowing of wild bulls, made sleep hard to come by. In 1851 Bartlett found what he called wolves consistently abundant on the plains and valleys of southern New Mexico, southeastern Arizona, and northern Mexico.³⁹ Many of the animals referred to were undoubtedly coyotes, but the presence of Canis lupus is indisputable from a number of 19th century accounts of this general region. Between 1849 and 1853 border survey parties in what is now southeastern Arizona and northern Sonora found Mexican ranchers using strychnine in fresh livestock kills. Many wolves were disposed of this way, and on occasion mountain lions were poisoned when they returned a second time to visit a carcass.⁴⁰

On July 19, A.B. Gray, the official American surveyor, arrived at the copper mines and immediately condemned the boundary arrangement that Conde and Bartlett had worked out. Convinced that the United States had been duped in that Bartlett had surrendered the right of way for a southern transcontinental railroad line, Gray halted all surveying until a new conference could be arranged with Conde. Gray was backed up in his objections by Colonel James D. Graham of the Topographical Engineers, who

38. Ibid., v. 1, p. 248.

39. Ibid., v. 2, pp. 199, 322, 555.

40. A.S. Leopold, Wildlife of Mexico, p. 480.

had arrived at El Paso to begin work as "chief astronomer and head of the scientific corps" of the Boundary Commission.

Commissioner Bartlett started once again from the Santa Rita copper mines in late August for an area south of the Gila River where another meeting with Conde could be worked out. Among the 57 men in the column were Lt. Whipple and A.B. Gray, both watching Bartlett with suspicion. Colonel Graham followed the main party with a separate contingent of 13 men.

Early in September, Bartlett's group entered what is now Arizona after passing the Stein's Peak area. They camped in the San Simon Valley, at a cienega called Sauz, "the willow marsh." Speaking of the valley, Bartlett wrote: "Here was a great abundance of water, which from the rushes that grew on its margin, I suppose to be permanent. Grass was also plenty here." He referred to the general aspect of the valley as being "unbroken by a hill or a tree."⁴¹

The expedition then crossed the Chiricahua Range and descended into the Sulphur Springs Valley, which was also treeless, "extending in both directions from sixty to eighty miles." Colonel Graham, who was close behind with his small command, rounded the Chiricahuas on the north, reaching the valley on the same day, September 5. He describes the event: "We descended into a most beautiful level plain, abounding with delicious green grass as far as the eye could reach, without any

41. Bartlett, v. 1, pp. 255-256. Today, the San Simon Valley is dry, being covered to a considerable degree with vegetation typical of the Chihuahuan Desert.

stinted shrubbery, as is generally the case on these plains, but interspersed with the magay."⁴²

Meantime, Bartlett had discovered Conde's camp near Willcox Playa and had a conference with him on September 8. After the two parties separated, the Americans continued to the west, crossing the Dragoon Mountains into the San Pedro Valley, probably following Dragoon Wash. "On emerging from the arroyo," Bartlett said, "we entered a plain, thickly overgrown with large mezquit bushes, but destitute of grass."⁴³ We looked in vain for a line of trees, or of luxuriant vegetation to mark the course of the San Pedro--when all of a sudden we found ourselves upon its banks. The stream...was here about twenty feet across, about two feet deep, and quite rapid. The water, though muddy, was pleasant to the taste."⁴⁴ Bartlett felt that irrigation would be impracticable in the San Pedro Valley because the banks, at least on some stretches, were from eight to ten feet high.

In order to cross the river, the party had to level the banks on both sides and let the wagons down by hand. While this was going on, the whole surface of the valley became deluged in a torrential rain. Colonel Graham's surveying contingent came up from behind, and his

42. J.D. Graham, The Report of Lieutenant Colonel Graham on the Subject of the Boundary Line Between the United States and Mexico (Washington, 1852), p. 30. In speaking of magay, Graham was probably referring to soaptree yucca, Yucca elata, a conspicuous dominant on the desert grassland of southeastern Arizona.

43. Bartlett, v. 1, p. 377. Bartlett's comment about the lack of grass is interesting, in view of the fact that the summer rainy season had just ended, and chroniclers were commenting on the dense growth of grasses in adjacent valleys.

44. Ibid., p. 377.

observations of the San Pedro agreed with those of Bartlett. In Graham's words, "The San Pedro runs here through a soft, alluvial soil, and its rapid current has worn a deep bed for it, leaving steep banks on either side."⁴⁵

Bartlett's train left the San Pedro to ascend an undulating plateau, similar, as he put it, to the "western prairies." It was covered with short grass, and in the depressions, sometimes 50 or even 100 feet below the plain, were ponds, luxuriant grasses, and groves of evergreen oaks. The Americans spotted herds of wild horses, and deer and pronghorn were frequently seen.⁴⁶

Turning south, the column moved up the San Pedro to a point opposite the south end of the Whetstones, when it turned west again. Since he makes no mention of finding water, it seems likely that Bartlett missed Babocomari Creek, passing instead between the Whetstones and the Mustang Mountains, using the corridor known today as Rain Valley. His immediate goal was to return a Mexican girl kidnaped by Indians to her home village of Santa Cruz, Sonora, an adobe hamlet on the Santa Cruz River at the south end of the San Rafael Valley.

45. Graham, p. 36. As early as the 1850's, the channeling process was thus evident on the San Pedro River. Where there was no trench, the water table remained high and the bottoms marshy. The soil was waterlogged and too poorly aerated to support anything most of the time but marsh vegetation dominated by grass. The presence of an arroyo on the river meant that the bottom of the trench fixed the elevation of the water table. Between the surface of the water and the top of the bank there was a soil layer sufficiently well drained to support mesquite and other plants whose roots require aeration and cannot tolerate water-logging. See: Hastings and Turner, The Changing Mile, p. 36.

46. Bartlett, v. 1, pp. 383-384.

Colonel Graham, meanwhile, continued farther up the San Pedro, finally heading west on a course that probably skirted the north end of the Huachucas. While still near the river, Graham and two other men spurred their horses in pursuit of some "fine, large, wild cattle." One of them, a jet black bull, wheeled about as if to charge, then changed its mind and fled. The horses were unable to catch up with the cattle. As compensation, somewhere in the foothills of the Huachucas, a member of the surveying party shot a large black bear, "which was a very welcome addition to our rations."⁴⁷

Graham's party was now searching for Cooke's old trail leading to Santa Cruz. Northwest of the Huachucas they came out onto another treeless grassland on which Graham reported seeing a "great many antelope" grazing.⁴⁸ His comments on this plain, bordered by the Whetstones on the east and the Santa Ritas on the west, bear repeating: "This whole valley was covered with the most luxuriant grass we had anywhere seen. Our mules fed upon it as they traveled, for it was from three to four feet high in many places....We encamped in the valley, without water. The grass was, however, so green and fresh that our mules did not appear to suffer....We were obliged to keep close to the western margin of the valley, because it began to be quite boggy in the middle."⁴⁹

47. Graham, p. 36.

48. Ibid., p. 37.

49. Ibid., p. 38. The valley has no official name, though local residents sometimes refer to it as the "Sonoita Valley."

Farther ahead, the Bartlett group had crossed the valley passing close to the modern site of Sonoita, Santa Cruz County. Near the southeastern foothills of the Santa Rita Range, they picked up the headwaters of Sonoita Creek. Bartlett speaks of reaching the stream through a marsh with grass growing head high, of an abundance of grass along its banks, and of a gallery forest of giant cottonwoods. Sonoita Creek was closely hemmed in by an understory of willows, making it difficult to reach water. Large mesquites and oaks were also present. Where the pass between the Santa Ritas and the Patagonia Range becomes a defile, there were "gigantic cotton-woods, with an undergrowth of rank grass, weeds, and jungle, rising above our heads even when on horseback. Among them grew a vine, binding all together; so that it was impossible to force a passage through."⁵⁰ The only way to negotiate the swampy tangle was to use axes. It was hard work, but somewhere near Calabasas, Bartlett took the time to measure the girth of a cottonwood in a grove of the largest trees of the species he had ever seen. Its circumference five feet above the ground was 28 feet, and its limbs spread "full forty feet on every side." Bartlett found turkey sign along the creek here and shot a bird in one of the draws leading down from the Santa Ritas.⁵¹

Unable to find any trace of a wagon road to Santa Cruz, Bartlett decided to return to the San Pedro Valley and try again. This time he stayed south of the Mustangs and came upon Babocomari Creek, which flows east into the San Pedro. Bartlett wrote: "The valley of the Babocomari, is here from a quarter to half a mile in breadth, and covered with a

50. Bartlett, v. 1, pp. 384-389.

51. Ibid., pp. 390-391.

luxuriant growth of grass. The stream, which is about twenty feet wide, and in some places two feet deep, winds through this valley, with willows, and large cotton-wood trees growing along its margin."⁵² Bartlett stated that there were about 40,000 head of cattle on the ranch called San Ignacio del Babocomari when it was abandoned to the Apaches in the 1840's. At one time it embraced 200,000 acres of the grasslands west of the Whetstones and Huachucas.⁵³ As the party proceeded eastward, John C. Cremony, a member of the contingent, shot a young mountain lion out of a cottonwood tree growing on the bank of the stream.⁵⁴

Graham continued to shadow Bartlett's train, and on September 18 he reached the headwaters of Babocomari Creek. Wild horses and herds of pronghorn were seen several times during the day.⁵⁵ Two days later the Graham Party met a group of Mexicans hunting wild cattle as a beef supply for the garrison at Santa Cruz. The animals were roped by the horns, fastened to the heads of tame livestock, then driven into a corral to be sold to the government.

52. Bartlett, v. 1, p. 396.

53. Ibid., p. 397. A column in the Arizona Citizen (Tucson) for June 21, 1873, consists of an interview with one Mariana Diaz, reputed to be over a hundred years old. In reminiscing about rangelands near Tucson in the early 19th century, she said: "The country was covered with horses and cattle and on many of the trails they were so plenty that it was quite inconvenient to get through the immense herds. They were only valuable for the hides and tallow, and a good sized steer was only worth \$3."

Before 1848 no cattle at all came from the east. Herds were driven to California after the Gold Rush, but many were seized by the Apaches, who treated cattle as legal tender. Grass near the Santa Cruz River was excellent, but cattle were exhausted and skeletonized before they reached the Gila River. See Wagoner, p. 51.

54. Bartlett, v. 1, p. 393.

55. Graham, p. 37.

Bartlett had better luck on his second attempt to find a route to Santa Cruz, and from the descriptions of the terrain it seems likely that he led his men down the west side of the Huachucas and over the Canelo Hills to the San Rafael Valley. What follows probably refers to the view of this valley from Canelo Pass:

A few miles brought us to the puerta, or gate in the mountain; passing which, we emerged into a very broad and open plain of remarkable beauty. From the elevation where we first saw this valley, the prospect was exceedingly picturesque. Around us grew the maguey, the yucca, and various kinds of cacti, together with small oaks; while beneath us, the valley spread out from six to eight miles in width, and some twelve or fifteen in length. Unlike the desolate and barren plains between the mountain ridges, which we had crossed between the Rio Grande and the San Pedro, this valley was covered with the most luxuriant herbage, and thickly studded with live-oaks; not like a forest, but rather resembling a cultivated park. While the train was passing down the mountain, I stopped with Mr. Pratt to enjoy the scene, which he hastily transferred to his sketch book.⁵⁶

After leaving Santa Cruz, his humanitarian mission accomplished, Bartlett decided to push on deep into Mexico in search of mules and provisions. He found no supplies and came down with typhoid fever. His loyal friend Dr. Webb, an expedition member, nursed him back to health, whereupon he continued south to Acapulco, where he caught the steamer Oregon, bound for San Diego. His field party followed on foot, suffering considerable hardship while crossing the deserts of Sonora and southern California. They arrived in San Diego on February 11, 1852, three days after Bartlett.

Before organizing the return trip to El Paso, Bartlett took time off to explore California, making notes on the Indians, gold prospectors, and geysers. By the end of May he was ready to move. The old beaver

56. Bartlett, v. 1, p. 401.

trapper Antoine Leroux acted as guide for the expedition, and Colonel Lewis S. Craig, who was to be murdered by deserters in the Mohave Desert, commanded the military escort.

The Commission reached the Colorado River in June, and Lt. Whipple was detached to complete a survey of the Gila River, begun a year earlier but left incomplete because of a shortage of funds. Near Pilot Knob, which is just below the confluence of the two rivers, Bartlett recorded his impressions of the vast riparian jungle, which was about two to four miles wide on the Colorado and slightly wider on the lower Gila. The gallery forest on the Gila consisted of cottonwoods and willows near the river, with a mesquite bosque behind them. These three species formed the almost impenetrable forest on the Colorado.⁵⁷ Bartlett noticed that the Gila itself was diminutive and unnavigable except at its mouth.⁵⁸

The main expedition, including Bartlett and the escort, left Fort Yuma and worked its way up the Gila toward the Pima villages. In the vicinity of Painted Rocks (where Kearny's little army saw a flock of bighorn in 1846) Antoine Leroux shot a buck mule deer in the dense thickets along the river. Deer and pronghorn were often seen on the

57. Bartlett, v. 2, p. 160.

58. Ibid. A year earlier, in June, 1851, Lt. Thomas W. Sweeny and nine men established Camp Independence, on the east bank of the Colorado. Travelers told him at the time that the Gila River had completely dried up in the area of the Pima Indian villages, where extensive irrigation was practiced. See: Thomas W. Sweeny, Journal of Lt. Thomas W. Sweeny, 1849-1853, ed. Arthur Woodward (Los Angeles, 1956), p. 120.

Gila, but, as Bartlett tells us, the wagons alarmed them, and the hunters had to go out well in advance of the train in order to succeed.⁵⁹

At the Pima villages the Commission turned south and headed for Tucson and the Santa Cruz River. An eastward route then took them through Guadalupe Pass. Here, Bartlett recorded a conversation with some members of an emigrant train who had weathered a recent brush with a grizzly. Either in the Guadalupe Range or just to the east in the Animas Mountains, the bear was sighted and wounded by hunters sent out from the main column. The bear limped off and vanished into a thicket. One of the men followed too closely, blundered into the enraged animal, and was severely bitten in the leg. The man stabbed the grizzly, and both antagonists rolled off a nearby ledge. The fall separated them, with the bear once more attempting to escape. Though bleeding heavily, the injured hunter joined his companions in tracking their quarry, which was eventually overtaken and shot to death.⁶⁰

The Commission expedition reached El Paso on August 17, 1852, after crossing northern Mexico. Bartlett was jubilant and lost little time in spreading the news that he had traveled 1100 miles, as if this in itself were an accomplishment. Actually, there was very little to show for the 200,000 dollars the Commission had spent other than Lt. Whipple's survey of the Gila River.

Since the Commission's field trips were not accompanied by a competent naturalist whose primary duty was to observe and collect the fauna of the region, the only written account of wildlife in what is now

59. Bartlett, v. 2, p. 197.

60. Ibid., pp. 335-336.

Arizona is Bartlett's. His concluding summary: "In a region as barren as the greater portion of that traversed, animal life would hardly be expected to abound. Nevertheless, there was no spot, however barren, or however distant from water, where rabbits and wolves were not seen.

(Here again, Bartlett, like so many of his contemporaries, seldom bothered to distinguish between the coyote and the gray wolf.)⁶¹ Bartlett goes on to list a number of large mammals found in the mountains and in the riparian growth along rivers and creeks. Included were: jaguar, mountain lion, ocelot, black and grizzly bear, pronghorn, coyote, and "the large wolf" Canis lupus.⁶²

Bighorn were also seen, and Bartlett makes the erroneous observation that "the elk is not found south of the Gila." Beaver were numerous on the Gila and its northern tributaries, having made a good recovery from the onslaught of the mountain men some 20 to 25 years earlier. Both species of deer were abundant, especially in mountainous regions and along the Gila, "but nowhere as common as in Texas."⁶³

Finally: "On the whole, game, both animals and birds, was scarce throughout the broad regions traversed by us, except in the mountain districts, where it was abundant."⁶⁴

Once in El Paso, Bartlett learned that A.B. Gray had been dismissed as Commission Surveyor and replaced by William H. Emory, since promoted to Major. Emory had taken his new post in November, 1851, to

61. Bartlett, v. 2, p. 555.

62. Ibid.

63. Ibid., p. 562.

64. Ibid.

find half the Commission, under Colonel Graham (who had returned to El Paso when Bartlett undertook his jaunt into Mexico) sitting tight, with the rest somewhere in the field with Bartlett. He described the general condition of the Commission thus: "no money, no credit, subdivided amongst themselves and the bitterest feeling between the different parties."

Bartlett soon found the following charges arraigned against him: mismanagement of public funds, disregard for the health, comfort, and safety of those under him, and general negligence. Above all, there was clamor in Washington for his political head as a result of the Bartlett-Conde agreement, in which 6000 square miles of land needed for the proposed railroad were given over to Mexico. Finding that future appropriations for the Commission had been halted, Bartlett had no choice but to sell the field equipment and the animals, disband the crews, and retire from the field.

The Boundary Commission was disbanded on December 22, 1852, and Bartlett and Emory returned to Washington, the former never to be a public figure again. But the controversies he aroused led directly to the Gadsden Purchase of 1853. The Bartlett-Conde agreement planted the seeds of a bitter fight in Congress between Whigs and Democrats, or, in other words, between factions advocating conciliation and aggressive expansionism at Mexico's expense. There was also danger that a new boundary dispute involving the two countries might grow out of control. Consequently, in March, 1853, President Franklin Pierce sent James Gadsden of South Carolina to Mexico to settle all areas of disagreement. On December 30 a treaty known to history as the Gadsden Purchase was signed. The United

States paid Mexico ten million dollars for the area that includes most of Arizona south of the Gila River, giving final delineation to the present international boundary.

With the expansionists in Washington satisfied, the next step was to survey the best route for the proposed new railroad. Lieutenants John G. Parke and George Stoneman received this assignment, with orders to run the 32nd parallel across southern Arizona. In January, 1854, they started, working from California to Fort Yuma, then east up the Gila to the Pima villages. The surveyors followed a cut-off version of the emigrant trail called Nugent's wagon road, which led to Tucson, angled southeastward to the Chiricahuas, crossed the salt playas of New Mexico, finally linking up with Cooke's old wagon road as it led south after leaving the Rio Grande (see Fig. 4, p. 225).

In the spring of 1855 Lt. Parke again surveyed the 32nd parallel between the Pima villages and the Rio Grande. This time he located a new pass between the base of Mount Graham and the Chiricahuas. He was accompanied by a naturalist, A.L. Heermann, who had also gone along on the first expedition. However, Heermann's observations were largely limited to a cataloguing of specimens. He did make note--like so many before him--of the incredible abundance of Gambel's quail along the Gila and in the Sonoran Desert. The birds seemed to actually prefer the haunts of man, being common along roads and in cultivated fields, particularly around Tucson.⁶⁵ He also observed that the scaled quail was not seen west of the mouth of the San Pedro. On the grasslands of

65. A.L. Heermann, "Zoological Report," Reports of Explorations and Surveys, X (Washington, 1859), p. 19.

southeastern Arizona the species preferred the vicinity of prairie dog towns, where the vegetation was thinned out, perhaps, in his words, offering "the attraction of some favorite insect."⁶⁶

Lieutenant Parke made some observations of the Gila River as it appeared in 1855. Near the Pima villages it formed a broad plain, much of which was covered with dense groves of mesquite. Upstream, at a point just west of its confluence with the San Pedro, the Gila occupied the entire bottom of its gorge, spreading out in places to a width of 50-100 yards. There was ordinarily a single channel, but side drains created sloughs in seasons of rain or snow melt. The water was clear and palatable, flowing with a moderate current over an alternating bed of sand, pebbles, and rock. In July, the stream was 20 feet wide and 12 inches deep near the mouth of the San Pedro. As on the lower Gila, the banks here were fringed with cottonwood and willow, with mesquite at the base of the terraces.⁶⁷

The surveyors moved up the San Pedro Valley and found the terrain and the river anything but uniform. In places the valley was grassy and open, with inviting meadows. The bed of the river curved through these open bottoms, sometimes a few inches below the level of the meadow, at other places much deeper. At Tres Alamos Parke found the stream 15 inches deep and 12 feet wide, flowing rapidly over a light, sandy bed beneath nearly vertical banks some 15 feet high.⁶⁸ In most

66. A.L. Heermann, v. X, pp. 19-20.

67. John G. Parke, Reports of Explorations and Surveys, VII (Washington, 1857), pp. 23-25.

68. Ibid.

areas, timber did not mark the course of the San Pedro, and the stream tended to spread out over a considerable expanse where the bed was nearly flush with the banks. There were a few places where the banks supported a dense growth of cottonwood, willow and underbrush. The flow of water was not continuous, sometimes disappearing completely, to rise a few miles farther as a limpid stream.⁶⁹

When the surveying party crossed the Galiuro Mountains, Parke commented that they resembled the Coast Range of California. The slopes were open and covered with a vigorous growth of grama grasses, while the ravines contained oak, ash and walnut. The party often saw herds of pronghorn and mule deer in the foothill region.⁷⁰

In August, 1854, Major William H. Emory was appointed Commissioner and Chief Astronomer of a new Commission set up to survey the Gadsden Purchase boundary. One of his primary goals was to produce the first scientific description of the entire Southwest as a physical region. He planned to start with an outline map, adding the findings of scientists in all disciplines.

Emory divided the survey into two parties, one under himself to work west from the Rio Grande, while the other, commanded by Lt. Nathaniel Michler, would start east from San Diego. The two halves would meet at the 111th meridian, approximately where Nogales stands today (see Fig. 4, p. 225). Accompanying Lt. Michler was the artist, surveyor and collector Arthur Schott. Emory's contingent included two

69. Ibid.

70. Ibid.

naturalists, J.H. Clark and Dr. C.B.R. Kennerly, a member of the Whipple expedition of 1853-1854 across northern Arizona.

The survey went smoothly, with no dissension or Indian troubles. On October 14, 1855, it was officially concluded.

Emory's journal lacks the literary flair shown by Bartlett, and there are few detailed accounts of wildlife. However, he did have an eye for landscapes and plant communities, his impressions beginning at the San Bernardino Valley when the surveying party negotiated Guadalupe Pass in the spring of 1855. Near the abandoned San Bernardino hacienda Emory commented on the numerous springs, spreading out into "rushy ponds."⁷¹ He added: "The valley is thickly covered with a growth of coarse grass, showing in places a saline character of soil. The timber growth is confined to a few lone cotton-wood trees scattered here and there."⁷² Some 30 miles to the west, right on the international border where Agua Prieta, Sonora, is today, Emory noticed that the land was low and marshy, with no constant stream, but a considerable expanse of saline flats and pools of rain water. As a further observation: "Extensive lagoons are said to occur in this valley a short distance south of where the road crosses."⁷³

Near the head of the San Pedro River, on the boundary, Emory remarked that the valley "is everywhere carpeted with fine grama grass,

71. William H. Emory, Report on the United States and Mexican Boundary Survey, 2 vols. (Washington, 1857), v. I, p. 17.

72. Ibid.

73. Ibid.

the nutritious quality of which is exhibited in the well-conditioned character of the numerous wild horses and cattle that luxuriate over this favored region."⁷⁴ Close to the river he saw "a close sward of grama grass, giving a peculiarly smooth shorn look to the general face of the country."⁷⁵ He also had this to say about the approaches to the upper San Pedro:

At this point (on the international boundary), approaching from the east, the traveller comes within a mile of the river before any indications of a stream are apparent. Its bed is marked by trees and bushes, but it is some sixty or one hundred feet below the prairie, and the descent is made by a succession of terraces. Though affording no very great quantity of water, this river is backed up into a series of large pools by beaver-dams, and is full of fishes. West of the river there are no steep banks or terraces, the prairie presenting a gentle ascent.⁷⁶

The notes on the fauna of Arizona, primarily from Dr. Kennerly's journal, are best presented by species, since the day-to-day chronology of the expedition is too uneven in its details to permit a sequential narrative approach.

Gambel's Quail: Kennerly reports this species as being extremely abundant in the Rio Grande Valley. Interestingly, he says that these quail were seen only occasionally in Arizona, with no sightings at all by the time the surveyors had reached the Colorado River.⁷⁷

Turkey: No reference to the natural history of wild turkeys is made by any member of the Boundary Commission. It is interesting to note

74. William H. Emory, v. I, p. 17.

75. Ibid., p. 18.

76. Ibid., p. 99ff.

77. C.B.R. Kennerly, "Zoological Report," Reports on Explorations and Surveys, 1853-1854, IV (Washington, 1856), p. 33.

that a year later, in 1856, Captain Richard S. Ewell reported seeing turkeys on the Santa Cruz River within sight of San Xavier Mission.⁷⁸

Beaver: The particular naturalist who took notes on this species was not identified. He refers to the abundance of beaver on the Gila and, especially, the Colorado Rivers in 1855. "On a reconnoissance down the latter river to its mouth, we passed miles and miles of river banks which are inhabited, fortified, and covered over by the labor of this singular animal." The beaver's lodge formed a "chaotic heap of drift wood, rush, and mud." No observations were made of construction activities.

Beaver were observed at an elevation of 5000 feet in Guadalupe Canyon. The lowest point was "about 30 miles above the mouth of the Colorado, where the last timber gives way to those unbounded canebrakes and salt marshes which border the head of the Californian Gulf."⁷⁹

Gray Wolf: This species is described in Dr. Kennerly's notes: "Near Santa Cruz (in Sonora on the Santa Cruz River, about seven miles south of the border station of Lochiel, Arizona), we found this animal more common than we had observed it elsewhere on our route. It, as well as the coyote, were often destructive to the flocks around the village. It often, too, attacks the young cattle, both domestic and wild of this region, which are forced to succumb to its great strength."⁸⁰

Grizzly Bear: The Boundary Survey party found grizzlies abundant in all the mountainous regions west of the Rio Grande. Dr. Kennerly

78. Arizoniana, v. 7, p. 25.

79. Emory, Boundary Survey, v. 2, Part II, p. 41.

80. Ibid., p. 15.

collected one at Nogales. Frontiersmen told the naturalists that these bears often left the mountains in late summer to search on the open plains for a plant that ripens at that time. J.H. Clark was unable to find out what the plant was, but he noticed that Southwestern grizzlies did move down from the foothills in the fall when acorns, juniper berries and pinyon nuts were no longer available.⁸¹

Overtured rocks and loose soil torn from the roots of junipers in search of insects and small animals was characteristic grizzly sign in the mountains. Clark made note of the fact that a grizzly easily out-distanced a mule in rough country. The species usually tried to avoid man, but grizzlies often came into the Commission camp after dark to smell out discarded food scraps.

Dr. Kennerly felt that the animal commonly called "brown bear" by frontiersmen on the boundary was really the grizzly. He found grizzlies particularly numerous in the San Luis Range (near Guadalupe Canyon), the Guadalupe Mountains (part of what he called the "Sierra Madre") and around Nogales. These bears subsisted largely on acorns, walnuts, pinyon nuts, "the fruit of an ericaceous shrub" (probably manzanita), and such animals as they could capture. The following anecdote, related by Dr. Kennerly, took place when the survey team had crossed the Guadalupe Range and had descended into the Animas Valley, heading east:

Near the highest crest of the Sierra Madre, called 'San Luis' mountains, I had an opportunity to witness a rare butchery, by which, in less than one hour, a whole family of grizzlies was killed, without one offering the slightest resistance. It was about noon on the 11th of October, 1855, when our long trains, coming from the Guadalupe Pass, in the Sierra Madre, towards the San Luis springs, met on the plains these

81. Emory, Boundary Survey, v. 2, Part II, p. 28

unexpected mountaineers. When surprised, they were lying on the ground not far from each other digging roots. The position in which they performed this work naturally caused long narrow strips of grassy lands to be turned up and searched as if it had been done by a bad plough. I could not learn what kind of roots they had been looking for. After taking off the thick skin of these root-diggers, we found them all in a very poor condition, and this may account for the want of that resistance which they failed to offer. The ungrizzly-like behavior of these poor brutes induced the majority of our party to doubt their being grizzlies at all. They evidently had descended from the surrounding mountains, where they have their stronghold in the rough trachytic recesses of this part of the Sierra Madre, the highest crest of which is densely crowned by a dark growth of pines. There their fruit stores had probably given out in the late season, and they were obliged to resort to roots to satisfy their hunger.⁸²

The grizzlies of the border country were mainly inhabitants of the oak woodland, ranging as high as the xeric fringe of the pine belt.⁸³ This brushy foothill region was developed early for livestock, a fact that hastened the extermination of these bears.

Jaguar: In 1855 Dr. Kennerly noted that only one jaguar was seen west of El Paso by the Boundary Commission. This was at Guadalupe Canyon, the gateway to the San Bernardino Valley. He continues thus: "However, we were assured by many persons at Santa Cruz that it was very common near that village, in the valley of the river of the same name." Kennerly remarked that jaguars preferred the impenetrable

82. Emory, Boundary Survey, v. 2, Part II, p. 29. Kennerly is referring to the San Luis Range, which straddles the Chihuahua-New Mexico border to tie in with the south end of the Animas Mountains. In 1892 Edgar A. Mearns reported grizzlies still present in the San Luis Range. An American living in Mexico found grizzly tracks there in 1948, and as of 1959 A. Starker Leopold believed that it was "barely possible" that the species hung on in these mountains. See: A.S. Leopold, p. 420.

83. A.S. Leopold, p. 422.

thickets of river bottoms, where they preyed on deer, mustangs, and wild cattle as they came to water.⁸⁴

Mountain Lion: Lions were seen by Emory's party as far west as Nogales. "Those panthers that we have observed," says Kennerly, "were always found in the most solitary places, generally where there were thick bushes, and in the vicinity of rocky spots, affording canyons for secure concealment, and in which to bring forth their young. They always manifested great shyness, and fled rapidly at the sight of us, rendering it difficult to get within gun shot of them."⁸⁵

Kennerly's reports indicate that mountain lions not only inhabited rimrock country, but also suitable areas in river valleys-- wherever deer were abundant. Like the jaguar, lions found a liking for dense cover along streams. In 1855 ranching was not extensive enough to eliminate the mountain lion from flood plain woodlands.

Members of the Boundary Commission noticed that Mexican ranchers sometimes suffered heavy losses from lion predation on colts and calves. The usual retaliation was to poison the carcasses with strychnine, but wolves and coyotes were generally the victims in this case.⁸⁶

Arthur Schott, who accompanied Lt. Michler's group on the journey east from San Diego, commented on the presence of the mountain lion in the Sonoran Desert: "The habits of the puma seem to be nocturnal, and it is during the hours after dark that his mournful note is heard

84. Emory, Boundary Survey, v. 2, Part II, p. 7.

85. Ibid., p. 6.

86. Ibid.

resounding through the solitude of the deserts. The note listened to once attentively is apt to make a deep lasting impression.

"The note itself is often several times repeated, with intervals of from two to four minutes. As night time advances, the cry is heard but rarely."⁸⁷

Javelina: Kennerly's journal elaborates on the abundance of javelina in Texas, but apparently the species evaded detection most of the time in Arizona. Dr. Kennerly states that javelina were seen near the ruins of San Bernardino Ranch, just west of Guadalupe Canyon.⁸⁸

Mule Deer: Naturalists with Emory's party did not find the mule deer very common along the border, except in the San Luis and adjacent ranges. Dr. Kennerly remarked on the fact that this species was quickly thinned out by hunting, whereas the whitetails in a given area continued to hold their own. In his words: "In a few weeks, although at first equally as numerous, if not more so, than the latter, it disappeared almost entirely, while the red white-tailed deer became only a little more shy, but its numbers did not seem to diminish."⁸⁹ Between the "Sierra Madre" (Kennerly probably means the Guadalupe Range) and the area of Nogales, a region of mesquite-grassland and evergreen oak savanna, the surveyors did not see any mule deer, although Kennerly refers to large numbers of white-tailed deer and pronghorn.⁹⁰

87. Emory, Boundary Survey, v. 2, Part II, p. 6

88. Ibid., p. 50.

89. Ibid., p. 51.

90. Ibid.

White-tailed Deer: The boundary surveyors under Major Emory observed white-tailed deer in all the mountains between El Paso and Nogales. They were particularly common in the San Luis and Guadalupe Ranges, the two areas where Dr. Kennerly also saw mule deer in considerable numbers.⁹¹

Whitetails were abundant in all the stream valleys along the route as well. Dr. Kennerly again:

In the valley of the Santa Cruz river and the adjacent country we found them in such numbers as to influence the belief that a few skilful hunters might have supplied our entire party with fresh meat. The Mexicans of this region, having but few fire-arms, and being very much afraid of the Indians, do not often hunt them. Indeed, thirty miles west of the village of Santa Cruz, these animals seem to be so unaccustomed to the sound of a gun that we have known them, when the hunter was concealed, to be fired at several times before becoming sufficiently alarmed to take flight.⁹²

Near the present site of Nogales, Kennerly recorded the fact that whitetails fed on the hillsides in the early morning in June, withdrawing to dense shrubbery along streams about ten o'clock, when the sun became hot. At this time "they could be killed as easily as rabbits, by the hunter passing through the undergrowth with a gun charged with buck-shot. They would rarely spring from their concealment until approached within twenty paces."⁹³

Pronghorn: West of the Pecos, Kennerly found pronghorn common on "open and naked prairies" in 1855. It was also "no rare occurrence," in his words, to come across them in mountain valleys. Where pronghorn were most numerous Kennerly noticed an almost complete absence of deer, which he attributed to a lack of water and lush grasses.

91. Emory, Boundary Survey, v. 2, Part II, p. 50

92. Ibid., p. 51.

93. Ibid.

On the plains along the border Kennerly reported that pronghorn gathered in herds varying in size from eight or 10 animals to 300 or more. The species was just as abundant west of the Rio Grande as east of it, being especially common in northern Sonora, where pronghorn seemed less shy and "more easily captured" than elsewhere.⁹⁴

Lt. Michler, who had come up the Gila to the Pima villages, then south up the Santa Cruz River, met Emory's party in the summer of 1855 near Nogales. Michler's next assignment was to follow an azimuth line west on the border to Sonoyta. On the way, his contingent skirted the south end of the Baboquivari Mountains, proceeding to the next range west: the Sierra del Pozo Verde. "Many antelope were seen about this place," reports Michler. He was camped near the modern Sonoran border village of Pozo Verde, in an environment that was typically lower Sonoran, with ocotillo, sahuaro, and many other cacti. Michler describes good grass on the mountainsides; it was August, and the rains were on the land.⁹⁵

The animals Michler observed were probably Sonoran Pronghorn, Antilocapra americana sonoriensis, which at that time were plentiful on the Sonoran Desert.

Bighorn: On the same surveying expedition west from Nogales, Lt. Michler placed markers at Quitobaquito (now within Organ Pipe Cactus National Monument), Agua Dulce, Tule, and Tinajas Altas. He comments: "The bighorn mountain goats frequent this region, and the noise of their horns as they butt them together in fights is often heard among the

94. Emory, Boundary Survey, v. 1, p. 121.

95. Ibid.

rocks."⁹⁶ Arthur Schott backs up Michler on this point; he often heard these "butting contests" between rams in the area from Quitobaquito west. Schott regarded the rocky desert ranges along the border as the optimum habitat for the species. He continues: "On the whole of these mountain tops there was not a single horizontal or gently inclined spot where the round footprints of this animal could not be observed. In some places well-beaten pathways lead up to the most rugged portions of the rocky sierras."⁹⁷

Schott felt that the big rams were invulnerable to predation by mountain lions or wolves in the open country of the desert ranges.

Within a year, 10,000 copies of the narrative, or first, volume of Report of the Mexican Boundary Survey had been ordered for printing. Three large quarto volumes were to be published as an Executive Document of the thirty-fourth Congress. When the second and third volumes were ready for publication, Congress expressed alarm over expenditures on illustrated scientific books and authorized publication of only 3000 copies of the botanical and zoological reports for distribution among centers of learning. In these books, Schott and Parry made substantial contributions to geology, while James Hall approached geology from a paleontologist's viewpoint.

Spencer Baird and Charles Girard of the Smithsonian Institution classified the birds, mammals, and fishes collected by the Boundary Commission. Baird himself classified 311 species. His report was purely

96. Emory, Boundary Survey, v. 1, p. 124

97. Ibid., v. 2, Part II, p. 52.

descriptive, with no attempt to correlate specimens with plant communities or geographical areas in general.

Northern Arizona was not affected by the boundary controversies that followed the Mexican War, but the U.S. government took an immediate interest in the region, and the first exploratory expedition was organized in 1849. Lt. James H. Simpson, the only topographical engineer in New Mexico at the time, went along as a surveyor, but the column that marched west from Santa Fe on August 15 was punitive in nature. Simpson was part of Colonel John Washington's command, sent out to intimidate the Navajos, who had been raiding settlements in northwestern New Mexico. The force consisted of four companies of infantry and two of artillery, plus a detachment of mounted Mexican and Indian volunteers. Lt. Simpson had three assistants to help make sketches and lend a hand in the topographic work (see Fig. 2, p. 223).

Although his primary interest was archeology (he was the first American to write about the ruins of Chaco Canyon), Simpson took notes on what wildlife a noisy military column was likely to see. The expedition skirmished briefly with the Navajos in the foothills of the Chuska Range, then marched over the mountains, in what is now extreme northeastern Arizona. To Simpson, this was a beautiful parklike country of Douglas firs, good grass, and sparkling mountain streams. Near the head of Crystal Wash, members of the column saw a grizzly bear, probably the first record for this part of the state.⁹⁸

98. James H. Simpson, Navaho Expedition: Journal of a Military Reconnaissance from Santa Fe, New Mexico, to the Navaho Country, Made in 1849 by Lieutenant James H. Simpson, ed. Frank McNitt (Norman, 1964), p. 77.

Colonel Washington's reconnaissance force descended the Chuskas and swept the Navajos out of Canyon de Chelly, another archeological treasure-trove for Simpson to mull over. The Americans then turned south, marching through eroded pinyon-juniper country. Somewhere on Black Creek, between the modern sites of Window Rock and Lupton, Simpson had an experience which he describes in his journal under September 13, 1849:

A deer was killed by a soldier this morning, after running the gauntlet of numerous shots from the command--myself, among the number, throwing away a pistol shot. This is the first deer which has been killed by any of the party. The scarcity of this kind of game may therefore readily be inferred. Indeed, a more wretched country for game of every kind I have never seen that we have been traversing since we left Santa Fe.⁹⁹

The animal referred to was most likely a mule deer. There are no whitetails in this part of Arizona today.

Simpson apparently saw no elk on the expedition, although the species was present, at least in the Carrizo Mountains (a northern spur of the Chuskas), until about 1850.¹⁰⁰

Swinging past the future site of Fort Defiance, the column returned to Santa Fe by way of Canyon Bonito and Zuni. The information gathered on the reconnaissance was later used in charting military expeditions, directing emigrant trains, aiding the selection of Indian reservations, and determining the route of a transcontinental railroad. In addition, Simpson made a treaty with the Navajos, which though never ratified, provided a basis for future agreements.

99. Simpson, p. 108.

100. W.W. Hill, The Agricultural and Hunting Methods of the Navajo Indians (Yale University Publications in Anthropology No. 18), New Haven, 1938, p. 167. A Navajo informant told ethnologist W.W. Hill that after 1850 the nearest region where elk might be found was the La Plata Range of southwestern Colorado.

In August, 1851, another expedition left Santa Fe for the uncharted wilderness that lay toward the Colorado River. Captain Lorenzo Sitgreaves, the topographical engineer in charge of the column, was told, in part, to search for a wagon route described by Lt. Simpson after the reconnaissance of 1849. But he was also an element in another diversion against the Navajos, and Colonel Edwin Sumner provided him with an escort of fifty infantrymen. Lt. John G. Parke (later to lead his own expedition in southern Arizona) was Sitgreaves' assistant, while Antoine Leroux served as the expedition guide. Dr. S.W. Woodhouse, the naturalist, began his journey in Philadelphia and collected his way across Texas before joining the expedition to Arizona.

For about a month Sitgreaves' party remained in the vicinity of Zuni. In September they started west down an intermittent stream, the Zuni River, which empties into the Little Colorado (see Fig. 3, p. 235). Dr. Woodhouse saw a few cottonwoods along the Zuni, and at one point he found a beaver dam on which cattails grew.¹⁰¹ Near the stream was a good growth of grama grasses and juniper.

The column continued westward down the Little Colorado after reaching the mouth of the Zuni. The river flowed across a rolling, grassy plateau devoid of trees. Willow thickets grew along the banks, and Woodhouse reported beaver lodges shortly after leaving the Zuni.¹⁰² Farther downstream, in the direction of the San Francisco peaks, cottonwoods and willows became more abundant. In places, deep bayous, overgrown with

101. Lorenzo Sitgreaves, Report of an Expedition Down the Zuni and Colorado Rivers (Washington, 1853), p. 36.

102. Ibid.

rushes, formed alongside the main bed of the river.¹⁰³ The nearby mesas, covered with a thick growth of "unnutritious" grasses, reminded Sitgreaves of the high plains adjacent to the northern Rockies.

Where the river entered the Painted Desert, both mule deer and pronghorn appeared, the deer mainly limited to the bottoms.¹⁰⁴ The Little Colorado soon made a bend to the north, winding over a wide, muddy plain in a system of channels. Because of an increasing shortage of grass and wood for fuel, the expedition struck west for the San Francisco peaks, traversing lava fields and an expanse of undulating plains with some juniper and a fine cover of grama grasses. Mule deer were seen again, and Sitgreaves comments on the presence of pronghorn: "Herds of antelope were seen in all directions, but they kept to the open country, and were shy and difficult to approach."¹⁰⁵ As the Sitgreaves party approached the San Francisco peaks, weathering several skirmishes with Yavapai Indians, hunters attempted unsuccessfully to shoot some pronghorn for the camp mess.¹⁰⁶ In some area, between the mountains and the Little Colorado, Woodhouse saw fresh grizzly tracks several times, and later he verified the presence of the species on San Francisco Mountain itself.¹⁰⁷ He regarded grizzlies as generally common in the mountains of Arizona.

103. Sitgreaves, p. 8.

104. Ibid., p. 36.

105. Ibid., p. 11.

106. Ibid., p. 13.

107. Ibid., p. 37.

It was now October as the expedition ascended the lower slopes of San Francisco Mountain, passing through the pinyon-juniper belt to a forest of ponderosa pines interspersed with aspen. Grass was thick in the mountain glades, but water was limited to occasional springs. Off to the southwest was a vista of grassy plains dotted with parklike stands of ponderosa pine and some oaks. Mule deer and pronghorn continued to be abundant.

Dr. Woodhouse saw no sign of elk while crossing Arizona, although he recollected seeing the animals in Indian Territory while on his way west. He did not refer specifically to seeing bighorn, but he stated that they were found in mountainous districts. Likewise, Woodhouse considered black bears abundant in timbered regions of Arizona, although he did not describe any incidents involving them.

Sitgreaves remarks in his journal that the cry of a mountain lion stampeded the expedition's mules while the party was camped one night on the slopes of San Francisco Mountain.¹⁰⁸ Woodhouse also heard lions after dark while the column was in the mountain forests, but he added the opinion that lions were not plentiful in the Southwest.

Moving down off San Francisco Mountain, the Sitgreaves party negotiated the open, grassy parkland of tall pines. Waterfowl were flushed from pools hidden in the deep grasses. The rich grassland persisted as the men headed west. On the flanks of Bill Williams Mountain it flourished amid open forests of juniper, pines, and oaks. The expedition proceeded directly toward the Colorado River, the terrain alternating between open grassland and patches of pinyon-juniper woodland.

108. Sitgreaves, p. 12.

This was the only region in which Woodhouse reported wild turkey,¹⁰⁹ but Sitgreaves considered them abundant along the route from the San Francisco peaks to the Big Sandy drainage.¹¹⁰

Dr. Woodhouse stated that wolves were common on open, thin grasslands west of San Francisco Mountain.¹¹¹ He recognized three species in Arizona: Canis nubilis, the "dusky wolf;" Canis latrans, the coyote; and Canis frustror, the "American jackal." The dusky wolf was modern Canis lupus, the gray wolf, and Woodhouse found it abundant east of the Mojave Desert. C. Latrans and C. frustror were both coyotes, of which Woodhouse believed there were several species in North America.

Mule deer remained plentiful until the expedition crossed the drainage of the Big Sandy River,¹¹² while the open valleys of sparse grass lying west of the river abounded in pronghorn.¹¹³ Woodhouse makes one of the first references in Arizona to hunters luring the species within range by creeping through the grass waving a stick with a handkerchief attached to it.

Water was now becoming increasingly scarce, being limited to an occasional small spring, and more rarely, to a running stream. Grass remained ample to feed the expedition's stock until the area of the Colorado River was reached. Meanwhile, a series of Indian ambushes was testing the nerves of Sitgreaves' party, and Leroux the guide was wounded.

109. Sitgreaves, p. 94.

110. Ibid., p. 38

111. Ibid.,

112. Ibid.,

113. Ibid.

On November 5, the column came within sight of the Colorado River, only to run into a hostile reception from the Mohave Indians. This time Dr. Woodhouse was wounded, but this did not divert his mind entirely from natural history. He observed that beaver were very abundant on the Colorado, far more common here than anywhere else in northern Arizona.¹¹⁴

Sitgreaves' half-starved men moved down the Colorado in the face of repeated attacks by Mohave and Yuma Indians. Fresh meat from mules that had died from exhaustion sustained the party until it reached Camp Yuma on November 30. Here, the expedition rested and stocked up on fresh supplies. Eventually, Sitgreaves got his contingent across the Mojave Desert to San Diego.

The Sitgreaves expedition did not produce any scientific generalizations about the region covered. There was merely a catalogue of plant and animal specimens collected by Dr. Woodhouse, and only a few of these were new. The route of the party traversed some relatively unknown terrain, but it did not follow the direct line necessary for a transcontinental railroad. Nevertheless, Sitgreaves' effort was an epic of exploration since it was a painstaking reconnaissance of forbidding and little-known territory. His map of the area was a standard reference for those who came after him.

Nearly two years passed before the next major expedition was ready to take to the field. Organized at Fort Smith, Arkansas, in July, 1853, it was placed under the command of Lt. Amiel Weeks Whipple, the highly capable assistant astronomer on the Mexican Boundary Survey. Whipple's

114. Sitgreaves, p. 47.

party was well staffed with scientists, including Dr. Jules Marcou, a Swiss geologist, and Heinrich Baldwin Mollhausen, a German artist-naturalist who was sent to America by Baron Alexander von Humboldt. One of the Americans was Dr. C.B.R. Kennerly, later to distinguish himself on Major William H. Emory's boundary survey expedition. Guiding the group was to be the irrepressible Antoine Leroux.

Whipple's instructions were to explore the 35th parallel and determine the practicability of this route for a railroad. He was to proceed west by way of Albuquerque and Zuni, making a careful survey of all the territory lying between the Zuni villages and the Colorado River. To a considerable degree the expedition would follow in the footsteps of Captain Sitgreaves (see Fig. 3, p. 235)

At Albuquerque, Whipple's party was joined by an auxiliary force under Lt. Joseph C. Ives, providing added insurance against damaging Indian attacks. The expedition then moved on to Zuni, where it set up camp close to the present Arizona-New Mexico state line. A period of planning and preparation lay ahead before Whipple felt ready to negotiate the Arizona wilderness.

Dr. Kennerly, the party's physician as well as a naturalist, lost little time in exploring the broken mesa country around Zuni. Grizzlies were common, and he remarked that they often came down from the mountainous areas to raid the flocks of sheep kept by the Indians in the grassy valleys.¹¹⁵ On one occasion, Kennerly and Heinrich Mollhausen were taken

115. C.B.R. Kennerly, "Report on the Zoology of the Expedition," Reports of Explorations and Surveys, 1853-4 (Washington, 1856), v. IV, p. 6.

by a Zuni guide to a spring where the Indians had erected a blind from which to shoot grizzlies in ambush. This was in a rocky terrain covered with pinyon-juniper forest. The two men saw no "grey bears" on this excursion, but Mollhausen describes a trail used by the grizzlies for such a long time that they had "fairly polished the rocky steps with their heavy clumsy paws."¹¹⁶

In the immediate area of Zuni, Kennerly noticed numerous herds of mule deer feeding in the little valleys between the mesas.¹¹⁷ Pronghorn were also present, but they were very shy and kept their distance far off on the plains.¹¹⁸ He also wrote an account of natural history after dark:

At night the prairie jackal, or coyote (Canis latrans) rarely failed to approach our camp, and serenade us with his loud and varied notes. The long and dismal howl of the larger species (Canis gigas) was occasionally heard in the distance (he is referring to the gray wolf, Canis lupus); but the latter is much less numerous than the former, and was not often seen. It, too, prefers the wooded regions, and depends mainly upon the deer for a subsistence, which it hunts, and rarely fails, after a long pursuit, in overtaking and conquering.¹¹⁹

One evening in November, the Whipple party stopped to set up camp near a small saline pond a few miles west of Zuni. This was in rough terrain, with small valleys interspersed with ridges covered with pinyons and junipers. In Mollhausen's account: "Herds of black-tailed

116. H.B. Mollhausen, Diary of a Journey from the Mississippi to the Coasts of the Pacific with a United States Government Expedition (London, 1858), v. 2, p. 92.

117. Kennerly, v. IV, part VI, p. 5.

118. Ibid.

119. Ibid., p. 6.

deer and antelopes showed themselves in the twilight and alarmed our people, who took them for a troop of Navahoe Indians."¹²⁰ When the expedition finally got under way, it followed the Zuni River westward, passing through the same type of country. Dr. Kennerly was also impressed by the prevalence of deer and pronghorn, stating that this region of "Cedar groves and grassy valleys" abounded with the two species. He also observed mountain lions in the area, saying that they hid during the day on "hillsides or ravines, where the bushes are the thickest and most impenetrable."¹²¹ The overall sweep of terrain embracing the Zuni River and the upper Little Colorado prompted this observation by Kennerly: "Grass throughout this whole country is very abundant, and of a most excellent quality, especially around the mountain bases, and on the more elevated plateaus. Large herds of cattle and sheep might be reared and sustained here, were it not for the depredations of the Indians."¹²²

West of the Zuni River, the Whipple party entered the Painted Desert, a region which Mollhausen considered sandy and bleak. Members of the expedition were surprised to observe a herd of pronghorn scramble down the rocky sides of a steep wash that emptied into the Puerco River. This was close to the present boundaries of Petrified Forest National Park, just north of the Little Colorado.¹²³

120. Mollhausen, v. 2, p. 114.

121. Kennerly, v. IV, part VI, p. 6.

122. Ibid.

123. Mollhausen, v. 2, p. 118.

On the Little Colorado, Mollhausen saw beaver dams, and Dr. Kennerly's notes tell us that both beaver and porcupine were very common in places along the stream. They subsisted mainly on an abundance of bark and tender twigs and buds of young cottonwoods growing in the sandy soil of the river bottom.¹²⁴ Between the Puerco River and Chevelon Creek, Mollhausen exulted over the fine hunting furnished by an abundance of mule deer in the riparian growth along the Little Colorado.¹²⁵

The expedition camped for several days in the bottoms near the mouth of Chevelon Creek. Mollhausen says that the men entertained themselves by laying trap lines for wolves and hunting deer. Beaver continued abundant on the Little Colorado, but on the adjacent grassy uplands only jack rabbits and rodents were much in evidence. One night a pack of wolves came in close to camp, started howling, and stampeded the entire herd of tethered mules.¹²⁶

Although it was early winter, Dr. Kennerly saw few ducks and geese on the Little Colorado, with the exception of occasional flocks of mallards and teal. He speculated that this was due to the absence of marshy areas, with emergent or aquatic plants.¹²⁷

It was December when Whipple left the Little Colorado, turning west toward San Francisco Mountain, probably where Diablo Canyon comes in. The column followed Sitgreaves' route, past cinder cones and a sweep of plains covered even at that time of the year with an excellent growth of

124. Kennerly, v. IV, part VI, p. 6.

125. Mollhausen, v. 2, p. 124.

126. Ibid., p. 127.

127. Kennerly, v. IV, part VI, p. 6.

grama grass.¹²⁸ Hundreds of pronghorn thronged the sheltered valleys at the eastern base of the Mountain. In places progress was difficult through the lava fields, especially in the face of snowstorms. Mollhausen also saw pronghorn: "We met herds of forked antelopes, who appeared to be hastening away from the snowy regions towards the plains, and with every mile some change took place in the scenery."¹²⁹

Whipple's party now began climbing, through the pinyon-juniper belt and into the grassy parkland covered by ponderosa pine. Still, pronghorn were everywhere, and Whipple reported that he followed the trail of "at least one hundred." Well up on the mountainside, he made the following entry in his journal: "Thus far, since leaving the Navajo country, we have not seen the fresh track of a wild Indian. The snow is untrodden, except by birds and beasts, which afford plenty of game. Antelope, deer, hares, and turkeys are abundant." Dr. Kennerly also saw large flocks of turkeys in the pine forests,¹³⁰ but his colleague Mollhausen was disappointed that the pronghorn and mule deer were so shy that few members of the party ever got a shot at them. He also recalled that, during the expedition's passage through the pine forests, "the wolves, lurking here and there in the woods, indulged us only now and then with a broken howl."¹³¹

128. A.W. Whipple, A Pathfinder in the Southwest, ed. Grant Foreman (Norman, 1941), p. 165.

129. Mollhausen, v. 2, p. 146.

130. Kennerly, v. IV, part VI, p. 6

131. Mollhausen, v. 2, p. 147.

As the expedition continued to ascend, Dr. Kennerly noticed many tracks of bighorn. All efforts to secure a specimen were unsuccessful, however, except for a skull and several sets of horns. Kennerly believed that bighorn were numerous on San Francisco Mountain, but that their timidity and preference for inaccessible areas kept them out of reach.¹³² He also took notes on the abundance of Abert squirrels, which were everywhere in the pine belt. In his opinion, they were limited to the San Francisco massif, since he saw none west of Mount Sitgreaves. Mollhausen added that a number of men went squirrel hunting under conditions of bitter cold and deep snow. The animals were secretive and had to be shot from the very tops of the pines.¹³³ However, though few were obtained, they were considered a welcome addition to the camp fare.

Whipple managed to lead the expedition around the south face of San Francisco Mountain, then on to the west. Some 20 miles ahead rose another prominent peak, described by Kennerly:

A few short marches through dense pine forests and the deep snow brought us near Mount Sitgreaves, from the base of which stretched beautiful valleys, covered with grass, and dotted by clumps of cedars. This mountain had been, apparently, before the falling of the snow, the peculiar home of grizzly bears; but the cold and want of food had caused them all to go in search of other quarters. The number of trails of this animal that we found here, all leading towards the south, is almost incredible.¹³⁴

Mollhausen also elaborated on this phenomenon:

The numerous footprints of the grey bear, which traversed the forest in all directions, tempted us to follow them. We examined

132. Kennerly, v. IV, part VI, p. 6.

133. Mollhausen, p. 156.

134. Kennerly, v. IV, part VI, p. 7.

the forest that lay to the south of us, as well as that at the foot of Mount Sitgreaves and the neighboring hills, and we found dens in such numbers that if they had been tenanted we should have had a bear to every acre of land. The declivities and ravines of Mount Sitgreaves, are, it seems, a particularly favourite residence with them, and even Leroux, old trapper and hunter as he was, did not remember to have ever met with signs of such numbers living together on so small a space; but, unfortunately, the whole company had emigrated but a few days before our arrival. Probably the freezing of the water had occasioned this move, for we found on the ice marks of their having tried to break it. They seemed to have made their journey to the south in troops of eight or more, and their path was plainly recognisable on the glittering snow. They walk one behind another, each stepping in the footprints of his front rank man, and in this way broad trampled impressions had been made, in which the snow, melted by the heat of the fleshy foot-soles, had afterwards frozen again to smooth ice. They had probably left with reluctance a region that had afforded them in superfluity their favourite food, the sweet nuts of the cedar (he probably means pinyon); but the want of water had driven them all away, and our bear hunt consisted in nothing more than running about looking for the prints of their huge paws, and then, from their breadth, estimating the size of the individuals who had made them. Every day, as long as we remained at this spot, we searched the woods, climbed the neighbouring hills, and scrambled down into the ravines, but no creature but the grey squirrel enlivened the solitude, and it fled at our approach to the tops of the highest trees.¹³⁵

West of Mt. Sitgreaves, the Whipple party once again negotiated a region of lava fields and volcanic hills. In the pinyon-juniper country ten miles north of Bill Williams Mountain, Mollhausen made the following observation: "Here and there we saw solitary specimens of the black-tailed deer and the antelope, and more frequently wolves and cayotas announced their presence by howling and chattering as they prowled around us in the scanty cedar woods."¹³⁶ Kennerly concluded that over most of the dwarf evergreen forest on the plateau west of the San Francisco peaks there were no pronghorn at all. But he regarded mule deer as

135. Mollhausen, v. 2, p. 165.

136. Ibid., p. 171.

"quite common," and not very shy, being "unaccustomed to the sight of man" (contrast this to observations of game behavior on the east side of San Francisco Mountain).¹³⁷

In January, 1854, the expedition moved down an intermittent stream given the name of Partridge Creek, probably in the drainage of Big Chino Wash near modern Ash Fork, Yavapai County. Mollhausen tells us how the creek got its name: "Hundreds of pretty little partridges (Gambel's Quail) kept flying about us, but flew far off when a charge of murderous shot was sent among them....We found them in such masses in Partridge Creek, that very few shots served to supply us all with an abundant dish."¹³⁸ Mollhausen made an additional note on the wildlife of Partridge Creek: "We also saw the large gray wolf....crossing along the edge of the ravine, but he was very shy, and knew exactly how to keep out of the reach of our rifles."¹³⁹ (Later that month a reconnaissance group that included Mollhausen returned to the Chino Valley after pushing a short distance to the west. They camped one night among the junipers in the eastern foothills of the Juniper Mountains, where they could hear "the howlings of the wolves prowling in the ravines.")

Whipple also commented on the abundance of game on Partridge Creek. In addition to Gambel's quail, a mule deer was shot, and he observed innumerable tracks of deer, pronghorn, bear, and wild turkeys.¹⁴⁰

137. Kennerly, v. IV, part VI, p. 6.

138. Mollhausen, v. 2, pp. 174-175.

139. Ibid., p. 175

140. Whipple, p. 185.

After coming down off Black Mesa, the party camped along a stream on the east side of Chino Valley. Willows and cottonwoods grew beside large pools, and the nearby flats were covered with fine grama grass. The dwarf evergreen forest on the hills yielded an excellent crop of pinyon nuts. Whipple commented on the quantity of wildlife; he saw mule deer, many rabbits and quail, and also the tracks of pronghorn and bear.

Breaking camp and proceeding west again, the expedition came out on a magnificent treeless plain, "so densely covered with the best grama grass," in Kennerly's words, "that we named it 'Val de China!'"¹⁴¹ Dr. Kennerly also noticed the abundance of pronghorn here: "This species prefers the open valley, or wide and unbroken plain. Descending into the Chino valley, we found this animal in large herds, sometimes of hundreds. Occasionally, impelled by curiosity, they would approach quite near, and for a time gaze upon the train, then circling round, would hurry off and disappear in the distance."¹⁴² Whipple added that some of the men took shots at "the antelopes that came trooping around us." He relates another anecdote involving stormy weather in the valley: "The wind blew furiously over the plain, so that the antelopes, who here began to show themselves again, played about us undisturbed, for it was quite impossible to take aim in such a gale."¹⁴³

Whipple's train now crossed the northern end of Chino Valley, passing Picacho Butte (between the sites of Ash Fork and Seligman). Pronghorn continued to be seen on every hand, and near the butte Whipple

141. Kennerly, v. IV, part VI, p. 8.

142. Ibid., p. 7.

143. Whipple, p. 179.

reports finding "the magnificent antlers of a mountain sheep."¹⁴⁴ He reflected on the fact that the valley, now sustaining only deer and pronghorn, might someday furnish pasturage for thousands of cattle and sheep.

Turning south from Picacho Butte, Whipple headed down the Chino Valley. He observed that deer and wild turkeys were numerous, as well as the ubiquitous pronghorn. Turkeys became even more in evidence when the expedition changed course to the west again, entering the pinyon-juniper forest in the foothills of the Juniper Range. Kennerly found turkeys particularly common near streams, where he saw them feeding on juniper berries. Mollhausen now relates what happened when some of the party approached a grove of cottonwoods and willows where a ravine emptied into Chino Valley from the mountains:

As we rode through the long withered grass that covered an opening in the wood, we suddenly came in sight of a numerous flock of wild turkeys, which, startled at our approach, were running at a great rate towards a hiding-place. The shots fired among them were eminently successful; but when several of them fell, the rest spread their wings and flew away as fast as they could.¹⁴⁵

The birds killed fell in a marshy area formed by a spring that was later called Turkey spring.

A short time afterwards some members of the expedition found turkeys on the west slope of the mountains. A period of bitter cold had just followed a snowstorm. As Mollhausen says: "The very turkeys seemed to be suffering from cold, and cowering between the rocks and bushes

144. Whipple, p. 189.

145. Mollhausen, v. 2, p. 192.

took little notice of the shots with which they were saluted as the hunters came up."¹⁴⁶

Meanwhile, the main expedition ascended Walnut Creek, between the Juniper and Santa Maria Mountains. Coming down over Aztec Pass, Whipple's train reached a grassy plain, described by Kennerly as "a beautiful valley, where we found both the black-tailed deer and antelope quite numerous."¹⁴⁷ The party headed northwest, following Muddy Creek past the Mohon Mountains. Probably at a point south of Cross Mountain, Whipple turned west into the Aquarius Range. In all likelihood, he continued to ascend Muddy Creek until he picked up the headwaters of Trout Creek. His entry for January 26 states that he found a new Indian arrow lying on the ground, causing him to speculate that it had been shot at one of the mule deer with which the region abounded. On this point Dr. Kennerly had a comment: "The distance from Pueblo Walnut Creek to Williams' River is probably much less than the distance embraced between any other divisions that we have assumed but it was a country throughout particularly rich in deer."¹⁴⁸

The party proceeded once more to the northwest, setting up camp on January 30 at Cactus Pass in the Cottonwood Mountains, near the head of the Big Sandy River, which drains south into the Bill Williams. Whipple's diary continues: "As coyotes stole the remnant of our mutton last night from the camp-fires, we have lived today on game--partridges, rabbits, and black-tailed deer."

146. Mollhausen, v. 2, p. 201.

147. Kennerly, v. IV, part VI, p. 6.

148. Ibid., p. 7.

Whipple now came to a major decision. Until now, the expedition had followed the route established by Sitgreaves in 1851. At the Big Sandy, however, Whipple resolved not to continue due west, but to descend that river to its confluence with the Bill Williams, then follow the latter stream out to the Colorado. This change of course pleased Dr. Kennerly, who made the following observations of natural history along the Big Sandy River: "On the wide mesas that stretched out on either side of us herds of antelope continually sported, and in the valley black-tailed deer were not uncommon. In the precipitous and rugged mountains that we encountered we found the big-horn more numerous than in any other locality that we passed."¹⁴⁹ Mollhausen added the fact that the bighorn, although abundant, were too shy to approach closely. Consequently, no member of the party ever got within rifle range of the animals.¹⁵⁰

As the expedition moved downstream, Whipple noticed that Gambel's quail were once more incredibly numerous. He grasped the rudiments of the food-chain concept with his statement that deer, pronghorn, and rabbits fed on the rich grama grass and other plants. These animals in turn were preyed on by the wolves and coyotes that were seen and heard on the Big Sandy.¹⁵¹

Somewhere near the point where Trout Creek joined the Big Sandy, the party met a Yavapai Indian wearing leggings made of bighorn skin.

149. Kennerly, v. IV, part VI, p. 7.

150. Mollhausen, v. 2, p. 222.

151. Whipple, p. 213. The wolves referred to by Whipple, if actually Canis lupus, may be the westernmost account of the species on record for Arizona.

This may have been close to the place where several members of the expedition made a side excursion to the east into the Aquarius Mountains (about 12 miles north of the mouth of Trout Creek). At the foot of a "white feldspar cliff" Whipple found a spring shaded by willows, acacias, and cottonwoods. A band of bighorn was frightened away from the spring as the men approached. Whipple wrote: "They were magnificent animals, with skin of silky hair like an antelope, and horns of remarkable size, curled like those of a ram....Those that we had started disappeared among the mountains; and as a prize had been offered for a specimen, some of the men followed with perseverance, which, however, was not rewarded."¹⁵²

In early February the expedition reached a section of the Big Sandy near the present site of Wikieup, Mohave County. Whipple describes it: "A few miles below our last camp the stream changed its character, from alternate fertilizing rills and beds of sand, to a continuous rivulet, clear, rapid, and several feet in depth. Many fresh beaver dams existed upon this portion of the river, enlarging it so as to make the crossing difficult."¹⁵³

Just above its confluence with the Bill Williams River, the valley of the Big Sandy became choked with dense willow brush, making progress extremely difficult for Whipple's wagon train. There were also places where beaver dams had inundated the whole valley. Mollhausen recorded seeing lodges built in the ponds formed by these dams.¹⁵⁴

152. Whipple, p. 212.

153. Ibid., p. 214.

154. Mollhausen, v. 2, p. 224.

On February 9, after the expedition reached the Bill Williams River, a group under Whipple set out to explore one of the mountain ranges lying just to the north. This side excursion took place some two miles below the mouth of the Big Sandy, so the mountains investigated were probably an eastern spur of the Rawhides. Once again, several bighorns were flushed from the vicinity of a spring. They had been concealed in a cave containing Indian petroglyphs.¹⁵⁵ Mollhausen found bighorn horns scattered around the spring and assumed that Indians came here to ambush the animals when they came for water.

Dr. Kennerly observed bighorn sign all the way down the Bill Williams and concluded that the species was common in the ranges that flanked the river. There was a good growth of grass in the upper valley, more than enough to support the mules and other livestock while passing through. But farther down, closer to the Colorado River, grass became scarce, and the pack animals had to depend on willow twigs and on the twigs and bark of cottonwoods. Kennerly also had a comment about the Bill Williams River: "The water of Bill Williams fork, in many places, flows in a bold current; but, like the Mimbres, and other streams in this country, it sinks again in the sand, sometimes within a very short distance of its head. It rises and sinks this way, alternately, until it reaches the Rio Colorado."¹⁵⁶

To Dr. Kennerly, the waterfowl on Bill Williams River in mid-winter were particularly interesting. Great numbers of ducks and geese were continually frightened from the stream or nearby lagoons, and many

155. Whipple, p. 220.

156. Kennerly, v. IV, part VI, p. 11.

specimens were added to the expedition's collection. Pintails were most abundant in the marshes, along with large congregations of ducks of other species. Both green-winged and cinnamon teal were everywhere, and small flocks of buffleheads were seen on both the Bill Williams and Colorado Rivers.¹⁵⁷

Heinrich Mollhausen, the avid hunter, spent a good deal of time with his shotgun on the Bill Williams marshes:

The shallow water was covered by thousands of birds, who usually sported on its surface undisturbed, but at the approach of our procession they fled; and shot after shot was heard in all directions, echoing among the rocks and hills. I happened to be one of the foremost of our party, and had thus an opportunity of obtaining a fine harvest of various kinds of ducks, many of them with splendid plumage, that would be an ornament to our collection.¹⁵⁸

The ducks were considered a "savory dish" by Mollhausen, but not enough to satisfy the hunger of the whole party. Game, in fact, was lacking on the Bill Williams except for the inaccessible bighorn. Even together, waterfowl and Gambel's quail could not make up for the inability of the hunters to bring in venison or pronghorn. And the flock of domestic sheep that had been driven all this distance was by now nearly gone. Still, the expedition pressed on, and the problems of contending with the lower valley of the Bill Williams were recorded by Mollhausen:

Sometimes we were stopped by the windings of the now deep and full river, sometimes by the marshy grounds formed by its overflow; here the thick wood and tangled bushes stopped the way, and there an almost impenetrable growth of canes, and other obstacles, requiring time and toil to overcome....Slowly we made our way over the marshy ground covered with innumerable

157. Kennerly, v. IV, part VI, p. 11.

158. Mollhausen, v. 2, p. 236.

water-fowl, and more slowly still past places where every foot of our way had to be cleared with the axe."¹⁵⁹

A few miles short of the Colorado, the scene took this form. Mollhausen again: "The Bill Williams fork waters a beautiful valley varied by meadow, woods, and ponds or small lakes, and the clear waters of the stream, passing the rugged mountains, take their way to join the flood of the Colorado."¹⁶⁰

The expedition finally reached the Colorado without serious mishap and turned upriver to the vicinity of the Needles. This time the previously warlike Mohaves assisted the tired travelers, even helping Dr. Kennerly collect birds and fish. But the larger game animals, as Kennerly observed, had been heavily hunted by the Indians and were scarce along the Colorado.¹⁶¹

Once over the Colorado, Whipple headed due west to the Mojave River. From there the expedition found the Mormon wagon road to San Bernardino, before moving on to Los Angeles. Lt. Whipple considered the long reconnaissance a successful one and felt that the 35th parallel was, indeed, a practicable route for a railroad.

The next expedition to follow the 35th parallel was easily the most exotic of them all. It had its origins in an idea conceived by a lieutenant in the Navy, Edward Fitzgerald Beale, who believed that camel caravans would be the most effective way of moving supplies across the American deserts. When the concept was supported by Jefferson Davis,

159. Mollhausen, v. 2, p. 238.

160. Ibid., p. 239.

161. Kennerly, v. IV, part VI, p. 7.

Secretary of War under Franklin Pierce, Congress appropriated 30,000 dollars to import the animals.

With Lt. Beale in charge, thirty-three Bactrian camels were shipped from the Middle East to Indianola, Texas, in 1856. Another forty-four camels arrived a year later, and all were concentrated at Camp Verde, Texas, some 60 miles northwest of San Antonio.

Lt. Beale received orders from the Secretary of War to start west in the summer of 1857 to survey a wagon route from Fort Defiance, a six-year old post some 30 miles southeast of Canyon de Chelly, to the Colorado River. He left Camp Verde on June 25, 1857, with each camel carrying between six and eight hundred pounds and traveling 25 to 30 miles a day. Beale was particularly impressed with the fact that the camels thrived on creosote bush, Larrea divaricata, which no other ruminants would touch.¹⁶²

By August, Beale's caravan had reached the Zuni villages, after which he headed due north to Fort Defiance. His survey route into Arizona therefore started considerably farther north than the course followed by Sitgreaves and Whipple, who both descended the Zuni River (see Fig. 3, p. 224).

Lt. Beale pushed southwest from Fort Defiance, crossing the open plateau country of what is now the Navajo Reservation, Apache County. His first reference to wildlife, which later went into his official report of the expedition, is dated September 1 and refers to sighting "a fine band of antelope" on an expanse of rolling plains covered with a

162. Odie B. Faulk, Arizona: a Short History (Norman, 1970), p. 82.

good growth of grama grasses.¹⁶³ This incident took place near the present site of Wide Ruin. A day later Beale described a high table land covered with "beautiful grass" close to the head of Leroux Wash, just north of the present location of Petrified Forest National Park.

The expedition probably continued south along Leroux Wash, reaching the Little Colorado a few miles west of modern Holbrook. As they moved downstream to the west, members of the party saw numerous signs of beaver, especially where Clear Creek and Jack's Canyon came in from the south. Clear Creek was muddy and lined with cottonwoods, while the stream in Jack's Canyon was clear with no trees on its banks. One beaver was found partly eaten by a coyote.¹⁶⁴

On September 7 the caravan was moving parallel to the river up on the plateau above the north bank. Beale had this to say about the open terrain near the site of Winslow: "The grass throughout the day has been most abundant, and we have constantly exclaimed, 'what a stock country!' I have never seen anything like it; and I predict for this part of New Mexico a larger population, and a more promising one than any she can now boast."¹⁶⁵ On the same day he commented thus on the natural history: "We have seen indications of the greatest abundance of game for the past three days. Elk, antelope, and deer, besides beaver and coyotes

163. May H. Stacey, Uncle Sam's Camels, ed. Lewis B. Lesley (Glorieta, 1970), p. 191.

164. Ibid., p. 200.

165. Ibid., p. 202. Today, of course, most of the Navajo Reservation is a sand or red rock desert, devoid of grass for most of the year.

in large numbers."¹⁶⁶ Before sundown, the party having maintained a course to the northwest, Beale again spoke of wildlife. Deer and elk continued to be abundant, and he refers to their tracks near the river as being "innumerable."¹⁶⁷ He closed his journal entry for the day with the observation that cottonwoods grew in profusion along the river, but that there was no woody growth at all on the grassy mesas above the valley.

Another member of the expedition who kept a diary was May Humphreys Stacey. As the caravan moved downstream, now above the left (south) bank of the Little Colorado, he speaks of grass and pronghorn everywhere. "Every now and then herds of antelope would dart across our path," he said. Like Beale, Stacey thought that the beautiful rolling grassland would someday be a paradise for livestock.¹⁶⁸ He was referring specifically to the area near Diablo Canyon, just west of modern Leupp, Coconino County.

Beale now took his column due west, following the trail of Sitgreaves and Whipple toward San Francisco Mountain. He never ceased to marvel at the green expanse of waving grasses, now covering the lava fields between the Little Colorado and the mountains. When the expedition reached the flanks of San Francisco Mountain the grass was knee-high to

166. Stacey, p. 201. It is a matter of considerable interest that keen observers like Sitgreaves and Whipple, Woodhouse, Kennerly, and Mollhausen made no mention of elk while crossing northern Arizona. It is conceivable that the elk found around the San Francisco Peaks in summer wintered to the north, in the valley of the lower Little Colorado River. If this were the case, Sitgreaves and Whipple passed too far to the south to see the animals.

167. Ibid., p. 202.

168. Ibid., p. 93.

the mules, interspersed with a carpet of wild flowers. And over this parkland towered the widely spaced ponderosa pines. (Beale was the first explorer to write about this country in summer. As it was, the members of the Sitgreaves and Whipple expeditions were impressed with the density of the grass in fall and winter).¹⁶⁹ Beale saw bear, deer, and pronghorn on the mountainside and reported the first Abert's squirrels shot on the expedition. The date was September 11, at Stacey's Spring, on the southeastern slope.

The caravan circled San Francisco Mountain and continued west through the lush park country. At a spring on the north slope of Mount Sitgreaves Beale recorded his impressions of the region:

The fine spring attracts numerous antelopes, which appear and disappear as they glance rapidly through the fine open forest with which it is surrounded, sometimes stopping to gaze at the strangers, and at others racing past at full speed; and the majestic mountains looking bold and grand, and black with heavy timber, at just a sufficient distance to make the scenery of the amphitheatre in which the springs are one of the loveliest valleys we have seen. This stopping to gaze has been fatal to two of the antelope, which have been killed by our party with muskets, directly in sight of the whole camp.¹⁷⁰

While the expedition camped on Mount Sitgreaves, hunting parties reported an abundance of both mule deer and pronghorn on the parkland to the northeast, toward Kendrick Peak.

By September 17 Beale's party had reached a place he calls King's Creek, near the present site of Seligman. There was permanent water in the stream, which might actually have been Big Chino Wash, and Beale shot some snipe and blue-winged teal. He also saw flocks of sandhill cranes.

169. Stacey, p. 210.

170. Ibid., p. 215.

Like Kennerly before him, he commented on the numerous herds of pronghorn that grazed the open plains adjacent to the creek.

The caravan next turned south into the Chino Valley, which it followed as far as Walnut Creek. Beale's men were hardly ever out of sight of pronghorn or deer and their trails.¹⁷¹ Even in the pinyon-juniper country along Walnut Creek game flourished because water persisted as deep pools on the rocky canyons.¹⁷² Once over the Juniper Range, Beale headed north, apparently keeping to Whipple's route over the Aquarius Mountains. Good grass continued to grow on a rolling plain of clay mixed with gravel. In Beale's words: "Abundance of deer and antelope, constantly in sight render our ride, this morning September 29, a most agreeable one. The deer were of the species known as black-tailed. Bear sign was also frequent, though Cuffee did not show himself in person."¹⁷³

Beale decided to follow the original trail blazed due west by Sitgreaves, rather than attempt the route taken by Whipple down the drainage of the Bill Williams River. Therefore, he crossed the Aquarius Mountains and the Big Sandy River, circled the north end of the Hualpai Range and passed the present site of Kingman, Mohave County. The Black Mountains were thus his last obstacle before reaching the Colorado River near the Needles. Here, to his amazement, Beale encountered, not hostile Indians, but a steamboat expedition under one Captain Alonzo Johnson, who was returning downriver after reaching the head of navigation 34 miles

171. Stacey, p. 228.

172. Ibid., p. 231.

173. Ibid., p. 236.

above the meeting point. Beale was quite impressed by this chance contact between two of the most innovative expeditions to date: "Here in a wild almost unknown country inhabited only by savages, the great river of the west, hitherto declared unnavigable, had for the first time borne upon its bosom that emblem of civilization, a steamer."

The last leg of the journey to California was less eventful than the drama on the Colorado, and Beale took his caravan back to Texas soon after completing the survey. Only one entry concerning wildlife added information of significance. On January 26, 1858, Beale had reached the south end of the Sacramento Valley (between the Black and Hualpai Ranges) after heading east from the vicinity of the Needles. It was the dead of winter, but the valley was filled with grass. About the Sacramento Valley Beale wrote: "A large number of deer, antelope, and big horn tracks show it to be well supplied with game, which, finding abundant grass, probably seek its warmth in winter, and retreat to the neighboring mountains during the heat of the summer."¹⁷⁴

In the summer of 1859 Beale led a government road-building crew from Fort Smith, Arkansas, to the Colorado River, constructing a wagon road along the route he had surveyed two years earlier. Besides dromedary camels, he brought greyhounds with which to hunt the deer and pronghorn that were so abundant on the way.¹⁷⁵

An impending clash between the Mormon settlers in the Great Basin and the Federal Government motivated the last major expedition into the Arizona wilderness before the Civil War. In 1857 an army detachment

174. Stacey, p. 265.

175. Beale Diorama, Arizona Historical Society, Tucson.

under Colonel Albert S. Johnston was sent to Utah to enforce stricter compliance with U.S. statutes. This force had to be supplied, and the cheapest means would be by water. The Bureau of Western Explorations and Surveys therefore funded an expedition up the Colorado to determine the head of steamboat navigation and to see if Johnston really could be supported by this route.

The man selected to lead a party up the river was Lt. Joseph C. Ives, a product of Yale and West Point who had already gained familiarity with Arizona's interior when he accompanied Whipple along the 35th parallel in 1853-1854. He was enthusiastic about his new assignment, describing it according to one contemporary as an event "destined to make fame for his children."

In October, 1857, the members of the Ives party gathered in San Francisco. They included the eminent geologist John Strong Newberry, who also served as physician and naturalist, and Heinrich Mollhausen, the German who so enlivened the Whipple expedition, now functioning as the official artist. This group was divided into three detachments. One, under Newberry's leadership, was to proceed by coastal steamer to San Diego, then overland to Fort Yuma. Another contingent led by P.H. Taylor, the astronomical assistant, would march from San Pedro to Fort Yuma by way of Fort Tejon. Ives himself commanded the third element, destined to sail from San Francisco on a voyage to the mouth of the Colorado. This party embarked on November 1 on the schooner Monterey. Lashed to the deck were the disassembled parts of a shallow-draft steamboat, the Explorer, built in Philadelphia and tested on the Delaware River the previous August.

The voyage was congested and uncomfortable, involving at one stage a three-week period of "dead calms, of burning tropical days and stifling nights," as Ives phrased it. On November 29 the Monterey reached the delta of the Colorado off Montague's Island, but spent several days maneuvering into position to unload the fragmented steamboat. Wood to construct a derrick for assembling the boat had to be dragged for nearly two miles over the vast mud flats. After back-breaking labor lasting almost a month, the steamboat was back in one piece, with the massive boiler lowered into place amidships. While all this was going on, steamboats from Fort Yuma and curious Cocopa Indians visited the "shipyard."

At high tide on the night of December 30 the Explorer was launched. News had just been received from upriver that the Mormon War, so long expected, had finally broken out. Ives was driven by a sense of urgency as his odd little vessel churned northward. And a spectacle she was: painted bright red, some fifty-four feet long with a stern paddlewheel. The hull was left open, with most of the space occupied by the steam boiler. At the bow a four-pounder howitzer was mounted on a little deck. The stern contained a small cabin eight feet by seven, with a roof that formed an observatory deck for the pilot and the scientists.

On January 9, 1858, the whole party was reunited at Fort Yuma, a rough stockaded encampment built on a gravel spur on the west bank of the river. While Ives was ascending the Colorado, the civilian Alonzo Johnson had already completed his expedition to El Dorado Canyon on the 35th parallel.

Ives started upriver on January 11 (see Fig. 4, p. 225). He immediately struck a sandbar, but pulled free without damage and

continued. At Explorer's Pass in the Purple Hills area, he took his first good look at the terrain bordering the river. Here, the banks were largely destitute of vegetation, being limited to occasional growths of mesquite, cottonwood, and willow--just enough to supply fuel. The hills were bare, and the gravelly valleys supported Sonoran Desert plants. Sahuaros were much in evidence.

Ives' journal entry for January 17, adjacent to the Chocolate Range, reads thus:

The scarcity of vegetation has been alluded to: of fish, but a single one--and that a poor variety--has been caught; and game is seldom met with. An occasional flock of ducks or geese is observed flying past, and this morning a dozen mountain sheep ("bighorns") were seen scampering over a gravel hill near Lighthouse Rock, but not within shot from the bank of the river.¹⁷⁶

Even this far south, Newberry the geologist became excited by the vistas presented where the Colorado had cut through the jagged ranges on each side. When the Explorer passed the mouth of the Bill Williams River, Ives did not recognize it at first. A severe drought had reduced the stream to a trickle, and its mouth became effectively screened by a growth of willows. There was no sign of Whipple's trail. A bit to the north, the expedition went ashore to camp among the peaceful Chemehuevi Indians. They were highly amused by the bearded Mollhausen, who enlisted the children to collect reptiles and small mammals. Said Ives: "They think he eats them and are delighted that his eccentric appetite can be gratified with so much ease and profit to themselves."¹⁷⁷

176. Joseph C. Ives, Report Upon the Colorado River of the West (Washington, 1861), p. 52.

177. Ibid., p. 62.

Above the Needles, the Explorer entered Mojave Canyon, "a profound chasm." This walled-in twilight zone provided a vivid contrast with the open Mojave Valley to the north, "clothed in spring attire and bathed in all the splendor of a brilliant morning's sunlight....a scene so lovely that there was a universal expression of admiration and delight." Beale also made note of the fact that there was no game in the valley and that fish were scarce and of "very inferior quality."¹⁷⁸

The expedition passed the Mojave Indian villages without incident, ascending to the Cottonwood Valley above the point where Alonzo Johnson turned back. At the head of the valley was Paiute country and Black Canyon, the first really awesome gorge of the Colorado. The Explorer entered the canyon and struck a submerged rock; the boat was crippled, but did not sink. Ives sent up signal rockets, and his party settled down to wait for a land supply detachment under Lt. John Tipton.

During the wait, Ives and two companions reconnoitered Black Canyon in a skiff. For several days they paddled laboriously through the gorge, reaching Las Vegas Wash before coasting downstream again. Ives estimated the Mormon Road at 20 miles west from the river and saw no reason why a wagon road could not be connected to it. After returning to the Explorer, Ives extended the camp's hospitality to a young Mormon bishop disguised as a lost emigrant. He was actually one of a party that included the renowned frontiersman Jacob Hamblin, all out to stir up the Paiute Indians against the Federal authorities. Part of Ives' overall expedition was spent in placating the Indians of northwestern Arizona with presents and skillful diplomacy.

178. Ives, p. 73.

When Tipton finally appeared, Ives sent half of the command back to Fort Yuma on the temporarily repaired Explorer. With the rest, including the scientists and 20 soldiers, he set off eastward to look for another connection with the Mormon Road. Ives looked back and recorded his final impression of the Mojave Valley, "enveloped in a delicate blue haze that imparts to it so softened and charming a glow, while the windings of the Colorado could be traced through the bright fields and groves till the river disappeared in the Mojave Canyon."

The Ives party followed Beale's wagon route for part of the way while pushing eastward, first across the Black Range, then around the Cerbat Mountains to the Hualapai Valley. It was March, but Ives noticed a luxuriant growth of "glue grama and pin grass." He also made an entry regarding the fauna of the Hualapai Valley: "Deer and antelope are now frequently seen, but they are shy and hard to approach. A single antelope one of the Mexicans succeeded in killing; they are just in season, and the flesh was tender and delicately flavored."¹⁷⁹

The Expedition was now in the territory of the Hualapai Indians, described by Ives as "Squalid, wretched-looking creatures, with splay feet, large joints and diminutive figures." The Americans persuaded two members of a band to guide them, despite Mollhausen's suggestion that one of the ugliest be preserved in a jar of alcohol as a zoological specimen.

On March 31 the party reached Peacock Spring, near the Peacock Mountains, after four days of intense heat in which the mules suffered acutely from thirst. To the northeast stretched a broad plateau described by Ives: "The road became hard and smooth, and the plain was covered with

179. Ives, p. 98.

excellent grass. Herds of antelope and deer were seen bounding over the slopes. Groves of cedar occurred, and with every mile became more frequent and of larger size."¹⁸⁰ After resting at the spring, Ives' train resumed the journey, eventually turning north to follow Diamond Creek down into the depths of the Grand Canyon. Ives finally reached the mouth of the creek, walking out onto the floor of Granite Gorge, beside the Colorado River. Only Cardenas in 1541, Espejo in 1583, Garces in 1776, and perhaps James Ohio Pattie and his companions had even come close to the Grand Canyon. But Ives was the first known white man to descend to the Colorado itself.

Ives and his men climbed back out of the Canyon with great difficulty, since the guides had deserted, and their water was almost gone. They stopped for awhile in the ponderosa pine forest on the South Rim, while some of the soldiers hunted mule deer. After one more unsuccessful attempt to descend to the Colorado from a new point, the expedition headed off to the southeast. The route lay across an extensive pygmy forest of pinyons and junipers, an area lacking in water. Ives found this region--the Coconino Plateau--depressing: "The deer, the antelope, the birds, even the smaller reptiles, all of which frequent the adjacent territory, have deserted this uninhabitable district."¹⁸¹

On April 21 the column observed bear tracks near a pool on one of the headwaters of Cataract Creek (now in Coconino County). Ives relates what happened:

180. Ives, p. 98.

181. Ibid., p. 110.

A large grizzly bear--the animal whose tracks we had observed--was seen quietly ascending a hill near by, and half of the company rushed after the grim monster. He was unconscious of pursuit till the party was close upon him. Then he commenced to run, but the hill retarded his pace, and a volley of balls made the fur fly in all directions from different parts of his hide. Twice he turned as though meaning to show fight, but the crowd of pursuers was so large, and the firing so hot, that he continued his flight to the top of the hill, where he fell dead, riddled with bullets. His skin was taken off to be preserved, and the flesh divided among the party. It is rather too strong flavored to be palatable when roasted or broiled, but makes capital soup.¹⁸²

Ives and his party reached the north base of Bill Williams Mountain on April 25. Like all previous explorers who passed this way, he was enchanted by the extensive grassland growing beneath widely spaced ponderosa pines. Melted snows had turned the landscape green, and it was covered with spring flowers. One camp site was beside a stream that meandered across a lush meadow. Ives writes: "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."¹⁸³ He continues: "The place is a great resort at this season for grizzly bear, antelope, deer, and wild turkeys, large numbers of whose tracks were seen heading to and from the water holes."¹⁸⁴

The expedition resumed the journey a few days later, entering the cool pine forest on San Francisco Mountain on April 30. "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," recalls Ives.

182. Ives, p. 112.

183. Ibid., p. 113.

184. Ibid.

Changing direction to the northeast, Ives apparently passed what is now Wupatki National Monument, reaching the Little Colorado River in the vicinity of Black Falls. One of his entries reads thus: "The bottom is filled with black-tailed deer. A buck was killed today 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."¹⁸⁵

Lt. Ives now divided his command once more. Tipton and the supply train followed Whipple's trail back to Fort Defiance, while Ives crossed the Little Colorado in "Buchanan boats," tipsy structures of canvas stretched over wood. He then headed for the Hopi villages. While crossing the Painted Desert, Ives commented on the general bleakness of the region, characterized by an almost total absence of grass, in contrast to the lushness of the open country to the south and east.¹⁸⁶

From the Hopi villages, where Ives took detailed notes on the ethnology of the area, the party returned in a somewhat disheveled state to Fort Defiance, while mounted Navajos dogged their trail. Shortly after they reached the fort, open war broke out between the Navajos and the U.S. Government.

Ives took the Butterfield Stage back to California, after which he sailed from San Francisco on a ship bound for Washington, D.C. He could look back on an expedition that had tested the navigability of the Colorado and made a connection with the Mormon Road into the Great Basin.

185. Ives, p. 117.

186. Ibid.

In addition, Newberry's geological report revealed the Grand Canyon and the Plateau Province to the scientific world for the first time.

Following the outbreak of the Civil War, American troops of both sides marched and countermarched across Arizona, but matters concerned with natural history were not uppermost in the minds of most participants. A small Confederate force occupied Tucson and the Pima villages in the spring of 1862, but logistical problems were insurmountable, and it soon withdrew to New Mexico. Its place was taken by a Union column of 1500 California volunteers that marched east from Fort Yuma in June. By the end of the year there were no Confederates west of Texas, and the Californians were occupied with the elusive Apaches instead. Routine garrison duty in scattered outposts across Arizona and New Mexico was to be the fate of most of these men for the war's duration.

One colorful visitor to Arizona was a soldier named George O. Hand, Company "G," First Infantry, California Volunteers, who marched up the Gila River in the summer of 1862. As Marshall points out in The Birds of Arizona, Hand's main interests were "whiskey, women, and whiskey" so that any comments he made about the natural history of the region must have indicated something extraordinary.

Before starting east, Hand did take a little time to explore the banks of the Colorado. Local informants told him of the incredible numbers of waterfowl on the river during the winter, and Hand himself came to the opinion that beavers were "very thick."

At Mohawk Station, 66 miles up the Gila River from Fort Yuma, Hand and some companions packed a mule deer they had shot through two miles of "brush and high grass." The troops saw wildlife again on the

river four miles east of Burke's Station (near present Agua Caliente, Maricopa County). Hand speaks of bighorn in the area and "great droves of antelope," adding that there was no time to go hunting.¹⁸⁷ More pronghorn were encountered in the desert ten miles farther on, at Oatmans, where one was shot and prepared for dinner.¹⁸⁸

Hand made his final--and most dramatic--observation of the fauna on the lower Gila River with this entry:

July 30,--Left Kinnion's Station on or near the Gila River just east of Oatmans at twenty five minutes till two and travelled eight miles. Struck a bend in the river at 4 a.m., had a bath, filled our canteens, and started again. All along this day's march the quail were astonishing; big flocks of them two hundred yards long. I really think there were millions of them in each flock. If I were to tell my old friends in California that, they would say that I had lost my senses, and would not believe me. Came to camp, Gila Bend, about eight in the morning.¹⁸⁹

Hand, of course, was describing the Gambel's quail.

In the fall of 1863 a detachment of the California Column was sent west from Fort Craig, New Mexico, to help establish a new post, Fort Whipple, in the mountains of central Arizona. Some of these men were diverted northward to the area around San Francisco Mountain to keep an eye on roving Navajos. One of these troopers, Frederick G. Hughes, kept a diary, as follows:

By the time we reached the base of the San Francisco Mountains our cattle were giving out and dying to such an extent that it became necessary to either destroy part of our stores, or cache them until the command could go on to its destination....In the

187. George O. Hand, Diary, typescript, Arizona Historical Society, Tucson, p. 17.

188. Ibid.

189. Ibid., p. 18

interim we enjoyed ourselves hunting to our hearts' content, for our camp was a veritable hunters' paradise. It was at a point then called Snider's Water Hole. Bear, elk, deer, antelope and turkey abounded in greater numbers than I have ever seen either before or since. While hunting we would see Indians almost daily and being as we now were in Tonto or Hualapai Apache country we knew them to be Apaches, and really expected each day that our camp would be attacked.¹⁹⁰

On February 24, 1863, Abraham Lincoln signed into law a bill making Arizona a territory, separating it from New Mexico along a north-south line at approximately 109 degrees west longitude. However, members of the provisional government did not reach Arizona from the east until late in the year (another contingent headed for Fort Whipple from California). James D. Houck, a member of the expedition that left Santa Fe under army escort, reported that Governor John Goodwin and his party reached Navajo Springs (now Navajo, Apache County) on the cold, raw day of December 29. Six inches of snow covered the ground, and the camp was muddy and uncomfortable. The party was completely out of meat, so Houck and a couple of Mexicans went out to kill pronghorn, since several herds had been seen near the camp. The hunters were successful, and a number of animals was brought in. After a flag-raising ceremony officially establishing the Territory of Arizona, the entire command feasted on pronghorn steak and drank champagne to commemorate the occasion.¹⁹¹

Six months later, on June 12, 1864, a company of infantry and a troop of California and New Mexico cavalry gathered at Los Pinos, New Mexico, to escort a wagon train of provisions to the new palisade of unbarked pine logs known as Fort Whipple. Along with the wagons was a

190. Arizona Daily Star, 5-23-09.

191. Will C. Barnes Collection, Arizona Historical Society, Tucson.

herd of cattle and sheep to be driven through 500 miles of wilderness, much of which was the domain of Apache and Navajo raiding parties.

One of the members of the column was the 21-year old surgeon in charge, Dr. Elliott Coues. His medical background belied the fact that his primary interest was natural history, especially ornithology. At the request of the Smithsonian Institution, he had received his present assignment, in his words, to "shoot up the country between the Rio Grande and the Rio Colorado." Free transportation had been assured for all his collections, and to preserve specimens he brought along a five-gallon keg of alcohol.

Between June 16 and July 29 Dr. Coues made many excursions along the flanks of the column collecting a wide assortment of vertebrates. He rode out each day on a buckskin-colored mule named Jenny Lind, in recognition of her vocal qualities, his uniform consisting of a corduroy suit containing many large pockets. On the saddle was an additional array of sacks and pouches. Generally, Coues would be gone until the detachment had camped and been settled in for several hours. Sometimes the troops heard the far-off discharge of his double-barreled shotgun. On his return to camp, he would empty his pockets of specimens and make up study skins of birds and mammals while officers and men flocked around to watch. Coues would eagerly instruct anyone interested in making up a skin.

Unfortunately, the keg of alcohol did not last long. It was emptied by soldiers who felt the need of a libation following a dusty day on the trail or in the saddle, and apparently the mass of well-soaked reptiles did not detract from the flavor. In any event, the collection was ruined.

During a tense period on the march, when Apaches were making frequent attempts to stampede the livestock, Coues tended to remain closer to the escort, but an interesting bird never failed to lure him away despite the danger of ambush. At one point all firing of weapons was forbidden, orders being issued to rally in the direction from which any shot came from. One day the bluecoats swung hastily about and gathered to the rear, only to find Elliott Coues holding up a bird. As he explained the situation, "I really could not allow this bird to escape without causing a serious loss to science."

The colonel in command of the column responded thus: "Well, I shall deprive science of any further collections for a week by placing you in arrest and taking possession of your gun and ammunition."

The arrest only lasted a few hours. Relenting, the colonel merely gave Coues a lecture, making it clear what the young surgeon might expect if he fired his shotgun again or left the escort before it was out of hostile country.¹⁹²

Stationed for a year at Fort Whipple, Coues earned a creditable reputation as a surgeon. When he was ordered to Washington, D.C., in November, 1865, he took with him the skins of 250 species of birds, including six unknown to science. His paper, "The Quadrupeds of Arizona," published by the American Museum of Natural History in 1867, was based on his observations during his tour of duty in central Arizona.

While at Fort Whipple, in what is now Prescott National Forest, Coues took to the field at every opportunity. His apparent recklessness

192. C.A. Curtis, "Coues at His First Army Post," Bird-Lore, IV (1902), pp. 5-9.

was tempered in the following comment, prompted by the frustration of not always being at complete liberty to perform as he pleased: "My operations were conducted at the most imminent personal hazard from the continual presence of hostile Indians--the wily and vindictive Apaches--which always cramped, and at times necessitated entire cessation of investigations."¹⁹³

The following species accounts are taken from Coues' notes and recollections stemming from the period 1864-1865, when he was stationed at Fort Whipple, close to the new territorial capital of Prescott.

Merriam's Turkey: The wild turkey was a permanent resident of the mountains around Fort Whipple (the Sierra Prieta, Granite Mountain, the Bradshaws, etc.). However, as early as the middle 1860's turkeys were, in Coues' opinion, "quite rare, so much so that I procured no specimens."¹⁹⁴

Abert Squirrel: Coues considered this species shy and hard to shoot. Fort Whipple was probably on the extreme western edge of the range of the Abert squirrel, though Coues does not cite the localities where he saw it.¹⁹⁵

Beaver: Beavers were found in "great abundance" on all the streams of interior Arizona, according to Coues. They were particularly numerous in the 1860's on the Salt and San Francisco Rivers. Beaver dams

193. Elliott Coues, "List of the Birds of Fort Whipple, Arizona," Proc. Acad. Nat. Sci. of Philadelphia, v. XVIII (1866), p. 42.

194. Coues, "Birds of Fort Whipple," p. 94.

195. Elliott Coues, "The Quadrapeds of Arizona," Amer. Nat., v. 1 (1867), p. 356.

were found every few hundred yards on some streams. Old trappers attributed the increase to Indian depredations as well as the demise of the fur market. It simply was not safe for trappers to operate because of hostile Apaches.¹⁹⁶

Gray Wolf: This species was common around Fort Whipple, although it was secretive and rarely seen during the day. A number of specimens were taken in winter, all being grizzled white;¹⁹⁷ Coues heard of no black or tawny individuals from the mountains of central Arizona.¹⁹⁸ Many of the wolves killed had been poisoned for their furs, which made fine robes. Wolves were generally distributed over the Territory, although not so common as the coyote.¹⁹⁹

On one occasion Dr. Coues took detailed notes on a mixed chorus of wolf and coyote howls heard one night in central Arizona:

A short, sharp bark (Coues is speaking of the coyote) is sounded, followed by several more in quick succession, the time growing faster and the pitch higher, till they run together into a long-drawn lugubrious howl in the highest possible key. The same strain is taken up again and again by different members of the pack, while from a greater distance the deep melancholy baying of the more wary Lobo breaks in, to add to the discord, till the very leaves of the trees seem quivering to the inharmonious sounds.²⁰⁰

196. Elliott Coues, "The Quadrupeds of Arizona," pp. 362-363.

197. Ibid., p. 289.

198. Elliott Coues, "Notes on a Collection of Mammals from Arizona," p. 134.

199. Ibid.

200. George M. Wheeler, Report upon Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian, v. V, (Washington, 1875), p. 45.

Grizzly Bear: Grizzlies were still common in wooded and mountainous areas of central Arizona in the 1860's. They had been especially numerous on San Francisco Mountain and Bill Williams Mountain, "though they appear to have somewhat decreased of late," Coues said.²⁰¹ He was with a party that killed several grizzly bears on the slopes of the latter peak in 1864.²⁰²

Like Kennerly, Dr. Coues observed that grizzlies extended south into the Sierra Madre of Mexico. He also brought out the important point--when one examines old records--that frontiersmen of the period often called the lighter or browner grizzlies "cinnamon" bears.²⁰³

Jaguar: Elliott Coues suspected that jaguars might be found in Arizona, but he never saw any, or knew of anyone who had.²⁰⁴

Mountain Lion: While generally distributed, the mountain lion was seldom seen, and Coues never met with one or heard its cry. He did see the skins of lions killed by Indian arrows.²⁰⁵ His opinion that mountain lions were rare in the Arizona of the 1860's is probably based on the fact that few, if any, frontiersmen owned well-trained hunting dogs at that time, especially in the face of Apache hostility. Therefore, not many situations would have arisen in which one might expect to see lions or their sign.

201. Coues, "Quadrupeds of Arizona," p. 354.

202. Wheeler, v. V, pp. 65-66.

203. Ibid.

204. Coues, "Quadrupeds of Arizona," p. 286.

205. Ibid.

Mule Deer: Dr. Coues found mule deer still very abundant around Fort Whipple in 1864-1865, although they had decreased from the numbers in evidence when the first white prospectors entered the region in 1863. The species was enduring heavy hunting pressure from both Indians and white settlers during Coues' tour of duty, and it contributed substantially to the food and clothing needs of both ethnic groups.²⁰⁶ Mule deer were economically far more important than the white-tailed deer, which was rare near Fort Whipple.

Coues usually saw mule deer singly, except in autumn, when the species tended to form herds. Once, in October, he observed between 20 and 30 deer feeding in a little glade in thick pine woods. Mule deer were not, in Coues' opinion, inhabitants of open grasslands, preferring thinly wooded tracts comprising oaks or junipers, or mountainsides covered with pines. They were also common in chaparral.²⁰⁷

Pronghorn: Coues had little to say about pronghorn except that in the middle 1860's they were common on the open grasslands of central and northern Arizona.²⁰⁸

Bighorn: In central Arizona the bighorn had been considerably reduced by 1864-1865. It inhabited only the most rugged mountain regions, and Coues found a number of horns lying at the bases of cliffs near Fort Whipple.²⁰⁹

206. Coues, "Quadrupeds of Arizona," p. 535.

207. Ibid., p. 536.

208. Coues, "Notes on a Collection of Mammals," p. 136.

209. Ibid.

CHAPTER IV

PASSAGE TO CALIFORNIA, 1849-1850

For three years following the military expeditions of Kearny and Cooke, only a handful of the hardiest Americans braved the harsh and little-known region called Arizona. An occasional detachment of dragoons passed through on its way to a new post in California. Here and there, a few beaver trappers hung on, unable to change to a new life despite the absurdly low price of pelts that prevailed. There were also outlaws and other social castoffs, including gangs who hunted Mexicans and Indians for their scalps, then turned them in to the authorities of Chihuahua and Sonora for bounty money, claiming that their victims were Apaches.

Once, in 1848, a group of scalp hunters based in Fronteras, Mexico, ranged all the way to the Grand Canyon country while practicing their nefarious trade. Somewhere on the Little Colorado River they killed a "large brown bear," according to one of the men, and its meat was eagerly consumed.¹ This bear could have been of either species, but in that semi-arid region of open, grassy mesas the chances are particularly good that it was a grizzly. Ursus horribilis was common then in the San Francisco peaks to the west, in the Chuskas and other ranges to the northeast, and almost certainly it wandered to the South Rim of the Grand

1. Samuel E. Chamberlain, My Confession (New York, 1956) p. 277.

Canyon.² There is also a strong possibility that grizzlies existed on the North Rim and in the Kaibab region generally, since they inhabited the Pine Valley Mountains just to the north in southern Utah.³

The discovery of gold at Sutter's Mill, also in 1848, was to lead to a new phenomenon in Arizona: the emigrant wagon train on its way to California. Roughly two dozen forty-niners described their journeys in diaries (as compared to hundreds who took the Great Plains route), and some of them were interested in the fauna and flora along the Gila Trail.

When gold fever swept the United States early in 1849, many newspapers, especially in Texas, made much of Cooke's wagon road as the best way to the new El Dorado. The Houston Democratic Telegraph and Texas Register, for instance, on January 25, 1849, described it as being "so well furnished with good pasturage and water that mules or horses could travel the whole distance without interruption, and the journey could be made in about two months with pack mules and in about three months with wagons."

Texans were on the way to California by January. From Brownsville, Corpus Christi, and San Antonio, the gold trails headed west into Mexico, taking in a chain of villages where food and other supplies could be bought. At Parral the emigrants could either turn toward the Gulf of California to board ships for San Francisco, or they could head northwest to Janos, Guadalupe Pass, and Cooke's route. There were other trails as well: one to Altar, then north to the Pima villages, another straight

2. Vernon Bailey, Mammals of the Grand Canyon Region (Nat. His. Bull. no. 1, Grand Canyon Nat. His. Assoc., 1935), p. 35.

3. Donald F. Hoffmeister, Mammals of Grand Canyon (Urbana, 1971), p. 66.

west from New Mexico to Tucson by way of Apache Pass, and a third from Albuquerque to Zuni, continuing southwest across the Mogollon Plateau to the Gila River.

Fewer people took the Gila Trail than the Platte-Humboldt route across the Great Plains, perhaps due, in part, to the reputation of the Apaches. Yet the southern course had advantages. There were not as many mountains to cross, and although the weather was hot in summer there were no winter blizzards to contend with. In 1849 alone more than 9,000 Americans followed Cooke's route, and according to one record, about 60,000 emigrants crossed southern Arizona in the years 1849-1851 (see Fig. 5, p. 226).

Most emigrant parties were large; therefore there were few brushes with Indians. But families and small groups were often attacked. Herds of cattle, gathered in south Texas, were driven with some of the wagon trains, and despite the rigors of the journey surviving animals bought 100 dollars a head on the hoof in California.

Like Cooke before them, the first forty-niners to cross Guadalupe Pass found wild cattle still abundant. Owen Coy, an emigrant in one of these early parties, wrote that the beef provided by the wild bulls was as important to travelers on the southern route as buffalo were to the wagon trains crossing the Great Plains.⁴ Forty-niners often stopped for several days in the San Bernardino Valley in order to replenish their larders with fresh meat. The bulls were as dangerous as Cooke's men found them, especially to hunters on foot, but they were far more conspicuous and easy to hunt than the numerous deer and pronghorn. Possibly for this

4. Owen C. Coy, The Great Trek (Los Angeles, 1931), p. 243.

reason, few journals of the Gold-Rush emigrants refer to wildlife in the extreme southeastern corner of Arizona.

On May 19, 1849, an emigrant train passed through Guadalupe Pass and stayed overnight in the San Bernardino Valley. One of the travelers, John E. Durivage, an outstanding reporter for the New Orleans Daily Picayune, recalled an abundance of water but complained about the all-night bellowing of wild cattle near the camp. The next day the forty-niners moved on across open country covered with excellent grass, although there was no water until they reached the vicinity of Agua Prieta. On the way, according to Durivage, "guns were popping off in all directions" at the cattle.

Durivage and his party continued west to the village of Santa Cruz, where they began to follow the Santa Cruz River downstream. On May 27 the emigrants camped about eight miles north of Tumacacori Mission. "Just below this point," relates Durivage, "the river sinks into the sand and appears again only at intervals for many miles. Here the river is crossed for the last time for fifteen leagues, although the cottonwoods marking its course are frequently in sight. The grass for several days past has been coarse and innutritious."⁵

In contrast, another group passed down the river in August, presumably at the height of the summer rains. In the words of an emigrant, "The valley is covered with mesquite timber and is the finest grazing country (except California) I ever saw."⁶

5. Ralph P. Bieber, "Southern Trails to California in 1849," The Southwest Historical Series, V (Glendale, 1937), p. 209.

6. Ibid.

Durivage nearly died of thirst and exhaustion crossing the desert between Tucson and the Pima villages. After recovering among the Indians, he started down the Gila River with his party of forty-niners in early June. He describes the river in the area of Gila Bend: "We found excellent grass along the river bottom--a species of coco grass and timothy. Whole acres of Mexican sunflowers covered the entire bottom. Quail and a species of dove were in the greatest abundance. The river at this point branches and flows with much less rapidity than above, over a broad, sandy bed--perfect quicksand."⁷ Grass was spotty, being good in some areas, totally absent along other stretches of river.

Somewhere between the present sites of Yuma and Dateland, on the lower Gila, Durivage reported that "The whole bottom abounded in deer."⁸ These were probably desert mule deer, since it seems unlikely that white-tails would have been found this far west.

Durivage made his final observation on the fauna of Arizona at the crossing of the Colorado River near its confluence with the Gila. "There is no game in the vicinity of the Colorado--at all events (none) at the present season."⁹

On the same day that Durivage crossed Guadalupe Pass, an emigrant train originating in Missouri also negotiated the defile. Their chronicler was a New Englander named A.B. Clarke, who had become separated by

7. Bieber, "Southern Trails," p. 221.

8. Ibid., p. 223.

9. Ibid., p. 227.

illness from a Massachusetts company that had gone on ahead. Clarke was impressed by the lush appearance of the San Bernardino Valley, considering it "one of the prettiest valleys" he had ever seen, although on the higher tablelands to the west desert shrubbery took the place of grassland. Excellent pasturage for the train's livestock persisted all the way to the Sulphur Springs Valley. Clarke was another traveler to regard the wild cattle as more dangerous than buffalo, adding that many of them had escaped from herds driven north from Mexico by Apaches returning from raids. One member of the company was tossed in the air by a charging bull, but escaped with only slight injuries when another member of his hunting party quickly brought the animal down with one well-aimed shot.

On May 23, while the emigrants were crossing the treeless grassland of the Sulphur Springs Valley, Clarke was intrigued by a lone pronghorn standing on the plain with no others of his kind within sight. It was his only reference to pronghorn, in a region where other travelers were to report them abundant.

The next day Clarke's party entered the valley of the San Pedro River, which they followed for several days. Since the emigrants later passed through Santa Cruz, Sonora, on their way to Tucson and the Pima villages, the train must have headed south up the river at the point where the Mormon Battalion crossed on its northwesterly course in 1846.

Clarke found indications that the valley had been intensively farmed by Mexican settlers before the Apaches drove them out. The forty-niners replenished their water supply from abandoned irrigation ditches. In Clarke's mind, the fine expanse of grassland must once have supported large herds of cattle. As he concluded, "The Indians, now, have

undisputed possession. It must be a miserable race that could deliver up such a valley, with its delightful climate."

There were places on the upper San Pedro that supported a good stand of riparian growth. Cottonwoods predominated in the gallery forest, indicating the direction of the river for a long distance, but there were also sycamores, willows, and mesquites.¹⁰ This part of the valley varied in width from one to four miles, with "stunted oaks" growing in the foothills of the nearby mountains.

On May 27 Clarke made the following entry in his journal, after a day following the upper San Pedro:

Three of the men attacked a grizzly bear last night on the other side of the river. They felled him three times, but their ammunition gave out. He was running towards one of the men, whose gun was yet loaded with buck shot, when coming very near, he let it blaze into his face, when they all ran, the men in one direction and the bear in another; this was the last that they saw of him. In the morning, they went out again, and tracked him by his blood some distance.¹¹

Following the established route down the Santa Cruz River, Clarke and his companions reached Tucson, then braved the heat of the Sonoran Desert in early June to drive their wagons to the Pima villages. He made the following observation of the Pima and Maricopa communities along the Gila River: "Nearly the whole of the Gila is drawn off by zequias for irrigating the land, which is laid out in little squares, with sluices between, to admit the water from the zequias."¹²

10. A.B. Clarke, Travels in Mexico and California (Boston, 1852) pp. 82-83.

11. Ibid.

12. Ibid., p. 92.

To save time, the company crossed a stretch of waterless desert at the base of the big bend of the Gila, arriving back on the river at noon on June 9. On the way, Clarke saw the weathered horns of a bighorn lying on the slope of a hill, probably in the Maricopa Mountains.¹³

The wagon train cleared the bend country two days later, heading downstream somewhere near the present boundary between Maricopa and Yuma Counties. Clarke made this observation of the river: "The river was at this place a quarter of a mile wide. The volume of water at times must be immense, as there is brush and other substances lodged in the mesquites from ten to twenty feet high, through the adjoining plain, over which we have been traveling."¹⁴ He also noticed that the river on June 12 did not occupy more than a quarter of its bottom, the remainder consisting of a deep bed of sand, baked so hard and cracked so deep that it was difficult to estimate the depth of the fissures. The river banks were generally low along this stretch, the bottom being covered with alluvial soil from the periodic overflows. There were scattered heaps of driftwood and a dense growth of weeds, but no grass.¹⁵

In places, sunflowers from eight to 10 feet high grew in extensive clumps, giving the appearance of cultivated fields. Other flowers, of various colors, grew in profusion, and a narrow line of cottonwoods marked both sides of the river. Gambel's quail were everywhere, running in large flocks through the weeds or under the heaps of driftwood.¹⁶

13. Clarke, p. 95.

14. Ibid., p. 96.

15. Ibid.

16. Ibid., p. 99.

The emigrants had a hard time clearing a way for their wagons through the dense riparian growth on the Colorado River a mile and a half below its junction with the Gila. This jungle consisted of willows and cottonwoods shading an almost impenetrable wall of "canes, vines, and weeds." Farther back from the river were extensive mesquite bosques. The river itself was about 350 yards wide, with a deep, strong current. Clarke commented on the contrast in the color of the water in the two rivers. The Gila was "clear and sea-green," while the Colorado was a deep yellow, from the "clay and mud" it carried.¹⁷

In late June an expedition of 52 men mounted on saddle horses, with all their supplies on pack mules, entered Guadalupe Pass. They had no wagons, so made good time. One of these "Texas Argonauts," who had just weathered a brisk skirmish with Apaches under Mangas Coloradas, was a literate Tennessean named Benjamin B. Harris. Near the summit of the pass, in a mixed woodland of evergreen oaks, junipers, and Chihuahua pines, Harris stopped to watch a flock of wild turkeys, including some young birds.¹⁸

Like most emigrants who had just come through Guadalupe Canyon, Harris' party camped near the ruins of Rancho San Bernardino, in an area of abundant water. He observed that the wild cattle remained out of sight in the hills during the day, coming down into the valley after dark for water and grazing. On the way to Agua Prieta, somewhere south of the Perilla Mountains, the emigrants saw a herd of feral cattle estimated at between five and fifteen thousand head.

17. Clarke, p. 105.

18. Benjamin B. Harris, The Gila Trail, ed. Richard H. Dillon (Norman, 1960), p. 71.

A routine journey took the Harris party to Santa Cruz, on the Santa Cruz River, then down the river to the abandoned ruins of Tubac. Here, Harris wrote that thousands of turkeys came down to the Santa Cruz to drink. "Their fresh tracks were visible everywhere about the water," he said.¹⁹

When the column resumed its northward journey, Harris commented on the abundance of mesquite in the valley, observing that the horses and mules seemed very fond of the pods that grew on the trees at that time of year. He also marveled at the structure of a sahuaro cactus growing near Tubac. (Today, Tubac is in mesquite-grassland country. Ocotillo and small cacti are found nearby, but no sahuaros.)

The emigrants continued downriver, camping at one point half a mile north of Tucson. It was late in the dry season, but there was still water in pools in the bed of the Santa Cruz.²⁰

After an uneventful crossing of the desert, the forty-niners followed the rich Gila bottom through a dense mesquite bosque to reach the Pima villages.²¹ The next leg of the journey took them due west to the area of modern Gila Bend, where they picked up the river again. Harris' journal reads thus: "Two or three mornings after, while breakfasting in the Gila bottom, a herd of deer--the largest I ever saw, being as big as common burros--came to view forty yards away. One, struck with a ball, made for the mesa. With another party, I tracked him by his blood along

19. Harris, p. 77.

20. Ibid., p. 79.

21. Ibid., p. 80.

the course of a dry arroyo about three miles."²² The mule deer escaped, in part because Harris discovered some Indian pottery shards protruding from the earth, the archeologist in him taking precedence over the hunter.

Downstream, the Gila continued broad and shallow until it passed the northern end of the Gila Mountains. Here, the emigrants went swimming, since the water was waist-deep.²³ Harris took the time to notice that "millions of blue quail inhabited near the water."

Harris' company crossed the Colorado without difficulty, being towed on rafts by swimming Yuma Indians. The river in early summer was swollen with snow water, deep and cold, and about 500 yards wide.

Back up the Gila, near its headwaters in what is now Gila National Forest, another party of forty-niners was just getting under way in July on the trail taken by Stephen Watts Kearny and the Army of the West. Like many mountain men twenty years earlier in this region, these emigrants did not have much luck on hunting excursions. Diarist Robert B. Green, a Pennsylvanian, reported talking to one of the company on his return to camp: "Capt Dixon just shot a wolf & says 'Green I shot the wolf but by God I could not get the deer,' game is very scarce no ingins today but lots of mockasin tracks."²⁴

Near the junction of the Gila and San Pedro Rivers, Green expressed his discontent thus: "There is no game worth mentioning along

22. Harris, p. 84. The old mesquite bosques no longer exist along this stretch of the Gila. The sandy bed of the stream is indicated by a few cottonwoods.

23. Ibid., p. 85.

24. J. Orrin Oliphant, On the Arkansas Route to California in 1849 (Lewisburg, 1955), p. 59.

this river, no country, no people, no timber, no fresh water no grass, & no comfort."²⁵ On the lower Gila, beyond the big bend, things began to look up. "Saw 3 old fashioned deer today the 1st in a great while." Once again, if the point needs to be made, it is apparent that on the Gila River the larger game animals were spotty in their distribution and not a dependable source of food for large parties.

Another chronicler of the Gold Rush, George W.B. Evans, seemed particularly interested in landscapes. When the Defiance Gold Hunter's Expedition, of Defiance, Ohio, reached the middle Santa Cruz River in modern Santa Cruz County, Evans thought they were in the most beautiful valley he had ever seen. "All kinds of wood grows on the hillsides," he wrote, "and fine towering cottonwoods mark the course of this river."²⁶

When Evans' party reached the Pima villages on August 22 he recorded his impressions of the adjacent stream: "The Gila River opposite our present camp is a deep, narrow, and rapid stream of warm, muddy water, the banks covered with a dense growth of wild willows and weeds, tall cottonwoods, and the low willow tree, known as the water willow."²⁷ It was late in the summer rainy season, and Evans may have been observing the Gila just below the point where the Salt River comes in from the east. He goes on to comment on the fact that grass was found on the high benches several miles to each side of the river, but none down in the bottoms

25. Oliphant, p. 66.

26. G.W.B. Evans, Mexican Gold Trail, ed. Glenn S. Dumke (San Marino, 1945), pp. 149-150.

27. Ibid., p. 153.

themselves. Like Clarke, he saw large stands of a tall, sunflower-like composite.

Farther downstream, in what is now Yuma or western Maricopa County, Evans saw "indisputable evidence of the presence of the beaver, deer, and wolves (coyotes)."²⁸ He did not elaborate on this "evidence," but he must have been referring to dams and tracks.

At the Colorado River in early September Evans wrote a detailed account of the water flow:

The river here is about two hundred yards, with a five-mile current, good sloping banks on this side but very bluff and about twelve feet high on the other (California). The waters from the melting of the snows above are now receding, but have for weeks past been very high. The rise of the water in this river and tributaries north commences about the middle of June, and about the last of July or first of August, the snows being melted, the water recedes and a stream of two miles in width is at this time within banks, and about the distance across above spoken of.²⁹

In the middle of September a wagon train of emigrants calling themselves the Illinois Company reached the treeless grassland just east of the Guadalupe Range called today the Animas Valley. A party of hunters sent out to scour the plain had poor luck. H.M.T. Powell, one of the forty-niners, believed that Indians had chased away the game. However, a scouting party that probed the foothills of the nearby Animas Mountains

28. Evans, p. 158.

29. Ibid., p. 160.

reported "plenty of deer, herds of Antelope, and some bear tracks near the Sierra," in Powell's words.³⁰

Despite the loss of several wagons during the ordeal of crossing Guadalupe Pass, Powell's keen eye catalogued the beauty of the land. In the bottom of Guadalupe Canyon, on the west side of the Guadalupe Mountains, Powell described the plant community: "Walnut, sycamore, cedar, blue ash, scrubby oak, small white mulberry and willow and a scrubby tree with red, smooth bark; the South Carolinans call it Red Skunk; I suppose it is a kind of laurel."³¹ The last-named plant was obviously the manzanita, Arctostaphylos sp.

That night Powell relaxed in camp after sketching the scenery. He enjoyed a strip of fresh venison broiled over mesquite, and his journal entry for September 20 states: "Deer are plentiful here, but very small; venison plenty in camp."³² The deer he reported were whitetails; he emphasized the small size characteristic of the Coues subspecies, Odocoileus virginianus couesi, which is common there today.

While crossing the San Bernardino Valley, Powell mentions an abundance of grass, but he also speaks of the widespread presence of

30. H.M.T. Powell, The Santa Fe Trail to California, 1849-1852, ed. Douglas S. Watson (San Francisco, 1931), p. 122. The bears referred to were probably grizzlies, since the Animas Range ties in with the San Luis Mountains in Mexico, where the species was common. There are also grizzly records from the Guadalupe Range to the west, and from other mountains in southwestern New Mexico.

31. Ibid., p. 124.

32. Ibid.

mesquite, covering the plateau in places.³³ Farther west, at the south end of the Sulphur Springs Valley (near the site of Douglas), Powell entered this comment in his journal: "hunters killed 3 wild cows. On arriving at Camp, saw to the North what we supposed to be a herd of wild cattle. Men turned out quick to follow them, but they proved to be a herd of Antelope."³⁴ Again, on the Santa Cruz River, probably on the international boundary near the Buena Vista land grant: "On our road over the low hills we saw a herd of about 20 Antelope some 3000 yards from us; pretty creatures, they bounded away as fleet as the wind."³⁵

The Illinois Company kept to the Santa Cruz Valley while working its way northward, and Powell reported that deer and pronghorn were "very plentiful" in an area of "bunchy swamp grass" near Quebabi Mission, about ten miles south of Tumacacori.³⁶ It was October when the company camped near the latter mission, on the Santa Cruz River. Powell remarked that sleep was difficult because of the constant howling of wolves. He could, of course, have been referring to coyotes, but the gray wolf was native to this area and might well have been what he was listening to.

Powell's group followed the trail left by earlier emigrants to the Pima villages and down the Gila. At a point about 30 miles from the

33. Powell, pp. 126-127. This report is at odds with a widely held belief that mesquite was always restricted to washes and flood plains before the era of American cattle grazing. Mosaics of Chihuahuan desert were apparently present in 1849 and were not a more recent development following the period of settlement and ranching.

34. Ibid., p. 129.

35. Ibid., p. 138.

36. Ibid., p. 139.

Colorado he mentioned the fact that someone shot a bighorn in the hills across the river to the north (he probably means the Muggins Mountains, Yuma County). On the next day (it was now November) the hunter came into camp with his report, as jotted down by Powell:

Dr. Snelling killed four sheep in the range of hills across the river, just north of us. Brought one in, a young one; tan color, black streak along his back and black tail. He says they are all of the same colour; the rams with very large, heavy horns reaching behind their shoulders. He thought the head, neck and horns of one he killed weighed as much as the rest of the carcass. He suffered so severely from thirst whilst among the hills that he drank 3 or 4 double handfuls of the blood of one of the sheep he killed.

Dr. Snelling tells me the sheep before they lie down scratch away the loose stones to make it smooth. He says he saw a number of places thus cleaned off for their own comfort. He also says that when a rock falls from above they are much more alarmed than at the crack of a rifle; at the sight or sound of the former they bound madly away as if aware of the danger, but at the sound of the latter, they stop to look to see what it means. I have an idea that they will soon learn from the Emigrants that a rifle is as much to be dreaded as a rock.

Jones tells me that some of his party killed wild sheep (or goats) as far back as the mountains between Tucson and the Pima villages.³⁷

When the Illinois Company reached the Colorado River, Dr. Snelling informed Powell that beaver sign was abundant everywhere; slides, dams, and lodges. He also saw large numbers of waterfowl.³⁸

A group of forty-niners who headed straight west in the fall of 1849 from Socorro, New Mexico, to contact Cooke's wagon route included another chronicler, Judge Benjamin Hayes. He makes frequent references to the great abundance of pronghorn on the plains of southwestern New

37. Powell, pp. 169-171. The ranges referred to could have been any of the following: Sierra Estrella, Sacaton, and Picacho. Neither can the Tucson Mountains be ruled out.

38. Ibid., p. 174.

Mexico, from the Mimbres Valley on west, as well as on the open grasslands on the western side of the Guadalupe Range. The latter region would include the San Bernardino and Sulphur Springs Valleys, and Hayes also refers to a "large gang of antelope" on the upper San Pedro River, right on the present Mexican border.³⁹ All along the international boundary, between the San Bernardino and San Pedro Valleys, wolves howled at night, and wild horses, wild cattle, and deer (species not differentiated) were abundant on the upper San Pedro.⁴⁰

Judge Hayes makes the additional observation that wolves were frequently heard or seen along the entire wagon route between southwestern New Mexico and Tucson. They were particularly noticeable in the mesquite bosque near San Xavier Mission, as this statement brings out: "They are howling around us, and one of very large size, was seen an hour or two since."⁴¹

Near the end of the journey, on the lower Gila, close to its confluence with the Colorado, Judge Hayes mentions beaver slides and speaks of seeing the animals playing in the water at a point where the Gila River was about half a mile wide.⁴² Charles Pancoast, another emigrant, referred to a considerable growth of flags and reeds above the

39. Benjamin Hayes, Diary of Judge Benjamin Hayes, October 31, 1849 to January 14, 1850, Ms in Arizona Historical Society, Tucson, p. 24.

40. Ibid., p. 25.

41. Ibid., pp. 35-36.

42. Ibid., p. 58.

mouth of the Gila, and "much evidence of beaver."⁴³ On the same stretch of the river, Judge Hayes comments on an "immense number" of Gambel's Quail, saying that the mesquite bosque was swarming with them.⁴⁴

Early in October a party of forty-niners came through Guadalupe Pass and followed the tracks left by other groups on Cooke's wagon trail. One of the emigrants, Lorenzo Aldrich, made an observation that symbolized nature's resurgence over the fleeting traces of Spanish civilization: he spotted a large grizzly bear prowling through the ruins of San Bernardino Hacienda.⁴⁵

In the same month, 1849, an emigrant train crossing western New Mexico decided to try a new cutoff. Instead of heading southwest to Guadalupe Pass, it continued on past the Burro Mountains to Apache Pass in the Chiricahuas. Robert Eccleston, one of the company, recalled that a companion shot the first mule deer taken on the expedition at a range of 150 yards on the west side of the pass. Eccleston also admired the landscape; the nearby mountain slopes were "beautifully studded with scrub oaks." He was likewise impressed by the numerous stands of large junipers.

Eccleston's party proceeded to Tres Alamos crossing on the San Pedro River, passing Willcox Playa on the way. Somewhere in the Little Dragoon Mountains, near Nugent's Pass, one of the emigrants encountered

43. Charles E. Pancoast, A Quaker Forty-Niner, ed. Anna P. Hannum (Philadelphia, 1930), p. 252.

44. Hayes, p. 60.

45. Lorenzo D. Aldrich, A Journal of the Overland Route to California and the Gold Mines (Los Angeles, 1950), p. 47.

two grizzlies. He shot one, but the other bear charged, forcing him to flee on his horse. The hunter then rode to the San Pedro River for help, the company having stopped there to water the livestock. With two friends he returned to the mountains, but they were unable to find the site of the confrontation, and the trophy was not recovered.⁴⁶

Maintaining their westward course, the forty-niners crossed Pantano Wash and a wide expanse of creosote-bush flats, approaching San Xavier Mission from the east. The company then threaded its way through a large mesquite bosque to reach an abundant flow of water in the Santa Cruz River. There was a good grass cover on the adjacent flood plain, and two pronghorn were shot near the mission.⁴⁷

It was December when Eccleston descended the Gila to a point within 40 miles of the Colorado River. He has this to say about the fauna of the region:

We were in the bottom all day and touched near the river at several points (roughly, between the Mohawk and Copper Mountains to the south). We have seen some deer tracks but not a single hoof since we have been on the river. Ducks, geese, brant, & crane are tolerably plenty, but keep close to the other shore generally, & therefor out of reach. The poor quail is our only victim, but even he is extremely shy. Mr. Adams saw a bear last Saturday, on a cottonwood tree a short distance from camp, & panther & wildcat track may be found occasionally.⁴⁸

46. Robert Eccleston, Overland to California on the Southwestern Trail, 1849, ed. G.P. Hammond and E.H. Howes (Berkeley, 1950), p. 192.

47. Ibid., p. 199. Mammal taxonomists might ponder the fact that these pronghorn might have been from one of two subspecies: the Sonoran pronghorn, Antilocapra americana sonoriensis, or the Mexican pronghorn, A. a. mexicana.

48. Ibid., p. 227.

Some time before news of the gold strike reached the east, the famous wildlife artist John James Audubon gave the following advice to his son John Woodhouse Audubon: "Push on, to the West, even to California: you will find new animals at every change in the formation of the country, and new birds from Central America will delight you."⁴⁹

When family friends formed a "California Company" to head for the gold fields in early 1849, John W. Audubon joined the group as second in command. He was not interested in gold, but in natural history and adventure. On February 8 the company of 80 men sailed on the steamship Transport from New York, with ports of call at Philadelphia, Brazo Santiago, Texas, and Brownsville. From Brownsville, the emigrants boarded a steamer for a trip up the Rio Grande. They disembarked at Rio Grande City, Texas, and while preparing for the trek across northern Mexico were shattered by a cholera epidemic. Eight men died on the river, with more deaths to follow as the demoralized company decided to continue the journey.

At Parras Audubon and some 40 die-hards elected not to take the popular route to Janos and the Gila Trail, but struck due west across the Sierra Madre to Ures and the Sonoran Desert. Enduring the intense heat of late spring, the survivors of the California Company moved on to Altar, then northwards across what is now the Papago Indian Reservation.

Audubon was disappointed at the paucity of visible wildlife. He reported that the horns and antlers of bighorn and mule deer had been

49. John W. Audubon, "Illustrated Notes of an Expedition Through Mexico and California, 1849-50," Magazine of History, XI, Extra Number 41 (1936), p. 7.

seen, but no live animals. The Papagos "live on turtles," wrote Audubon, "and what game they can get, I have seen some elk and antelope skins dressed and terrapin shells are everywhere."⁵⁰ Near the site of modern Sells, Audubon again reported finding the horns of bighorn and was told by Papagos that the species was common in the surrounding mountains.⁵¹

Audubon and his party probably followed the Santa Rosa Valley north to the Gila River, which they reached in an exhausted state. Nevertheless, Audubon had time for zoological pursuits. In the area of modern Gila Bend he shot five Gambel's quail in ten minutes and noticed that they were feeding on pigweed, which was very abundant. Members of the company saw numerous flocks, each with hundreds of birds, while following the trail along the lower Gila.⁵² Audubon also succeeded in shooting two blue-winged teal, but at this time of year waterfowl was scarce on the river.⁵³

A year later, in October, a party of settlers following in the backwash of the forty-niners, camped on the Santa Cruz River just south

50. John W. Audubon, Audubon's Western Journal: 1849-1850, ed. Frank H. Hodder (Cleveland, 1906), p. 148. The "turtles" and "terrapins" are the desert tortoise, Gopherus agassizi. The elk skins might have been obtained by trade with Indians east of the desert, but it is just as likely that Papago hunters killed Merriam elk in the forested ranges that lie to the east. For instance, the species was recorded from the Santa Catalinas, which are on the edge of the Sonoran Desert. See: William T. Hornaday, Our Vanishing Wildlife (New York, 1913), p. 35.

51. Audubon, p. 149. Farther west, at the Cabeza Prieta tanks, there is a large pile of ancient, weathered bighorn horns. Some of these were several hundred years old and had been piled up by Indians, possibly Sand Papagos. They threw the horns into a pile as a good luck omen. See: Arizona Daily Star, May 18, 1964, "Stark Game Refuge Landscape Reveals Relics of Indian Era."

52. Audubon, p. 159.

53. Ibid., p. 160.

of Tubac. William Miles, an emigrant, reports: "Saw twenty black-tailed deer, a herd of wild horses and a flock of wild turkeys; killed none."⁵⁴ The party continued on through the deserted town of Tubac and followed an Indian trail nine miles to the west, away from the river. After finding water they kept moving until dusk, when they came on a camp of Pima Indians. The Indians sold them some bighorn meat, described by Miles as "very palatable and delicious."⁵⁵

The company maintained a northwesterly direction, toward the route taken by Audubon in 1849. Bypassing Tucson they reached a Papago Indian village which Miles called "Santa Rose." The site may have been near the Santa Rosa Mountains in the valley of the same name, but this cannot be ascertained. Miles' succinct reference to wildlife reads thus: "Here we had fine sport after mountain goats on the prairie, but killed none."⁵⁶ Conceivably, the hunters caught a flock of bighorn crossing the desert on their way from one mountain range to another, but on a level stretch horses should have been able to close the distance, enabling the hunters to get in some good shots. It is also possible that inexperienced easterners would mistake pronghorn for a type of "goat," considering the backward curve of the horns. Pronghorn, unlike bighorn, could easily out-distance horses, providing "fine sport," though unsuccessful. It can only be conjectural; both species were found in this general region.

54. William Miles, Journal of the Sufferings and Hardships of Capt. Parker H. French's Overland Expedition to California (Austin, 1965), p. 22.

55. Ibid.

56. Ibid.

CHAPTER V

THE SETTLERS, 1849-1864

The movement of the emigrant trains across Arizona in 1849 made little impact on the land other than leaving wagon wheel ruts, and for nearly a decade the scattered bands of Indians retained control of their wilderness. A trickle of settlers began to come in during the late 1850's but for some time outlaws, both Mexican and American, combined with hostile Indians to bring ranching and farming efforts to a virtual halt, particularly in the southeastern part of Arizona. Even by the end of the Civil War white settlement was largely confined to a few isolated enclaves near areas of dependable water: Tucson, Tubac, Prescott, and Yuma.

It was against this background that several settlers and travelers wrote about the land and its wildlife as they saw it in the 1850's. One of these was Sylvester Mowry, a territorial delegate and successful miner, who published his impressions and those of contemporaries in 1864 under the title Arizona and Sonora. The book mentions the fact that in 1851 the San Simon Valley (Cochise and Graham Counties) was treeless and marshy, a basin where water collected from the surrounding slopes.¹ The Sulphur Springs Valley lacked woody growth, as did much of the middle course of the San Pedro River.²

1. Sylvester Mowry, Arizona and Sonora (New York, 1864), p. 183.

2. Ibid., p. 184.

A delightful eccentric of the period, John C. Reid, left Alabama in 1857, driving a wagon alone across Texas, New Mexico, and Arizona on his way to California. He, like many other travelers, noticed that the water in the San Pedro and Santa Cruz Rivers tended to disappear seasonally from the surface for distances of ten to 20 miles.³ At the Pima villages, he found the Gila a bold, clear little river of uniform volume, fordable in most places, that likewise tended to vanish underground during dry periods.⁴

Another settler, a Virginian named James H. Tevis, described the San Pedro Valley in 1858 while on patrol with Captain Richard S. Ewell, commander of Fort Buchanan (near present Patagonia). "In those days the grass grew very tall in the San Pedro Valley;" he wrote, "in fact, so tall that one could see only the heads of antelopes that roamed over the valley in large herds."⁵ Of the river itself he had this to say:

The San pedro river as they Call it--is a stream one foot deep six feet wide and runs a mile and half an hour and in ten minutes good fishing we Could Catch as many fish as we Could use and about every five miles is a beaver dam this is a great country for them--and we have went to the river and watterd and it was running fine and a half mile below the bed of the river would be as dry as the road--it sinks and rises again.⁶

An official government report, dwelling on the problems of constructing a wagon road across the San Pedro in the late 1850's, describes the river as having a width of 12 feet and a depth of 12 inches. The

3. John C. Reid, Reid's Tramp (Selma, 1858), p. 186.

4. Ibid., p. 222.

5. James H. Tevis, Arizona in the '50's (Albuquerque, 1954), p. 81.

6. Ibid., p. 55.

current flowed in places between clay banks ten or 12 feet high. But on some stretches "it widens out, and from beaver dams and other obstructions overflows a large extent of bottomland, forming marshes, densely timbered with cottonwood and ash, thus forcing the road over and around the sides of the impinging spurs."⁷

The San Pedro Valley was still a stronghold for wildlife in 1859. In that year a group of settlers followed the San Pedro River north down its valley toward the Gila River. Deer were abundant, and grizzly bears were seen near the San Pedro in an area of good grass and large cottonwoods.⁸ During the 1850's, close to the junction of the two rivers, Mowry reported a particularly impressive woodland dominated by ash trees.⁹

After the start of the Civil War, when the Apaches had become implacable enemies of the whites, another evaluation of the San Pedro was made by Captain James M. Box, a soldier of fortune. He commented on the fine soil in the valley and the extensive stands of cottonwood and mesquite. But there were pitfalls to settlement: "As this is on the great trail of the Apaches, who are always on excursions of robbery and murder, to Sonora, very little security could be had by small isolated parties of settlers. The San Pedro is a good mineral country, if not one of the best, and furnishes deer, turkey, and other wild fowl, for game."¹⁰

7. U.S. Congress, House Executive Document 108, 35th Congress, 2d Session, House. (Washington, 1859), p. 87.

8. The Weekly Arizonian, June 9, 1859.

9. Mowry, p. 24.

10. James M. Box, Capt. James Box's Adventures and Explorations in New and Old Mexico (New York, 1869), p. 41.

To travelers of the period, the Colorado River, at the beginning of its steamboat era, was both a highway and an obstacle. Francois Aubry, a noted French-Canadian freighter, negotiated it several times on trips between California and Santa Fe (in 1852 he drove thousands of sheep across Arizona to California). On July 22, 1853, Aubry crossed the Colorado just below the site of Hoover Dam. He observed that the river was over 300 yards wide and 25 feet deep. "It is here a grand and magnificent stream," he wrote, "swift like the Mississippi, and apparently as well adapted to navigation." Aubry saw no waterfowl, it being mid-summer, but there were a few mule deer and pronghorn near the banks.¹¹ On rafts the Aubry party made the crossing, but they landed five miles below the launching point. The journal continues: "The driftwood of which we constructed our little raft appeared to have been cut by beavers. These animals must be exceedingly abundant, as they destroyed during the first night the ropes with which our raft was bound together, and carried off the timber."¹²

At some point in the 1850's, a group of beaver trappers (men who refused to recognize the decade-old demise of the Taos fur trade) worked their way down the Colorado to Mohave Indian country. Like the members of the Whipple expedition, their chronicler, one J.S. Champion, pointed out the fact that the region was "almost destitute of game," and that the Indians had to live on maize, beans, fish, pumpkins and other vegetables.¹³

11. Ralph P. Bieber, "Exploring Southwestern Trails," Southwest Historical Series (Glendale, 1938), pp. 359-360.

12. Ibid.

13. J.S. Champion, On the Frontier (London, 1878), p. 265.

In 1854, following the Gadsden Purchase, the Texas Western Railroad Company, chartered by the state of Texas, commissioned Andrew B. Gray to survey for a railroad route along the 32nd parallel. Gray, who was appointed the first Boundary Commission surveyor in 1849, had been removed from office after a dispute with Bartlett over the terms of the Bartlett-Conde Agreement. Now he was in charge of the first private surveying expedition in Arizona. En route, he met Lt. John G. Parke, surveying the same course for the government. As a result of the two expeditions, the first accurate maps of southern Arizona were created, and much of its geography became known.

After entering Arizona from the east, Gray, whose party consisted mostly of former Texas Rangers, turned north into the San Simon Valley. The expedition members were delighted with the numerous springs of good water, and Gray located the place where San Simon Creek rose in a willow swamp (cienega). In his journal, the stream "ramifies in numerous veins for some miles, until it forms into a regular channel, and although not generally a living stream, has plenty of water for all purposes necessary to make it valuable for grazing."¹⁴ Gray added that the whole valley was covered with grass, "in many places the rich grama, and in others a coarser or less nutritious kind."¹⁵

Gray passed the Chiricahuas, probably through Apache Pass, and crossed the Sulphur Springs Valley, reaching the San Pedro River somewhere on its middle stretch. As he describes it, the San Pedro was a

14. Andrew B. Gray, The A.B. Gray Report, ed. L.R. Bailey (Los Angeles, 1963), p. 61.

15. Ibid., p. 63.

"small stream at this stage, about eight feet wide and shallow; between steep banks 10 feet high and 25 to 50 feet apart. At three points where I have crossed it, it is a living stream, with large fish. At its mouth, where it joins the Gila, it spreads into passes, forming a sort of diminutive delta....Abundant springs and large districts of grama were frequently met with from half a mile to a mile off."¹⁶

In July, 1854, Charles D. Poston and a small party came up the west coast of Mexico, then down the Gila from Gila Bend to Fort Yuma. As Poston viewed the trip, "The journey down the Gila was monotonous--we killed some buck deer--made seines out of our blankets, and caught some fish, and fed mostly on mesquite beans."¹⁷ James Tevis saw another aspect of the Gila in 1857. In the fall of that year he joined Mose Carson, Kit Carson's brother, on a trapping expedition to the Gila and San Francisco Rivers. Beaver and otter were abundant on both streams.¹⁸

One night, while Tevis and Carson were camped on the Gila close to the mouth of the San Pedro River, they heard a tree fall, cut down by beavers. Tevis reported that the beavers were building a dam across the Gila a little bit downstream and that the water was backing up and flooding their campsite. When their blankets got wet the two men packed up and went to watch the beavers at work. A large cottonwood was being

16. Gray, p. 77.

17. Wallace W. Elliott (comp.), History of Arizona Territory (San Francisco, 1884), p. 208.

18. Tevis, p. 25.

cut up for construction material, and mud was also transported to the campsite.¹⁹

James G. Hamilton, an emigrant on his way to California, stopped to camp near San Xavier Mission on the evening of October 14, 1857. He describes the valley of the Santa Cruz River: "We reached this place night before last some time after dark, and yesterday morning moved camp a mile down the creek, and have now a beautiful camping place in a valley surrounded by mountains and timber and beautiful, level prairie in the center with fine grass knee high and plenty of water and wood."²⁰ This area is now close to the southwestern edge of Tucson.

A year later, in July, 1858, a party of settlers bound for California set out over Beale's wagon route across the 35th parallel. One of the pioneers, John Udell, left a record of the two attempts necessary before the expedition crossed northern Arizona. On the first journey the settlers saw mule deer in the bottoms of the Little Colorado, shooting one near the site of Leupp. Udell speaks repeatedly of the spectacular cover of grass along the Little Colorado and on the adjacent plateaus.²¹

As the train approached the eastern foothills of San Francisco Mountain, Udell continued to express delight over the blanket of grass, now covering highland valleys with an open forest of ponderosa pines. An added note mentions the fauna: "There is an abundance of wild game, such

19. Tevis, p. 45.

20. James G. Hamilton, My Dear Cornelia, Letters by James G. Hamilton During an Overland Trip, 1857-1858 (Fresno, 1951), p. 6.

21. John Udell, "Journal of John Udell," Western Historical Series (New Haven, 1952), pp. 17-19.

as deer, antelope, bear, turkeys, etc."²² The party camped at Leroux Springs, and the men took their rifles into the surrounding country. Udell's entry for July 27, 1858, reads thus: "In the evening the hunters came in with deer, antelope and turkeys enough for the whole company, and the mountain-climbers came in with snow enough for all to taste."²³

The mood of the party became less bucolic as it moved west into the territory of the Mohave Indians. Tantalizingly close to the Colorado River, Udell and his companions reluctantly turned back in the face of incessant ambushes by the Mohaves.

When the pioneers started out again in April, 1859, they accompanied a road-building crew under Lt. Edward Fitzgerald Beale. Near the Little Colorado Udell's notes state that Beale employed two Indians to hunt. Apparently they were so successful that the entire contingent was kept supplied with fresh meat, including many beaver. Unlike James Hamilton, who found beaver meat repugnant when it was served to him on the Gila by Pima Indians,²⁴ Udell considered the beavers of the Little Colorado a delicacy.²⁵ In fact, beaver were caught and eaten all the way down the river to Diablo Canyon, where the expedition turned west toward the mountains.

Pronghorn became a staple for the Udell party in the vicinity of San Francisco Mountain. "Fresh antelope meat today" was a news item

22. Udell, p. 20.

23. Ibid.

24. Hamilton, p. 8.

25. Udell, p. 39.

that the travelers did not tire of when the cooking fires were lit in camp each evening.²⁶

In southern Arizona The Weekly Arizonian for May 12, 1859, reported that pronghorn were abundant near Fort Buchanan,²⁷ but changes were taking place in the open, grassy valley to the east. One traveler in the same year reported that most of the region now comprising Sonoita and the southern part of the Empire Ranch was largely covered with golden fields of grain. A single field contained 150 acres of corn.²⁸ During this brief period of agricultural prosperity, before the outbreak of the Civil War, a substantial part of the pronghorn habitat between the Santa Ritas and the Mustang Mountains may have been eliminated.

Before the Civil War, pioneers crossing southern Arizona regarded the meat of the bighorn as a delicacy, but few of the species were seen because of the relatively inaccessible habitat, and even fewer were shot. Bighorn were probably found at one time in every mountain range in Arizona that had good visibility and rocky outcrops. In addition to being found in the Sonoran Desert ranges, they extended southward into the Sierra Madre of Chihuahua and Sonora on high peaks and in rocky canyons.²⁹

An area of potentially good bighorn habitat that has not had a population of the animals for a long time is the rimrock region near

26. Udell, p. 40.

27. The Weekly Arizonian, v. 1, no. 11, Tubac, May 12, 1859.

28. Granger, p. 325. Between 1861-1876 the valley was uninhabited by white men because of Apache troubles.

29. Donald R. Brand, "The Natural Landscape of Northeastern Chihuahua," The Univ. of N.M. Bull. (Albuquerque, Nov., 1937), p. 53.

Montezuma Pass in the Huachuca Mountains.³⁰ A short distance to the east, Samuel Cozzens was on his way in 1859 from Tucson to New Mexico with a group of travelers. He commented on the sighting of several bighorns watching the party from rocky outcrops in the Peloncillo Mountains, across the San Simon Valley from Apache Pass.³¹

Even near the few settled areas an abundance of wildlife withstood heavy hunting pressure before the Apache wars kept American settlers largely confined to the fortified outposts of Tucson and Tubac. In 1854 the pioneer prospector Charles D. Poston arrived in Tubac after an overland trip from Sinaloa, where he had been shipwrecked with a party of 25 men. (In San Francisco he had been persuaded by a French syndicate to lead an expedition to Arizona in search of silver.) There was still a Mexican garrison at Tucson, and Tubac had not yet become a ghost town.

Poston appears to have been something of a gourmet, as his account of life in Tubac attests:

Wild game in abundance could be procured in the immediate vicinity, and by Christmas we had such a store of bear meat, deer, antelope, and fat wild turkeys, that no apprehension of short rations disturbed our enjoyment. We even essayed to give an entertainment to our neighbors from Sopori, Tucson, and Magdalena, places distant from twelve to eighty miles, these being the nearest settlements....The festivities were continued during Christmas week; and, in order to relieve our guests of any anxiety about the

30. D.F. Hoffmeister and W.W. Goodpaster, "The Mammals of the Huachuca Mountains, Southeastern Arizona," Illinois Biol. Monographs 24 (Urbana, 1954), p. 138.

31. Samuel W. Cozzens, The Marvellous Country (London, 1873), p. 231. In 1868 an explorer named Stephen Powers climbed outcrops in the Stein's Peak area on the Arizona-New Mexico border, close to the Peloncillos. He found bighorn sign, including fresh bedding areas, but saw no live animals. He reported that they were already becoming rare in the region. (Stephen Powers, Afoot and Alone; A Walk from Sea to Sea, Hartford, 1872, p. 189.)

abundant resources of the larder, a dozen fat turkeys were dressed and hung up on the joist over the table in the spacious dining-hall.³²

In 1857, after he had returned to renovate Tubac following its abandonment by the Mexican community, Poston continued this gustatory tradition. Again, at Christmas, people were invited from as far as a hundred miles away or more. Quail and waterfowl also garnished the table, and, in Poston's words, "We obtained through Guaymas a reasonable supply of French wines."

Poston's return to Tubac marked the beginning of a new era for the old Spanish presidio. In the three years since his first visit he had helped organize the Sonora Exploring and Mining Company in Cincinnati, Ohio, capitalized at one million dollars. Poston, as general manager, was in charge of recruiting employees and establishing mines in Arizona. Most of the men came from Texas, a crew which, in his words, was "armed with Sharp's rifles, Colt's revolvers, and the recklessness of youth."

At Tubac, in 1857, Poston found that the buildings were still habitable, although the doors and windows had been removed. The recruits were sent into the Santa Ritas for the lumber necessary to restore the buildings, and Poston soon had the town in functioning order again. Several silver mines were developed in the surrounding mountains. Poston's company prospered. In this climate, the first newspaper in Arizona, the Weekly Arizonian, opened in Tubac.

Since the local fauna contributed substantially to the town's provisions, it is not surprising that the Arizonian printed a number of

32. J. Ross Browne, Adventures in the Apache Country (New York, 1869), p. 254.

columns on the natural history of the Santa Cruz Valley and even farther afield. An entry for March 10, 1859, reads thus: "Quail begin to be very abundant in the wooded valleys and dry beds of streams, and in the Santa Cruz Valley there are plenty of turkeys; it is about time also for grizzly bears and rattlesnakes."³³

On April 7, the newspaper quotes an unnamed army officer who had just arrived from Fort Yuma. Speaking of the Gila River near its junction with the Colorado, he says: "The river bottoms are wide, rich, and thickly overgrown with willows and a tall aromatic weed, and alive with flights of white brant (wings tipped with black), geese, and ducks, with many signs of beaver and deer."³⁴

Two entries for June 2, 1859, are particularly dramatic:

All the past week great fires have been raging along the western slope of the Santa Rita mountains, extending sometimes to the tallest peaks. At night the scene was grand--a vast illumination of the mighty hills--the fire in circles, in long lines, in scattered patches, and glowing in the distant horizon like the watch-fires of a great army--The entire western slope of the mountains has been burned over, and the fires are now working over and around to the eastern side, making at night a strange and beautiful spectacle.³⁵

Events related to the fires now follow:

Several grizzly bear have been killed by persons working in the timber regions of the Santa Rita mountains, and the fires that are now raging in the canons will have the effect of driving

33. The Weekly Arizonian, v. 1, no. 2, Tubac, March 10, 1859.

34. Ibid., v. 1, no. 6, April 7, 1859

35. Ibid., v. 1, no. 14, June 2, 1859.

Mr. Grizzly into the more accessible regions. We should say that it is a good time for a bear hunt in those canons and localities in the mountains where the fires have not burned.³⁶

A week later two Mexicans who were hunting lost horses in the Santa Ritas surprised a large bear in a narrow canyon containing a stream. The animal, described in the Arizonian as a "cinnamon" bear, but in all probability a grizzly, charged one of the men, who was on foot, knocking him down and mauling him. His companion, who was mounted, lassoed the bear. After a brief struggle, the bear broke the rope, nearly throwing the horse in the process, and escaped.³⁷

On June 23, another Mexican spotted three grizzlies on the banks of the Santa Cruz River near Tubac, giving them a wide berth before returning to the trail to the Santa Ritas.³⁸

Early in the summer of 1858, a young prospector named Phocian R. Way reached the San Simon Valley from New Mexico, bound for a silver mining camp at the south end of the Santa Rita Mountains. He reported that San Simon Creek had gone underground where his party crossed the valley. There were pronghorn in sight, but Way could not get close enough for a shot.³⁹ After crossing the Sulphur Springs Valley, one of the contingent shot at a pronghorn somewhere east of Dragoon Springs (two miles southeast of the Dragoon Post Office) but missed. Way

36. The Weekly Arizonian, v. 1, no. 14, Tubac, June 2, 1859.

37. Ibid., no. 15, June 9, 1859.

38. Ibid., June 23, 1859.

39. Phocian R. Way, "Overland via Jackass Mail in 1858: The Diary of Phocian R. Way," ed. William A. Duffen, Arizona and the West, v. 2 (1960), p. 156.

deplored this failure, for the pioneers had been out of fresh meat for two days.⁴⁰

On the same day (June 10) Way's party picked up the fresh trail of a large grizzly bear in Texas Canyon. They followed it well into the Dragoon Mountains, but eventually lost their nerve and withdrew without ever catching sight of their quarry.⁴¹ Continuing on the journey, Way's party stopped for breakfast on June 11 at Pantano Wash, close to the site of Pantano. Way described the water in the wash as being "clear and beautiful," though somewhat alkaline. The valley delighted him with its cool water and green foliage and he called it "a paradise to the weary traveler over the hot and parched up plain."⁴²

By June 20 the emigrants had become settled at the Santa Rita Camp, in the Santa Rita Mountains 22 miles west of Fort Buchanan. That night a mule was frightened by some prowling animal, prompting the following observation by Way:

I suppose it was a bear as the mountains here are full of them. They are a large brown species and the hunters say they are as fierce as the grizzly (They were, in fact, grizzlies). They will generally attack a man whenever they meet him without waiting to be provoked. I felt more afraid of them than I did of the Indians. They might have been attracted to the camp by the smell of provisions. They are very hard to kill, and a dangerous enemy.⁴³

40. Way, p. 156.

41. Ibid., p. 157.

42. Ibid., p. 158.

43. Ibid., p. 283.

A few days later Way went to Tubac to buy a pack mule and supplies. He got back to the Santa Rita Camp in the evening and discovered that one of his companions had shot a jaguar.⁴⁴ A number of miners had also set out in pursuit of a black bear that had ventured near the camp. Way wrote that both species of bear were common in the Santa Ritas, but that the black bear "here as everywhere is cowardly and will run from the hunter, and will not fight unless he is badly wounded or cornered and cannot help it."⁴⁵

On June 26, 1858, Way and two of his friends set out on a hunting trip into the Santa Ritas, where white-tailed deer, the main object of the excursion, were abundant. Way's straightforward writing style preserves a vignette of hunter life in an Arizona that was still essentially unsettled.

This afternoon Mr. Fuller, Mr. Randall, and myself will start on a bear and deer hunting expedition. We will take a pack mule with us in charge of our Mexicans, to carry our blankets, game, etc. We will sleep in the mountains tonight and return sometime tomorrow. I will have something to say about our trip when we return. We go on this hunt not so much as for sport as to provide ourselves with fresh meat. We have been out of fresh meat for several days and we cannot purchase any without losing so much time and going a long distance, and then we would probably have to pay an exorbitant price. We had better kill our own meat if we can.

(June 27): Returned from our hunt about noon today...When we started we directed our course for the highest peak of the Santa Rita mountains...I was expected to bring up the rear, and, of course, had but little chance to shoot game even if it had been plentiful, but yesterday it was unusually scarce.

44. Way, p. 287. The animal, called a "tiger" by the hunter who shot it, was known to the Mexicans as el tigre. They, in turn, distinguished it from el leon, the mountain lion. American frontiersmen called the mountain lion by a number of names, including--in Arizona--"California lion" and "panther," but never by the term "tiger."

45. Ibid., p. 287.

We saw several deer in the distance but could not get within shooting distance, but about dusk Mr. Fuller succeeded in shooting a large fat buck. About dusk we encamped on the border of a deep canon which leads down from the main mountain, it is from 600 to 1000 feet and in some places the sides are almost perpendicular. It was some time before we found a place where we could reach the bottom with safety. When we did so we found a cool, clear stream of running water. There are only a few places where the sun ever reaches the bottom of this grand ravine, and the water in consequence is very cold (probably Temperal Canyon). It was delightful to us after our fatigue. It is said that there are many such canons and hidden streams in these mountains, but the water generally dries up or sinks before it reaches the plains below. We had coffee, bread, and salt with us, and we soon had a portion of our deer meat roasted at the fire. The hunters always cook their meat in the same way. They cut it in small slices, sprinkle salt upon it, string it on a long sharp stick, and hold it over the coals until it is sufficiently done. And it is really delicious cooked in this manner, at least I thought so, and I ate more meat at one meal than I would have eaten at home in two or three days.

It was a beautiful moonlight night and after we had finished our repast we spread our blankets on the ground and slept soundly on the mountains surrounded by bears, wolves, and perhaps by Apache Indians....In the morning at daylight we each took a different direction to hunt an hour or two before breakfast. We all returned at the same time without having seen any game. We saw fresh bear and deer tracks in abundance, but the game was not to be seen. We saw several deer on our way home but did not succeed in killing another. At some future time when I have more leisure, I intend to take a hunt of several days in these mountains.⁴⁶

Within two days after returning, Fuller shot two deer on his way to Tubac, bringing one of them back to camp with him. Way was satisfied that the prospectors now had plenty of venison.

On the night of July 3 the dry grass near Santa Rita Camp caught fire, and in a short time the whole valley was ablaze. Since the grasses were tall and thick, Way had been afraid of this exigency for some time. Apparently, a stray coal from the camp fire caused the conflagration, and everything "flashed up like powder." All attempts to stem the fire

46. Way, pp. 288-289.

failed, and the wind carried the flames up one side of the valley, leaving the hillsides "black and desolate" in the morning. However, Way was confident that the impending summer rains would soon cover the landscape with green grass.

Grizzlies, rattlesnakes, and poisonous invertebrates were not the only dangers in the Santa Ritas of 1858. Way expressed a particular horror for a phenomenon which the local Mexicans told him prevailed in July and August--the danger of "mad wolves." In Way's words:

I have always associated everything that is horrible with the disease Hydrophobia and I would run faster from a Mad Dog than I would from a legion of Devils. The wolves are numerous here and in the two above named months they sometimes go mad and in this condition they will enter a camp or town or even a house if the door is left open and bite everything in their course. At this season the Mexicans generally (those that have no doors) sleep on top of their houses out of reach of this danger. This horrible disease is much more common here among the wolves than it is among our dogs in the States. They are a terror to the whole country. One of our men told me of six persons who were bitten in this thinly settled neighborhood last year. One of them was badly mangled by the rabid animal, and in one instance the wolf entered a house and bit two persons. But what appears very singular to me, only one of these persons died. I have always been accustomed to look upon this disease as incurable, but here they have a stone which attracts the poison and when it is applied in time it never fails to cure. This fact is so well established that I cannot reasonably doubt it, and it should be known far and wide that others may profit by it.⁴⁷

When not working a silver mine, Phocian Way indulged what may have been his favorite preoccupation--hunting. His flair for the dramatic comes out in another written anecdote:

July 8, 1858: Yesterday Mr. Fuller and myself went out with our guns for a short hunt near the mining camp (at the south end of the Santa Rita Mountains). When about a mile from our

47. Way, p. 291.

Ranche we saw a large cinnamon (most likely a grizzly bear) walking leisurely along, stopping occasionally to take a bite at the wild cactus. He was distant about 600 yards and had not seen us. We crept softly up toward him in the cover of a canyon until we were within a hundred yards of the spot when we had last seen him. When we clambered up the steep bank under a low scrubby tree, there was the monster in open view. He had evidently got wind of us, for he was snuffing the air and tossing up his head. They are very keen scented and when the wind is in their favour they can scent a man a long distance. We had no time to lose for the bear had already turned to run. We knew our only safety was to keep ourselves hid from his view, for if we wounded him he would be upon us in a moment if he should happen to see where the shot came from. It is true we might climb the (s)crubby tree (which was the only one near); but we could not see that we would get entirely out of his reach, and we would likely have hard fighting to do before we gained the victory.

It was a critical moment and I felt we were standing on dangerous ground. Fuller, being the best shot, levelled his gun and fired. He struck the bear for he gave an awful grunt, reared on his hind legs, and looked around in every direction for his enemies. We were concealed by the rocks and lay still as mice. He did not see us. Becoming frightened at the stillness around him, (he) started to move off. I took courage at this and fired my sharp shooter at him, but this only made him run the faster. He soon disappeared over the mountain. We tracked him by his blood about a mile and then gave up the chase. If we had come upon him suddenly it might have cost us our lives, so we followed him with great caution. If we had captured him we would have taken nothing but his hide, for the bears are all poor at this season and not fit to eat. Bear hunting is a dangerous sport and very few here will engage in it. I have heard old frontier men say that they would rather fight 6 Indians than one Grizzly or Cinnamon bear. The Indians and Mexicans will not kill nor eat them. They have an old superstition which causes them to respect and even venerate this shaggy brute....and to this day they believe a bear will not harm a Mexican or Indian. If they meet one they talk to him and he turns and walks away. I have not heard of one being attacked by a bear.⁴⁸

Way seldom had to go far from camp to find an opportunity for a shot. For instance, on two days in July, he saw deer and pronghorn in the Santa Rita foothills, but did not bring home any game. He was having

48. Way, pp. 356-357.

trouble with his Sharp's rifle, which was designed to overshoot, requiring the hunter to make allowance for a foot every hundred yards. Pronghorn were particularly frustrating to him. Thus: "They are a provoking animal to hunt. They will run off until they get out of gunshot, when they will stop and look at you. If you approach too near they will run off again and in this way they will keep you following them a long distance in hopes of getting a shot."⁴⁹

Toward the end of the month Way began to improve with his Sharp's rifle. He shot two deer at 130 and 150 yards respectively and was pleased that he had supplied the mining camp with meat for several days, although he had to travel 16 miles to get one deer home. "Our large family will consume two deer in a week," he reported. The occasion inspired another anecdote: "I neglected to state that it is customary in this country to set up with a man the night after he has killed his first deer, and make him treat the party present to a gallon of whiskey. I was fortunate enough to escape this ordeal as most of our company were in Tubac and there was no whiskey to be had without traveling 20 miles for it."

On August 5 Way accompanied Charles D. Poston on a hunting trip into the southern upthrust of the Santa Ritas. Somewhere near the upper limits of the mesquite-grassland biome, perhaps within the oak woodland, they shot a large pronghorn. The two men had to carry it a mile on their shoulders to get it back to camp.⁵⁰

49. Way, p. 359.

50. Ibid., p. 360. In northern Arizona pronghorn often penetrated deep into the ponderosa pine forest. It is not inconceivable that in a southern range like the Santa Ritas they would also leave open country to enter higher wooded areas on occasion.

On the eve of the Civil War, American settlement in Arizona was developing a more complex structure than a few self-reliant outposts of mining and farming. Army posts had been established, and the government was subsidizing mail service. This also led to the establishment of a stagecoach line. On the Colorado River, steamboats were bringing in supplies at a reasonable cost. Tucson was bustling with mercantile activity.

Hilario Gallego, who was born in Tucson in 1850, recalls this period from his own boyhood memories and accounts passed on by relatives. "Years ago there were lots of Indians here," he reminisced. "They lived on mescal, penole, deer, wild sheep...etc. There were lots of game in those days and over in the Santa Rita we had a good many wild turkeys. The little Indians who worked for my father used to trap small game, such as squirrels, rabbits, and quail."⁵¹

Beginning in 1860 a series of high-handed provocations instigated by white settlers and army personnel ended the tenuous peace between the Americans and the Chiricahua Apaches in Arizona. Nevertheless, mining operations continued on a "business-as-usual" basis. For instance, in February, 1861, a mining engineer named Biertu visited the Mowry lead-silver mine in the Patagonia Mountains, over the road which led south 20 miles from Fort Buchanan. Biertu was obviously interested in the wild-life: "The whole country abounds with rabbits, quails, and wild turkeys. It is not a rare occurrence to meet droves of deer and antelopes numbering

51. Bernice Cosulich, Tucson (Tucson, 1953), pp. 61-62.

from twenty-five to thirty. The amateur of more intense excitement may also indulge in bear and Apache hunting."⁵²

In the early summer of 1861, Raphael Pumpelly, a geologist commissioned in Cincinnati by the Santa Rita Silver Mining Company to appraise Charles Poston's mines, left Tubac to take a look at the Papago country. Accompanied by Poston and a man named Washburn, he inspected the Heintzelman Mine in the Cerro Colorado Mountains, then headed west into the Altar Valley. Pumpelly was most impressed with this sweep of grassland lying just to the east of the Baboquivari Range. His account reads thus:

As we entered the valley from our position on its eastern border, the broad plain lay before us. Descending in a gentle slope to the center, and thence rising gradually to the same height along the base of the opposite mountain range, it was a wide expanse of grassy steppe, and forests of mesquit and cacti. Detecting us from afar, a drove of wild horses trotted off over the grassy surface, and we watched their graceful course as with streaming tails and flowing manes they disappeared in the distance.

The only other signs of life that break the monotony of these journeys, are given by the herds of bounding antelopes, or by the red or gray wolf as he trots slowly away from the traveler, stopping dog-like ever and anon to turn and watch the intruder.⁵³ The tracks of the great grizzly bear, the marks of the huge paw of the no less ferocious panther, and the sudden and frequent sound of the rattlesnake, warn the traveller of other dangers than the Apache.⁵⁴

Despite the Indian danger, coupled with the fact that neither Federal nor Confederate troops could provide much security for isolated

52. Mowry, p. 74.

53. The red wolf, Canis rufus, never ranged west of Texas and Oklahoma. Pumpelly may be referring to both coyotes and gray wolves, Canis lupus baileyi.

54. Raphael Pumpelly, Pumpelly's Arizona, ed. Andrew Wallace (Tucson, 1965), p. 74.

settlements, a varied assortment of pioneers continued to brave Arizona's mountains, deserts, and plains during the Civil War.

In the north, a party of prospectors who had left Nevada in the spring of 1861, stopped to hunt on the flanks of San Francisco Mountain. One of the group, Sam Miller, recalled in a letter to a relative that the man shot all the mule deer they could accommodate, dried the venison, and stayed on the mountain for six to eight weeks.⁵⁵ The Mormon missionary, Jacob Hamblin, camped on San Francisco Mountain in 1863. He reported that game was so plentiful his contingent had no trouble killing what was needed. Pronghorn supplied an abundance of dried meat, especially just before the settlers moved on in late April.⁵⁶

Another prospector, and a literate one at that, J. Ross Browne, entered Arizona from Fort Yuma in 1863. This observant traveler left one of the finest accounts of frontier Arizona: Adventures in the Apache Country. His first mention of the fauna was made while starting up the Gila River with the Castle Dome Mountains in the distance to the north. The terse entry in his reminiscences states that bighorn were said to be very abundant in that range.⁵⁷

Browne went on to Tucson, then south up the Santa Cruz River to Tubac. Both game and wild cattle were abundant in the Santa Cruz Valley, but fear of the Apaches prevented many of the remaining settlers from

55. Robert C. Stephens (ed.), Echoes of the Past: Tales of Old Yavapai, v. 2 (Prescott, 1964), p. 17.

56. James A. Little, Jacob Hamblin, a Narrative of His Personal Experience (Salt Lake City, 1909), p. 91.

57. Browne, p. 72.

going on hunting excursions.⁵⁸ Undeterred, Browne spent as much time as possible in the field, inspecting mines and commenting on the countryside. Quail were so plentiful that no man was expected to kill less than five birds with one shot. For one thing, powder cost two dollars a pound and shot, a dollar a pound.⁵⁹

The Santa Cruz Valley in 1864 still abounded with wildlife despite the influx of silver miners that dated from 1856. The presence of Apaches did keep potential hunters at home, but enough settlers went out so that venison, quail, and turkey were basic table items when Browne stopped for meals during his excursions.⁶⁰ Once Browne reported several deer killed near the edge of Tubac. "Wild turkeys were also abundant," he wrote, "but our hunters failed to get a shot at them, although their tracks were to be seen within a stone's throw of the Plaza."⁶¹

On an expedition into the Atascosa Mountains, Browne reported deer as being very abundant in the mesquite-grassland and oak savanna country, but he does not ever distinguish between mule deer and white-tails. The wildlife in the Atascosas seemed tame, as if it had not been hunted much. Wild turkey and quail (species undetermined) were also much in evidence.⁶²

Concerning the valley of the Santa Cruz, Browne was unstinting in his admiration. The following account was written in January, 1864:

58. Frank C. Lockwood, Pioneer Days in Arizona (New York, 1932), p. 136.

59. Browne, p. 76.

60. Lockwood, p. 224.

61. Browne, p. 151.

62. Ibid., p. 244.

The valley of the Santa Cruz is one of the richest and most beautiful grazing and agricultural regions I have ever seen. Occasionally the river sinks, but even at these points the grass is abundant and luxurious. We travelled, league after league, through waving fields of grass, from two to four feet high, and this at a season when cattle were dying of starvation all over the middle and southern parts of California. Mesquit and cotton-wood are abundant, and there is no lack of water most of the way to Santa Cruz.⁶³

The next entry in the diary was written several days later when Browne's party had continued upstream past Calabasas, where Sonoita Creek comes in, to the valley where Nogales now stands. In Browne's words: "Every mile we travelled the country improved in beauty and fertility. Grass up to our horses' shoulders covered the valley, and the hills were dotted with luxuriant groves of oaks. Much of the country reminded me of the coast range in California."⁶⁴

During his trip into Sonora, Browne went as far east as the village of Santa Cruz. He worked his way north again by following the Santa Cruz River downstream. Somewhere near the international boundary, just south of Tubac, he penned a description of the game seen that day: "We saw great quantities of deer (probably whitetails,) for the most part and a few flocks of wild turkeys; but they are unaccountably wild--much more so than in populated countries. We supposed they were not accustomed to the presence of white men."⁶⁵

63. Browne, p. 144.

64. Ibid., p. 159.

65. Ibid., p. 224. Browne does not take into account the fact that for the previous 20 years or so, a wide assortment of emigrants had been using the Santa Cruz Valley as a highway, and that no traveler would overlook a chance to obtain fresh venison.

A little later in the year Browne accompanied an expedition to the Heintzelman Mine in the Cerro Colorado region west of the Santa Cruz Valley. The hills were covered with mesquite and good grass, with the presence of paloverde indicating an ecotone between the Sonoran Desert and the mesquite-grassland. The party had no difficulty keeping their camps supplied with meat, since deer were common and relatively undisturbed, and turkeys, rabbits, and quail abounded.⁶⁶ (In his wanderings it is quite possible that Browne encountered all four species of Arizona quail: Gambel's, scaled, Mearns', and masked bobwhite. But he never differentiated between them; they were all simply "quail" to him.)

After leaving the Cerro Colorado mining district, which consisted of 29 working silver mines, Browne and his group followed a wagon road south along the western foothills of the Pajaritos and then across the Altar Valley to Sasabe. Of the valley he wrote: "Nothing possessed of animal life is to be seen, save at very remote intervals, and then perhaps only a lonely rabbit or a distant herd of antelope."⁶⁷

The expedition moved on from Sasabe to the little Mexican border village of Pozo Verde, some ten miles to the west. Browne went hunting in a small valley at the foot of the Pozo Verde range. Again, he left his impressions in the diary:

The valley abounds in game. (This was primarily evergreen oak savanna.) In several places near the water-holes the deer tracks were so thick that they reminded me of a sheep corral. Strange to say I saw but one deer during my ramble, yet this is not an uncommon experience in Arizona. We all saw acres of deer tracks and turkey tracks during our journey; but few of

66. Browne, p. 265.

67. Ibid., p. 274.

us saw the deer or the turkeys that made them. Game is exceedingly wild, and difficult to kill when shot. (Compare with Browne's remarks about the fearlessness of the deer in the Atascosas, just a short distance to the east.)⁶⁸

During the mid 1860's, farming communities as well as mining settlements were initiated, but the successful ones were in areas of minimal Indian danger. One such community was Littlefield, established by Mormon farmers on the Virgin River in the extreme northwest corner of Arizona. From the north flows a stream called Beaver Dam Creek, attesting the problems the farmers had with the abundant beaver in this area. The animals repeatedly dammed both the creek and the Virgin River, making farming a very difficult enterprise.⁶⁹

After going into a decline at the start of the Civil War, mining was revived by the arrival of the California Column in 1862. Many of these volunteers had prospected in California, and their commander, Colonel James H. Carleton, granted permits to look for gold in northern Arizona (with an unwritten stipulation that he would share in what was found).

Strikes, in fact, were made in the north and west--wherever the Apaches were not in control. Gold had been found on the lower Gila River in 1858, leading to the founding of Gila City, while other significant finds were made on the Colorado upriver from Fort Yuma.

Early in 1863, a party of prospectors under the old mountain man Pauline Weaver investigated the Weaver Mountains near the site of modern

68. Browne, p. 280.

69. Granger, p. 214.

Yarnell. On a stream later named Antelope Creek they flushed a herd of pronghorn that ran up the canyon deeper into the mountains. The expedition later moved into the hills, and a pioneer named Abraham Peeples killed three pronghorn on the side of a mountain now known as Antelope Peak.⁷⁰ The meat was jerked, and while it was drying several of the men indulged in sporadic prospecting. Rich deposits of gold were found on the summit of the peak and in an arroyo called Weaver Gulch. The prospectors worked the placers with nothing more than knives, prying nuggets out of the crevices. In less than three months 100,000 dollars in nugget gold were taken out of the ground on nearby Rich Hill. But it only took two years to exhaust the placers in the Weaver Mountains.

On September 26, 1863, the Weekly Alta Californian, a San Francisco newspaper, came out with a description of the country that lies between the sites of Wickenburg and Prescott. This includes roughly the Weaver Mountains and what is now Prescott National Forest. Miners from California were infiltrating the region in fair numbers, and the Alta Californian responded to public interest in this newly discovered wilderness. The column described the mountainous country east of Bill Williams River as being "well watered," with hills covered with pines and oak timber. Grass grew tall and green in the valleys, and a profusion of wildlife included mule deer, Merriam elk, and pronghorn. There were also "immense droves of wild turkeys." The article said that prospectors had encountered grizzly bears and mountain lions as well. The mining camps

70. Granger, p. 331.

in the area were well supplied with deer, turkey, and elk provided by men who spent most of their time hunting.⁷¹

The first settlers in the Prescott area were interested only in gold and brought nothing with them but horses and pack mules. For meat these prospectors, who appeared in 1863, depended entirely on game. During a deer hunt to replenish the camp larder Sam Miller (who had hunted on San Francisco Mountain on his way south) discovered gold on Lynx Creek, near modern Walker. Wildlife alone furnished the meat for these early settlers and the additional miners and soldiers that followed.⁷²

William Furr, a prospector, kept a diary of his activities while searching for gold on Lynx Creek (near future Prescott) in 1863. There were many placer mining camps in the region, and deer hunters were constantly combing the mountains in an effort to keep the prospectors supplied with venison. To pick up "a few dollars," in Furr's words, these market hunters often tried to sell a bear or deer, particularly when a camp was running low on fresh meat.⁷³

At Hell Canyon, 45 miles east of the site of Prescott, wild turkeys were extremely abundant in the pinyon-juniper woodland. Hunting was

71. Daily Alta California, San Francisco, September 26, 1863.

72. John C. McNelty, "History of Game on the Prescott National Forest," Arizona Wildlife and Sportsman (September 20, 1941), pp. 1, 14. Serious inroads were made on game populations in this region by the late 1860's, and by the early 1880's only a remnant survived. Game meat thus supplied the entire community until the early 1880's, when military garrisons controlled Indians to the point where it was safe to raise cattle.

73. William Furr, "Journal," typed manuscript, Arizona Historical Society, p. 180.

dangerous because gunfire attracted Apaches, but the need for fresh meat superseded caution.⁷⁴ On one occasion, while on the way to the Bully Bueno Mine in Black Canyon (35 miles east of present Prescott), Furr and several prospectors shot a number of deer and pronghorn. They arrived at the camp near the mine to find, as Furr expressed it, a "large Juniper tree which was hung full of all kinds of wild meat, bear meat, turkey, deer, antelope and rabbits and we were told to hang our game up there too, so we did."⁷⁵

Starting in 1863, gold led to the ultimate defeat of the Western Apaches in central Arizona. It brought in the population and the army to protect it. Farmers and ranchers followed to feed the soldiers, and communication lines were established. On Lynx Creek alone, prospectors killed off most of the game in a single year--1863.⁷⁶

Shortly after the Civil War began, Joseph Reddeford Walker, the veteran mountain man and pathfinder, then in his sixties, was stricken with gold fever while leading a relatively quiet life in California. He set out with a band of some 40 adventurers, bound for Colorado by way of northern Arizona and New Mexico. After prospecting for a while in the Colorado gold fields, the Walker party decided to move on. These restless men traversed New Mexico from north to south, were present at Fort McLane when California volunteers murdered the captured Apache chief Mangas Coloradas, then turned west into Arizona. Daniel Ellis Conner, the

74. Furr, p. 200.

75. Ibid., p. 201.

76. Dan L. Thrapp, The Conquest of Apacheria (Norman, 1964), p. 24.

chronicler of the Walker expedition, commented about the country covered from Apache Pass to Tucson, the Pima villages, and the valley of the Hassayampa River in the late fall of 1862 (see Fig. 5, p. 226). "We would sometimes find game in superabundance, and then perhaps for the next month, do without because we unluckily happened to blunder into a section whose only inhabitants were lizards, rattlesnakes, horned toads, and coyote wolves."⁷⁷

During moments of relaxation, members of the Walker party sometimes sought entertainment that reflected the harshness of their frontier conditioning. While crossing the Peloncillo Mountains on their way to the San Simon Valley and Apache Pass, Walker's men put out steel traps attached to long chains after camp had been made for the night. Captured coyotes were then dragged into camp and forced to fight the numerous dogs that followed the expedition.⁷⁸

The adventurers stopped briefly at Tucson on their way north toward the Gila. Conner's one diary entry concerned with wildlife states that coyotes commonly scavenged in the outlying streets of the town after dark.⁷⁹

After leaving Tucson, the Walker party reached the Gila River at the Pima villages, following it downstream to the mouth of the Hassayampa River, which comes in from the north, opposite the Buckeye Hills. Walker now headed up the Hassayampa toward the Sierra Prieta and other ranges

77. Daniel Ellis Conner, Joseph Reddeford Walker and the Arizona Adventure (Norman, 1956), p. 25.

78. Ibid., p. 30.

79. Ibid.

now included in Prescott National Forest. The expedition staked claims along the upper river, both because there was gold, and in Conner's words, "plenty deer and other game in the woods." There was some harassment by Indians, but by the summer of 1863 the prospectors were firmly established. "We now devoted our time to hunting and prospecting when not at work upon our claims," added Conner.⁸⁰

As news of the gold strikes spread, more and more prospectors converged on the area where construction was to start within a year on the new town of Prescott. Mining camps sprang up in this mountainous region: watercourses with descriptive names like Lynx Creek, Big Bug Creek, Turkey Creek, and Wolf Creek. To protect the camps in what soon became known as the Walker Mining District, Colonel Carleton created the District of Northern Arizona and ordered Fort Whipple established.

Conner's experiences with the Walker party were largely confined to the mountainous country around the site of Prescott. In the absence of clear-cut chronological events over a large geographical area, his descriptions of wildlife are best presented in separate species accounts.

Merriam's Turkey: In 1863 wild turkeys were common in the Bradshaws, especially along Turkey Creek, a tributary of the Agua Fria River. Conner also saw turkeys along a stream on the edge of chaparral country a few miles to the southwest of present Prescott.⁸¹

Gray Wolf: Conner reports that in the autumn of 1863 prospectors saw a large pack of wolves on a creek about five miles south of modern

80. Conner, p. 105.

81. Ibid., p. 108.

Prescott. The stream, now called Wolf Creek, flowed at that point through chaparral.⁸² Another time, before setting out on an expedition to the Colorado River, Conner shot a wolf in a brushy hollow just to the west of the Prescott site. He remarked that wolves tended to gather and howl when they spotted men, thus attracting any Indians in the vicinity.⁸³

In 1864, while prospecting in the upper Verde River country, Conner was often "annoyed" at night in camp by the howling of wolf packs.⁸⁴

Grizzly Bear: Conner was deer hunting on a chaparral-covered ridge in the Prescott Mountains in 1864 when he heard the roar of a wounded grizzly, following a rifle shot from a companion not far away. The two men trailed the grizzly by its blood spoor but lost the animal with the onset of darkness.⁸⁵

Mountain Lion: One night in 1864 Conner and two friends put up for the night in a deserted miner's cabin on Lynx Creek. While the three men were playing cards a pack burro suddenly burst through the door into the cabin, where it stood perfectly still. The prospectors rose with drawn six-guns, but all was quiet outside. An examination of the burro showed that one of its thighs was badly mangled, and Conner reconstructed

82. Conner, p. 110.

83. Ibid, p. 118.

84. Ibid., p. 162.

85. Ibid., pp. 202-203. Chaparral is common in the vicinity of Prescott. It is dense shrubby growth dominated by scrub oak, Quercus turbinella, and was typical grizzly habitat in parts of central Arizona and in southern California, where the plant community of the California coastal chaparral is similar. In fact, Quercus turbinella and Q. dumosa of California may be conspecific. See: Charles H. Lowe, The Vertebrates of Arizona, (Tucson, 1964), pp. 48-50.

events as follows. A mountain lion had attacked the burro, the burro had rushed for the cabin, and the lion had somehow been shaken off. Conner felt that except for the light in the cabin the lion would have followed the burro right in.⁸⁶

Mule Deer: When the Walker party made its first gold strike in 1863, mule deer (and possibly some whitetails) were extremely common on the headwaters of the Hassayampa River. Conner once found a deer killed by a mountain lion in ponderosa pine forest near the site of Prescott.⁸⁷ When the miners first started hunting in the general region deer were not alarmed by rifle shots, but were easily spooked by thunder.⁸⁸

By 1864 deer had been virtually eliminated from the vicinity of gold-mining settlements on the upper Hassayampa generally. Hunters had to go farther afield, well away from any center of human activity, in order to bring in venison.⁸⁹

Pronghorn: When Conner first approached the Prescott area in 1863, several of his comrades shot some pronghorn in a grassy prairie on Weaver's Creek, 25 miles southwest of the site of the future capital.⁹⁰ Later, while hunting in chaparral country near the upper Hassayampa, Conner met an Indian (either Apache or Yavapai) on his way to more open country to hunt pronghorn with his bow. The head of a pronghorn was tied

86. Conner, p. 144.

87. Ibid., pp. 99-100.

88. Ibid.

89. Ibid., p. 202.

90. Ibid., p. 131.

to the small of his back. When the Indian stooped to peer backwards between his legs, the head rose to an upright position. The Indian then shot an arrow through his legs when a pronghorn was lured within range.⁹¹

Bighorn: In 1864 Conner and some gold miners had just inspected a camp established by Mexican prospectors at the head of Date Creek. All had been killed by Indians. Conner looked up and saw a flock of bighorn on what he described as a "low, rocky ridge overlooking the narrow valley."⁹² This was probably on the north flank of the Date Creek Mountains.

In April, 1864, construction began on Prescott, to be the first territorial capital of Arizona. Nearby Fort Whipple would be ready for occupation in a month. But military forces were to prove inadequate to the task of containing Apache raids, and even before the end of 1863 miners, ranchers, and other civilians decided to take matters into their own hands in the Walker Mining District. Up to then, in the words of General William S. Rosecrans, the whites lived on the reservations and the Indians occupied the country.

The leader of these civilian irregulars was a frontiersman from Louisiana named King S. Woolsey, described by historian Bert Fireman as "the most notable, the most enterprising and the most courageous of all the great host of trailblazers who first penetrated Arizona." Early suspected of having Confederate sympathies, Woolsey ended up growing hay for the Union forces on his ranch on the Agua Fria River.

91. Conner, p. 108.

92. Ibid., p. 217.

In 1864, Woolsey led three punitive expeditions across central Arizona in pursuit of Apaches who had stolen livestock from ranches in the Prescott area. These excursions revealed the agricultural and mineral potential of the mountain valleys that formed the drainage of the Verde and Salt Rivers. The civilian volunteers who went along combined Indian-hunting with exploring and prospecting activities.

Woolsey's second expedition, in March, has been described by a participant, Henry Clifton, in a ten-part serial in the Arizona Miner, published as a semi-monthly in Prescott. One hundred miners left Woolsey's ranch on the Agua Fria and struck off in three parties to raid Apache rancherias. Clifton's contingent headed east, then south, picking up the east branch of Agua Fria. The volunteers found a stream emptying into the Agua Fria which they called Ash Creek, because of "the abundance of fine ash timber that grew on its banks." Clifton went on: "The creek at this place is some ten feet in width and crossed by innumerable beaver dams, making it quite deep."⁹³

After a skirmish with Apaches in April, 1864, Woolsey's irregulars were camped on Cane Creek, near its junction with the Agua Fria, while on their way home. Some eight or 10 men left camp, in Clifton's words, "for the purpose of hunting deer and antelope." Even in hostile country, well-armed parties would go hunting, assured that they could handle any Indian attacks.⁹⁴

93. Clara T. Woody, "The Woolsey Expeditions of 1864," Arizona and the West, v. IV, No. 2 (Summer, 1962), p. 165.

94. Woody, p. 166.

In June the third expedition was heading east through the Pinal Mountains on an exploring foray (see Fig. 5, p. 226). Woolsey commented that the column's hunters kept the volunteers "well supplied with venison and turkey."⁹⁵

On June 14 a party that included a chronicler named F.A. Cook was working its way eastward when it came to the Salt River. Cook says that the men made a seine of willow branches and caught 200 fish. The largest, in his opinion, looked like cod but had no teeth, weighing between ten and 20 pounds. The men worked up to their necks in the warm water.⁹⁶

Cook's diary for June 21 states that his group caught 50 fish, all suckers and "verry sweet." The volunteers were completely out of meat, having been living on fish alone for several days. Some of the fish, estimated to weigh up to 40 pounds, broke every line that could be improvised.⁹⁷ On June 25 this party ascended Tonto Creek, then turned east into the mountains. Cook describes what happened next: "After dinner, I with five others...went up the high mount E. of us hunting this was somewhere in the Sierra Ancha, but instead of finding Deer we found 8 or 10 Indians who were watching us and had run off all the deer."⁹⁸

At one point, on the third expedition, Woolsey went all the way to the Black River. His volunteers returned through the Natanes Mountains, then down the San Carlos River through the Antelope Hills.

95. Woody, p. 173.

96. Frank D. Reeve, "War and Peace: Two Arizona Diaries," New Mexico Historical Review, v. 24 (April, 1949), pp. 103-105.

97. Ibid.

98. Ibid.

According to Henry Clifton, the column passed over "a level country covered with grass and shaded by cedar trees forming a most excellent stock range. Among these cedars we found an abundance of 'bear sign,' and one evening just before camping we had some excellent sport in killing a bear, our second, as we had killed one on the Gila about 15 miles above Fort Goodwin. Both of them were of the species known as the Cinnamon bear."⁹⁹

When Arizona officially became a territory in 1863 there were no schools, churches, or libraries. But by the end of September, 1864, there was a territorial legislature, even if the capitol building had not yet been built. Prescott had a hotel by then, the Juniper House, and the menu was dominated by venison. Near the present location of the Old Governor's Mansion there was a small spring of clear water in 1864. Wild turkeys came here to drink, and where the water flowed over the bank into Granite Creek, clumps of ferns grew.

99. Woody, p. 174. Clifton may have encountered black bears, but the situation is confused by the fact that Arizona frontiersmen of the time commonly called grizzlies "cinnamon" bears.

CHAPTER VI

SUMMARY: THE LAND AND ITS WILDLIFE

The Grasslands

Before the Civil War, travelers in Arizona spoke often of extensive areas of superb grasslands in the northeast, the southeast, and parts of the northwest. Today, many of these areas have been degraded, with the grasses usually giving way to woody vegetation. The expanses of grassland described in most detail were those lying along the routes followed by military expeditions and emigrant trains.

The San Bernardino Valley: This valley, to the east of Douglas in Cochise County, was crossed by Cooke's wagon road in 1846. At that time the area was largely open grassland with small mosaics of desert scrub. There were also extensive marshes on land now part of the Slaughter Ranch.

Today, the San Bernardino Valley is covered to a considerable extent by Chihuahuan Desert vegetation.

The San Simon Valley: Lying just to the north of the San Bernardino Valley, this region was once a basin collecting water from surrounding mountain slopes. In 1851 it was described as marshy and nearly treeless except for willows growing alongside the many springs and cienegas. The whole valley was covered with a lush growth of grass. In contrast, it is now part of the Chihuahuan Desert.

The San Pedro Valley: Emigrant trains passed this way in 1849-1851. The upper valley (on the present international boundary) was largely an open grassland. Farther north, where Babocomari Creek comes in from the west, the San Pedro River formed extensive grassy marshes. Near the Gila River mesquite covered much of the valley, even in the middle of the 19th century. There were also ponds and areas of good grass.

The Sulphur Springs Valley: In 1851 this valley was largely plains grassland. This is still true in places except where irrigation farming has taken over.

The Santa Cruz Valley: Tall grasses filled much of the flood plain of the Santa Cruz River in the 1850's. Near Tucson, the river was flanked by lush, open plains.

The Sonoita Valley: In the 1850's, as now, a magnificent stretch of plains grassland filled the valley that lies between the Whetstone Mountains on the east and the Santa Ritas on the west. It was much wetter then, and wagons sometimes bogged down in the extensive cienegas that occupied the middle of the valley.

The Navaho Reservation: The northeastern section of Arizona, now composed of parts of Coconino, Navajo, and Apache Counties, once had the most extensive grasslands in the state. This treeless plains region, which extended from New Mexico west to the San Francisco peaks, was approximately bisected east to west by the Little Colorado River. Explorers and emigrants rhapsodized over the beauty of the region and the lush grasses available for their stock. Much of what is now within the Navaho Reservation has since deteriorated into a sandy wasteland.

One area that has changed little since the 1850's is the Painted Desert. Even then, travelers described it as bleak, with very little grass cover.

The Bill Williams River: In the 1850's there was excellent grass cover along the upper stretches of this river. However, the grass disappeared a short distance before the Bill Williams flowed into the Colorado.

The Sacramento Valley: Even in winter (1858) there was a superb cover of grass in this valley, which is close to the Colorado River. Much of the area now supports northern desert scrub.

The River Valleys

The San Pedro River: In 1846 the Mormon Battalion found that a considerable stretch of the San Pedro River was marked by an absence of timber. This was particularly true along its middle course, where it flowed slowly through grassy marshes, flush with its banks, often flooding extensively behind beaver dams. Locally, there were areas of dense cottonwood and ash woodland, with mesquite bosques in the lower valley. As early as 1851 channelization was observed where Benson now stands, with a swift current flowing between clay banks ten or 12 feet high. The water also tended to disappear at seasonal intervals for distances of ten to 20 miles.

Sonoita Creek: This stream, still noted for its magnificent cottonwoods, was flanked by extensive marshy grasslands in 1851. In addition to cottonwoods, there was a screen of large mesquites and a dense jungle of willows and other shrubbery, all bound by grape vines. The marshes and understory are now largely gone.

The Gila River: At the Pima villages and above, the Gila River was a clear, swift little stream in the 1850's. The volume of water tended to be uniform for most of the year, and the river was fordable in most places. During drought periods the river occasionally dried up completely, or was entirely diverted by the Pima Indians for irrigation purposes.

Below the confluence with the Salt River, the Gila widened to about 80 yards, with a depth of three feet (1846). Beyond the great bend the current reached a width of 100-150 yards, with an average depth of four feet. The water flowed gently over a sandy bottom and was occasionally too deep to ford even with a horse. The lower Gila often formed a seasonal chain of lakes, ponds, and lagoons adjacent to the main channel.

In the middle of the 19th century the Gila River supported a dense riparian growth along most of its length. Willows and cottonwoods grew on the banks, backed by terraces of mesquites. The river bottoms were also overgrown with tall herbaceous plants, such as sunflowers. Near this river's junction with the Colorado, the riparian woodland formed a dense jungle two to four miles wide, even more extensive than the similar growth on the larger river. Today, this superb bottomland forest is gone, along with the living Gila River.

The Big Sandy River: In 1853 this stream, in Mohave County, flowed south on its upper reaches as small rills alternating with beds of sand. Farther down, near its confluence with the Bill Williams River, the Big Sandy became a continuous stream of clear water several feet deep. Dense willow brush lined the banks, and in places the river formed swamps caused by beaver dams.

The Bill Williams River: During the same period, the Bill Williams River ran for much of its course as an intermittent stream, periodically disappearing beneath the sand. There were good stretches of water in places. The lower river became deep and full, with thick riparian growth and extensive marshes adjoining the main stream bed.

Fires

The Santa Rita Mountains: In the late 1850's there were several reports of fires burning in the Santa Ritas. One was an extensive grass fire in the foothills at the south end of the range caused by a coal from a prospector's camp fire. Another was a timber fire on the upper slopes, for which no cause was given. No fires were reported as having been started by Indians or lightning.

The Wildlife

The first American explorers and settlers in Arizona found game abundant at certain times, scarce at others. During the 1820's, for instance, several parties of beaver trappers nearly starved on the upper Gila because of an apparent absence of wildlife. Other trappers had trouble sustaining themselves between the upper Verde River and the Grand Canyon, and along the upper San Francisco. However, in the 1840's, when the bottom had fallen out of the fur market, a few die-hard trappers found game once again plentiful, and venison and bear meat were dependable staples. The Kearny expedition found deer and turkey sign everywhere on the upper Gila in 1846.

It is quite probable that game populations were locally reduced along the main beaver streams by hundreds of trappers working Arizona at

the height of the fur trade. Additional pressure from the Indians may also have been a factor. Since this was a temporary phenomenon, the wildlife should have made a substantial recovery within a few years. This, in all likelihood, is what happened.

Bartlett in 1851 commented on the scarcity of wildlife on the fine grasslands of southwestern New Mexico and southeastern Arizona. Even pronghorn were not abundant. (Bartlett felt that game was generally scarce in Arizona except in mountainous regions.) Since Bartlett stuck to a fixed route he would have missed seeing pronghorn that had moved away, influenced by a seasonal migration pattern. Again, hunters for the emigrant trains over the previous two years, when 60,000 people passed through this region, could have thinned out the herds along the wagon routes. At any rate, the Emory expedition, coming some four years later, found pronghorn once more abundant.

In the vicinity of some Indian agricultural settlements, large game disappeared. This was true near the Pima villages on the Gila River and along the lower Bill Williams River east of the Mohave Indian communities. No game was observed on the Colorado River in Mohave territory. Exploring parties were often hard pressed to find wildlife in the extensive pinyon-juniper woodlands north of the Mogollon Rim.

In contrast, most Americans were exuberant in describing the abundance of wildlife on the grasslands of northeastern Arizona and in the vicinity of the San Francisco peaks at their western edge. Pronghorn, in particular, may have been present in much larger numbers than on the grasslands of southeastern Arizona in the middle of the 19th century.

As late as 1863, deer and pronghorn furnished meat for parties camped for weeks on end on the slopes of San Francisco Mountain.

Waterfowl: During fall and winter, many observers in the middle of the 19th century saw spectacular numbers of ducks, geese, and whistling swans on Arizona's rivers. On the larger streams like the Gila and the Bill Williams numerous marshes and lagoons formed subsidiary bodies of water alongside the main channels. Aquatic vegetation provided cover for resting flocks. The willow swamps along the lower Bill Williams River attracted immense flocks of wintering ducks, as recorded by members of the Whipple expedition. Other travelers singled out snow geese as being particularly conspicuous and abundant on the Gila River. White pelicans were observed in the 1820's on the Colorado River.

Scaled Quail: In 1855 Heermann reported this species as abundant on the open grasslands of southeastern Arizona. For some reason he did not see scaled quail west of the San Pedro River. He commented that the birds liked the area of prairie dog towns, where the grasses were thinned out.

Gambel's Quail: Arizona's first American explorers marveled at the size of flocks of this species, especially in the river bottoms that lay parallel to wagon routes so much of the time. In 1846, on the upper Gila, Turner saw several flocks estimated to contain between 800 and 1000 birds each. An 1855 report described these quail as teeming in cultivated areas near Tucson. Huge flocks were also reported in central Arizona in the 1850's, along washes and streams west of the San Francisco peaks. Partridge Creek, near the site of Ash Fork, was an especially favorable area, as was the valley of the Big Sandy River.

The largest number of sightings was made along the lower Gila River, with observers all agreeing as to the incredible number of birds in each flock. Gambel's quail were seen both in dense riparian growth and in the adjacent Sonoran Desert.

Wild Turkey: Before the 1860's, Americans encountered wild turkeys in wooded areas everywhere east of the Sonoran and Mohave Deserts and south of the Kaibab Plateau. Some records: 1825, upper San Francisco River; 1846, upper Gila River (west to San Pedro River); 1849, Guadalupe Mountains, Cochise County; 1851, Sonoita Creek, Santa Cruz County; 1851, common between San Francisco Mountain and Big Sandy River; 1856, Santa Cruz River (near San Xavier Mission). In the 1850's turkeys were abundant on San Francisco Mountain and Bill Williams Mountain. They were also frequently seen in the Juniper Range, to the west of Chino Valley. Turkeys were commonly reported on the San Pedro River, in the southeastern corner of the state, and along the full length of the Santa Cruz River. Prospectors hunted them often in the Santa Rita and Patagonia Mountains.

Turkey and venison were staples in the diet of gold miners working the mountains of central Arizona in the 1860's. By 1864 Elliott Coues believed that the wild turkey was already becoming rare in the general region around Fort Whipple.

In southeastern Arizona, turkeys were found in the oak-pine woodlands in the mountains, in riparian woodlands in river valleys, and in mesquite bosques. North of the Mogollon Rim they inhabited such diverse communities as juniper-pinyon woodland, riparian woodland, chaparral, and ponderosa pine forest.

Beaver: At one time probably every permanent and intermittent stream in Arizona with an adequate food supply in the form of willows and cottonwoods supported a population of beaver. Between the 1820's and 1840's the drainage systems of the Gila and Colorado Rivers were intensively trapped by mountain men, and the beaver populations fluctuated drastically. The species was virtually trapped out on the upper Gila in 1825 and was still shy and scarce there two years later. But by 1830 there were already signs of recovery. The Salt River was heavily worked and was considered by many trappers the best beaver stream in Arizona. Other popular areas were the San Francisco, the Verde, the lower Gila, and the San Pedro.

Following the collapse of the fur market in the 1830's, the beaver made a vigorous comeback in Arizona. The species was even abundant on tiny Zuni Creek in 1851, where few cottonwoods grew. In 1853 beaver colonies thrived on the Big Sandy, where there was a good water supply. Beaver were as abundant as ever on the Gila River, on the upper San Pedro, and even at 5000 feet in Guadalupe Canyon, on the Mexican border. On the Colorado River beaver were immensely abundant in the 1850's, extending south to within 30 miles of the delta.

Gray Wolf: The first mountain men saw and heard wolves on the upper Gila, and the presence of the animals was detected at one time or another by emigrants throughout Arizona east of the deserts. In 1846 the Mormon Battalion heard wolves howling on the grasslands near the site of Douglas. During the Gold Rush in 1849 wolves prowled around emigrant camps in the mesquite bosques near San Xavier Mission on the Santa Cruz River. Wolves were common at this period on the grasslands of

southeastern Arizona, northern Sonora, and southwestern New Mexico. The first boundary surveyors learned that Mexican ranchers in this general region were poisoning wolves with strychnine in an effort to cut down on livestock predation. In 1855 travelers reported wolf packs as being common near the village of Santa Cruz on the Santa Cruz River, where they preyed heavily on domestic animals. In the late 1850's wolves were frequently encountered by American silver prospectors in the Santa Rita Mountains, where they had a reputation for invading Mexican settlements when rabid.

Above the Mogollon Rim, wolves in the 1850's were common on the open grasslands of the Navaho country, especially near the Little Colorado. They also inhabited juniper-pinyon forest and were found in ponderosa pine forest on the San Francisco peaks. Wolves also ranged well to the west of San Francisco Mountain, as far as the Big Sandy, being found in both open country and wooded areas. They were reported common in Chino Valley. Elliott Coues found wolves abundant in the mountains of central Arizona, around Fort Whipple. In this region they were found in chaparral as well as in the pine forests.

Though generally distributed through a variety of habitats, the gray wolf was less common than the coyote, and, according to most observers, more likely to keep its distance from human campsites and settlements.

Black Bear: Explorers and emigrants did not leave many reports of black bear sightings, probably because travel routes tended to stick to the open plains and river valleys. Black bears were occasionally reported in riparian situations and on lower mountain slopes, but

travelers of the period usually had little reason to enter the high coniferous forests, where the species found its optimal habitat. Colonel Graham's party shot a black bear at the north end of the Huachuclas, possibly in oak-pine woodland. In the same year Dr. Woodhouse stated that black bears were abundant in timbered regions throughout Arizona. They were certainly common in the Santa Rita Mountains of southeastern Arizona, where prospectors considered them shy and difficult to hunt, in contrast to the easily provoked grizzly.

In northern Arizona black bears were reported from juniper-pinyon woodland as well as ponderosa pine forest.

Forty-niners and other travelers on the lower Gila and Colorado reported bear tracks in the dense riparian "jungles" of willow and cottonwood near the river banks. One observer reported seeing a black bear in a tree on the lower Gila River. No specific reports of grizzlies in this part of Arizona have come to light, though one would assume that the larger bear would be more likely to follow a low-elevation riparian corridor into the Sonoran Desert.

Grizzly Bear: In the 1820's, the first beaver trappers discovered grizzlies, sometimes in a dramatic face-to-face manner, in riparian woodland on the upper Gila River. As in the Rockies, the grizzly became very much a fact of life for the mountain man in the Arizona wilderness.

Grizzlies in southeastern Arizona, like their counterparts in California, were animals of the foothill region. Members of the Mormon Battalion found their sign in riparian growth along the San Pedro River in 1846. In 1849 a grizzly was shot on the headwaters of the same river, and another was observed in the ruins of the San Bernardino Hacienda, in

what was probably open grassland country at the time (today this area is Chihuahuan Desert). Grizzly sign was also followed by later emigrants in the Little Dragoon Range, near the middle reaches of the San Pedro. Bartlett, in 1851, saw grizzlies in the Guadalupe Range while negotiating Guadalupe Canyon. He considered them always dangerous to approach except in a well-armed group. A year later other travelers shot a grizzly bear either in the Guadalupe Mountains or just to the east in the Animas Range, New Mexico. The species was common in the southeastern corner of Arizona, where oak woodland was the typical habitat. Along the Mexican boundary grizzlies often left the mountains entirely to forage on the open grasslands. In Dr. Kennerly's opinion, this took place after acorns, pinyon nuts, and other woodland staples had become scarce. Kennerly considered grizzlies abundant in all the mountain ranges west of the Rio Grande and east of the Sonoran Desert. They ranged as high as the ponderosa pine forest. Kennerly collected one grizzly at the present site of Nogales.

In the late 1850's silver prospectors found grizzlies numerous in the bottomlands of the Santa Cruz River and in the adjacent Santa Rita Mountains. They were also reported in grassland in the Altar Valley, to the west. As late as 1859 the species was still abundant in the riparian woodland on the San Pedro River.

In northern Arizona at this time, grizzlies probably ranged as far as the Kaibab Plateau on the north, the Hualapais on the west,¹ and

1. Alfred L. Kroeber, "Walapai Ethnography," Memoirs no. 62, Amer. Anthro. Assoc., Menasha (1935), p. 62.

the Chuskas and other ranges in the northeastern corner of the state. In 1849 Simpson saw a grizzly in the Canadian life zone of the Chuskas. Sitgreaves considered the species common in all the mountains of northern Arizona, and he reported grizzlies on the grassy plains between the Little Colorado River and San Francisco Mountain. They were also encountered in the bottomlands of the Little Colorado. These bears were abundant in juniper-pinyon woodland around Zuni and in the same habitat to the west, on the Coconino Plateau. They seemed particularly numerous along the wagon route that led past San Francisco Mountain, Mt. Sitgreaves, and Bill Williams Mountain.

In 1864 Elliott Coues reported grizzlies as still common in the mountains of central Arizona, though a noticeable decrease had taken place in the few years before that. They still held out in such ranges as the San Francisco Peaks, on Bill Williams Mountain, the Weaver Mountains, and the Natanes Mountains. Grizzlies were also reported in the chaparral in the Prescott Mountains, not far from Fort Whipple.

Jaguar: A jaguar was shot in 1827 by members of the Pattie expedition on the lower Colorado River. The animal was in thick riparian growth close to the bank. Other reports of jaguars are few and scattered. Major Emory's Boundary Commission expedition recorded only one jaguar west of El Paso--at Guadalupe Canyon. Dr. Kennerly learned that jaguars were often reported from the bottomlands of the Santa Cruz River, near Santa Cruz, Sonora, where they preyed on livestock. In general, as he pointed out, they preferred the impenetrable thickets of river bottoms, preying on deer, horses, and cattle as they came to water.

In the late 1850's a jaguar was reported shot in the Santa Ritas. At about this period the Walapai Indians reported them as occasionally being seen in Coconino County.² Elliott Coues, on the other hand, never heard of a jaguar from central Arizona, and he never met anyone who had seen or heard of one in that region.

Mountain Lion: The first trappers on the upper Gila saw lions or their sign in the 1820's, and they considered the animal the same "panther" they had known in the east. Because of its secretive habits, the mountain lion was seldom reported by American travelers in the middle of the 19th century. A member of the Bartlett expedition shot what may have been a young mountain lion out of a tree on Babocomari Creek in 1851. Dr. Kennerly considered mountain lions abundant in southern Arizona, not only in the mountains but in bottomland growth along rivers and streams. They were found wherever there were deer, and ranching had not yet eliminated them from valley flood plains.

In 1849 mountain lions were reported in the dense growth of willow and cottonwood on the lower Gila River.

In northern Arizona Dr. Woodhouse found little first hand evidence of mountain lions in 1851 and considered them rare and retiring. Elliott Coues likewise neither saw nor heard one and believed that they were uncommon in the mountains of central Arizona. This, of course, is testimony to the lion's ability to keep out of sight unless flushed by trained dogs.

Javelina: The first Americans on record to encounter javelina, the beaver trappers reported the species in the riparian bottoms along

2. A.L. Kroeber, p. 80.

the upper Gila River and the lower San Pedro in 1826. Members of the Kearny expedition in 1846 also found javelina abundant in the same general area. The favored habitat seemed to be a floodplain with a thick growth of mesquite, cottonwood, and willow.

Subsequent sightings were few and far between. Emory's Boundary Commission in 1855 reported javelina only near the San Bernardino Ranch, just west of Guadalupe Canyon. There were no records of the animals in the Sonoran Desert or oak woodland, communities where they are common today.

Elk: The mountain men in Arizona must have covered the entire range of the Merriam elk in the east-central and southeastern parts of the state, but only one reference to the species has come to light. In 1826 a party of beaver trappers shot a number of elk on the Colorado River just east of the Grand Canyon. This is far enough to the north to consider the possibility that the animals were members of the Rocky Mountain race and not Merriam elk. Until the 1850's elk were present on the Paria Plateau and also in the Carrizo Mountains in extreme northeastern Arizona.

John W. Audubon in 1849 found dressed elk skins among the possessions of the Papago Indians in the Sonoran Desert. They may have been obtained from Indians to the east, though there is the chance that Papago hunters killed the elk in ranges on the eastern edge of the desert, such as the Santa Catalinas. Elsewhere in southern Arizona in the middle of the 19th century Merriam elk were common within the range of the central Chiricahua band of the Apache Indians. This area extended from the

Mexican border north to Parker Canyon, then east to the Willcox area and over the state line into New Mexico.³

Strangely enough, the members of the Sitgreaves and Whipple expeditions did not report elk in central Arizona. Conceivably, since Sitgreaves and Whipple crossed Arizona in fall and winter, the bulk of the elk population may have moved to wintering grounds to the north, down the valley of the Little Colorado. In retrospect, the elk shot by Ewing Young's trappers in 1826 were probably taken in early spring, and a likely site was the junction of the Little Colorado and the Colorado. Thus, no elk may have been left as far south as the wagon route used by Sitgreaves and Whipple.

The next expedition to follow the same route set out in the summer of 1857. Its members reported "innumerable" elk sign along the middle stretches of the Little Colorado and on the rolling grasslands to each side of the river. Soldiers and prospectors in the Civil War period found elk abundant in the area of San Francisco Mountain, but Elliott Coues makes no reference at all to elk in the vicinity of Fort Whipple, or anywhere else in central Arizona. Prospectors, however, reported them in the Weaver Mountains in 1863 and considered them initially abundant in that part of the state.

Mule Deer: A vital element in the meat diet of explorers and settlers, the mule deer, like the whitetail, was simply referred to as "deer" in most early records. Where the two species overlapped it was often impossible to determine which one was being referred to in a given report.

3. Morris E. Opler, An Apache Life-Way (Chicago, 1941), p. 325.

All the emigrants and explorers who crossed Arizona before the Civil War probably saw mule deer at one point or another. The species was not uniformly abundant, but no other game animal occupied such a wide variety of habitats. In southern Arizona mule deer were observed from the Guadalupe range in the east all the way to the Colorado River. Dr. Kennerly, however, did not find them particularly numerous along the border, except in localized areas like the San Luis Mountains, on the Sonora side of the boundary. He observed that they were thinned out quickly by hunting, whereas the whitetails held their own under the same pressure.

Mule deer in central and northern Arizona were seen in riparian woodland, juniper-pinyon forest, chaparral, the Mohave Desert, grassland, and ponderosa pine forest. They were economically important to the gold miners who swarmed into central Arizona in the early 1860's, and Elliott Coues reported that the species had decreased markedly in this region within a year of the mining influx.

White-tailed Deer: Mountain men in Arizona depended on deer of both species for food, and they undoubtedly saw whitetails in many areas along the Gila and San Pedro Rivers and in the adjacent mountains. Like most frontiersmen, they seldom identified a deer by species.

In 1852 Bartlett found deer abundant along the Gila and in all the mountains along his route. Emory reported whitetails specifically as being common between El Paso and Nogales. They were especially abundant in the Guadalupe Range and other nearby mountains. Whitetails also found an optimal habitat in stream valleys, such as that of the Santa Cruz River.

In the late 1850's whitetails furnished venison for silver prospectors in the Santa Rita Mountains, where these deer were very common.

Pronghorn: As early as 1826, James O. Pattie reported an abundance of pronghorn in what was probably the Sulphur Springs Valley. The next references, dating from 1846, refer to the species being numerous in the San Bernardino and San Pedro Valleys. An 1849 report describes the species in spectacular numbers in the valley of the Santa Cruz River. In 1851 Bartlett again found pronghorn abundant in the Sulphur Springs Valley, at the south end (near the present site of Douglas.) He also found them in large numbers west of Dragoon Wash in the San Pedro Valley. Colonel Graham saw many herds on the magnificent treeless grassland that lies between the Whetstone and Santa Rita Mountains.

A year later, Bartlett saw many pronghorn in the Sonoran Desert near the lower Gila River. In 1858 they were abundant in the San Simon Valley, the San Pedro Valley, and near Fort Buchanan on Sonoita Creek. Prospectors observed many of them in the foothills of the Santa Ritas and the Patagonias, right up to the oak woodland. Pronghorn were also reported from the Altar Valley.

In 1853 Dr. Kennerly found pronghorn in considerable numbers on all open, treeless plains west of the Pecos River. They also ranged up into mountain valleys. Where pronghorn were numerous, in Kennerly's opinion, there were usually few deer. On these border plains pronghorn generally numbered small groups of eight or 10, but at times they formed herds of 300 or more. The species was particularly abundant in northern Sonora. Lt. Michler noticed pronghorn in the Sonoran Desert near Pozo Verde and found them common between the Colorado River and Nogales, where

he met Emory's party. To the east at this period, Apaches hunted them in the San Simon Valley and other grasslands within the range of the Chiricahua bands.

There were times when the journals of soldiers and emigrants reported that pronghorn nearly disappeared from the great sweep of grasslands that straddled the international boundary between the Rio Grande and Nogales. Even lush valleys like the Animas, just to the east of the Guadalupe Range, were described as being empty of wildlife at certain periods in the 1850's.

Reports from the 1850's indicate that pronghorn were extremely abundant on the grasslands of central and northern Arizona. They were seen everywhere in the Navaho country, ranging up into the ponderosa pines on the San Francisco peaks and Bill Williams Mountain. This abundance continued to the west, and in suitable grassy valleys pronghorn were encountered all the way to the Colorado River. Some areas where large numbers were consistently sighted: Chino Valley (where herds of hundreds were sometimes seen), Big Sandy Valley, Hualapai Valley, and the Sacramento Valley. Occasionally herds were reported within juniper-pinyon woodland.

During the 1850's Indians still hunted pronghorn over the large areas remaining under their control. Some favorite hunting grounds: Monument Valley,⁴ Lonesome Valley (below Mingus Mountain),⁵ the Harquahala

4. Byrd H. Granger, Will C. Barnes' Arizona Place Names (Tucson, 1960), p. 233.

5. Edward W. Gifford, "Northeastern and Western Yavapai," Publ. in Amer. Archeo. and Ethnology, v. 34, Berkeley (1936), p. 265.

Plains (Yuma County),⁶ head of Agua Fria Creek (between Prescott and Jerome),⁷ and Black Canyon (near Phoenix).⁸ Large numbers were killed in fire drives between the upper Verde River and the Flagstaff region.⁹

Gold miners in the early 1860's found pronghorn abundant on the slopes of Antelope Peak in the Weaver Mountains. They were also common in grassy areas near Prescott. Elliott Coues, in 1864, considered pronghorn still numerous in open country in central and northern Arizona.

Bighorn: The first known account of bighorn in Arizona originated with James O. Pattie. He observed the animals on cliffs overlooking the lower San Francisco River in southeastern Arizona. A year later he referred to their abundance in Black Canyon, on the Colorado River. The next description of bighorn, dated 1846, states that Kit Carson shot a ram at Painted Rocks on the lower Gila River. The three observations represent three distinct habitats. The first was probably in juniper-pinyon woodland, the other two in the Mohave and Sonoran Deserts, respectively. At one time bighorn probably inhabited all hilly or mountainous areas in Arizona where there was a combination of rocky outcrops and good, open visibility.

In 1849 travelers reported an abundance of bighorn in the following areas: the Muggins Mountains, on the lower Gila; the mountains between Tucson and the Gila River--the Sierra Estrella, Sacaton, Picacho

6. Samuel W. Cozzens, The Marvellous Country (London, 1873), p. 100.

7. Edward W. Gifford, "The Southeastern Yavapai," Publ. in Amer. Archeo. and Ethnology, v. 34, Berkeley (1936), pp. 215-216.

8. Ibid.

9. Gifford, "Northeastern Yavapai," p. 265.

Peak, and the Tucson Mountains. Bighorn were hunted by the Pima Indians in the vicinity of Casa Blanca, on the Gila River. They were abundant at the northwest end of the Gila Bend Mountains, where they were hunted by the Yavapai Indians.¹⁰ The species was generally common in all the ranges along the lower Gila River. In southeastern Arizona and southwestern New Mexico bighorn inhabited the Peloncillo and adjacent ranges in the 1850's.

The Emory expedition of 1855 reported bighorn as being particularly abundant in the Sonoran Desert ranges along the international border between Nogales and the Colorado River.

In northern Arizona Dr. Woodhouse saw no sign of bighorn in 1851, but he stated that the species was considered abundant in mountainous districts. A short time later other travelers found them numerous on the San Francisco peaks. In 1853 bighorn were observed in considerable numbers in the mountains adjacent to the Big Sandy River. Members of the Whipple expedition considered them much more abundant there than in the ranges lying to the east. The animals remained common in the mountains lying along the Bill Williams River.

The Ives expedition found bighorn common near the Colorado River, especially in the vicinity of the Sacramento Valley in 1858. They were also abundant in the early 1860's along the South Rim of the Grand

10. Gifford, "Northeastern Yavapai," p. 265.

Canyon.¹¹ The Yavapai Indians reported many bighorn in the rimrock country adjacent to the Kirkland Valley, southwest of Prescott.¹²

During the gold rush in the Prescott area in 1863, prospectors found bighorn in considerable numbers in the Date Creek Mountains. However, by 1864-1865, Elliott Coues could write that the species was already greatly reduced in central Arizona and could be found only in the most rugged mountain regions.

11. Leslie Spier, "Havasupai Ethnology," Anthropological Papers, v. 29, New York (1928), p. 11.

12. Gifford, "Northeastern Yavapai," p. 265.

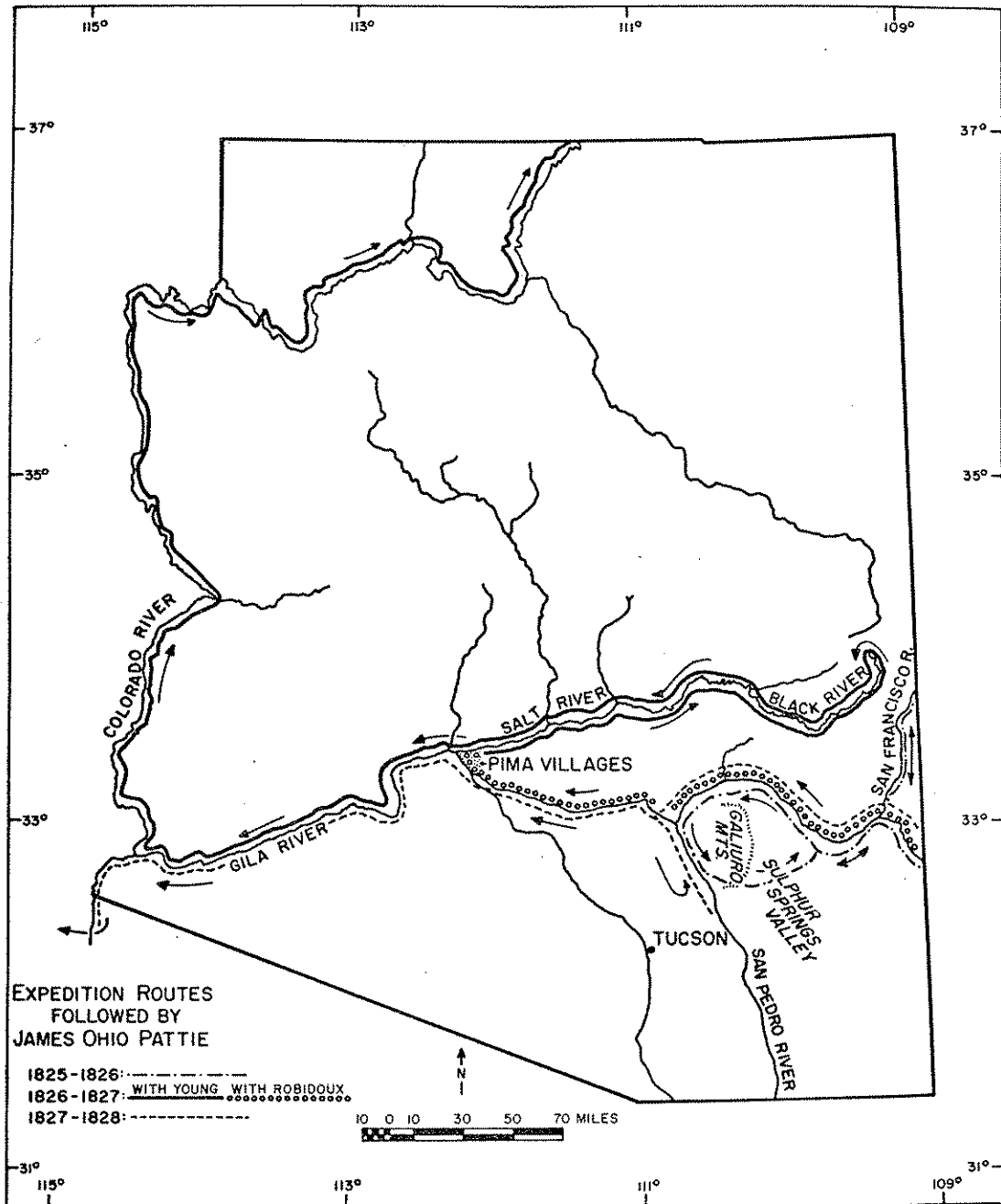


Fig. 1 Trapping Routes Along the Main Beaver Streams of Arizona

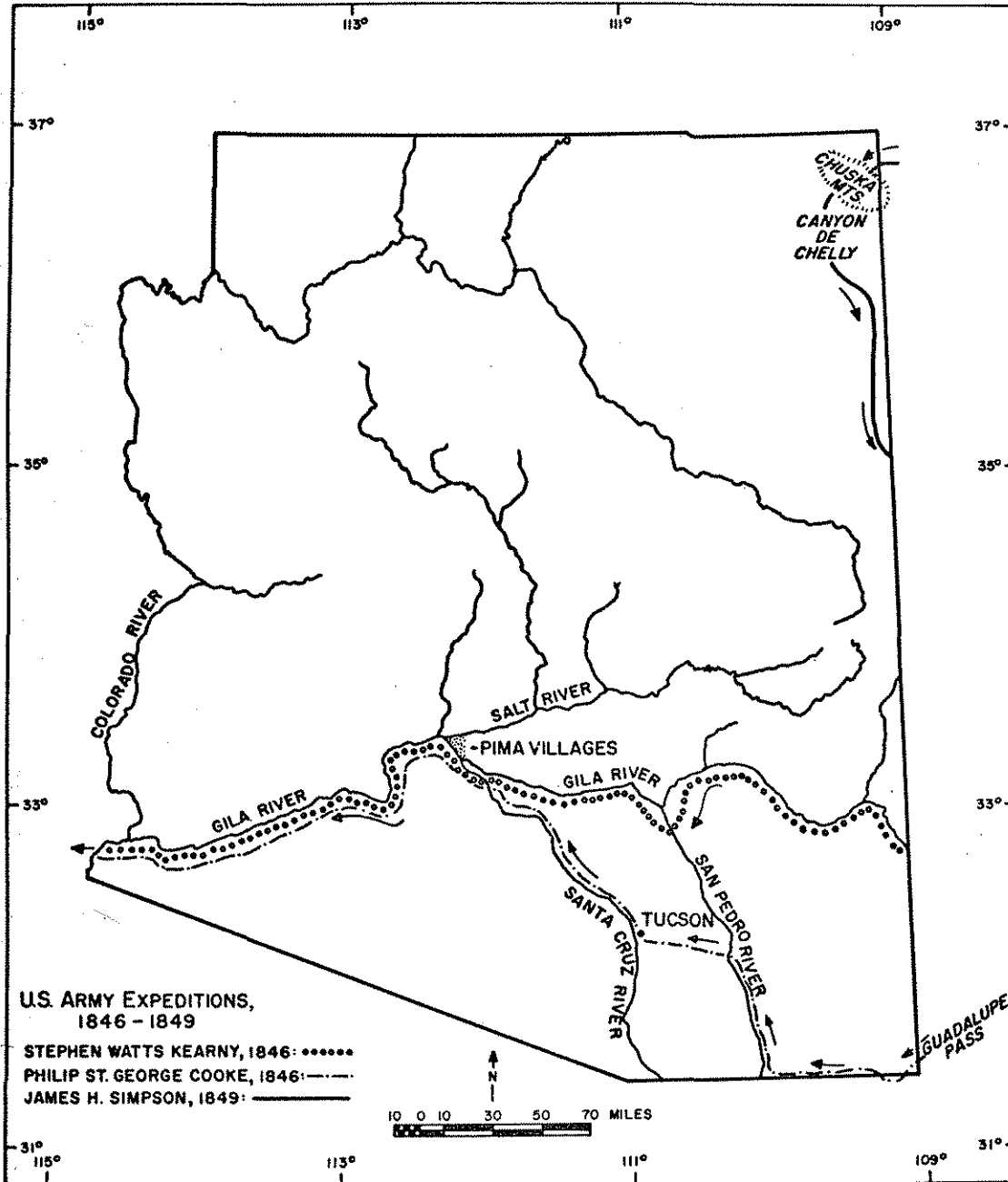


Fig. 2 U.S. Military Expeditions
Against the Mexicans and the Navajos, 1846-1849

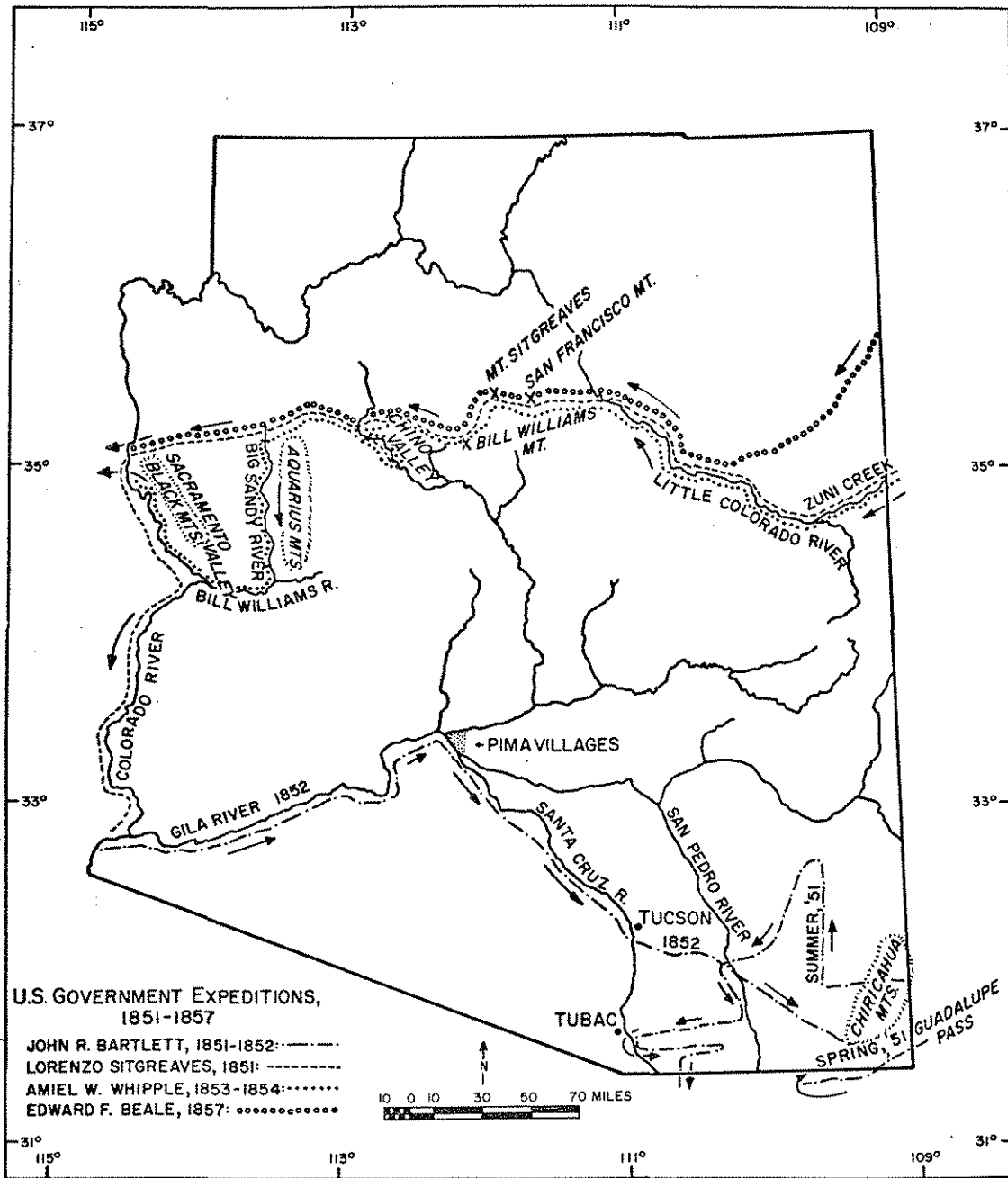


Fig. 3 Federal Surveying Expeditions, 1851-1857

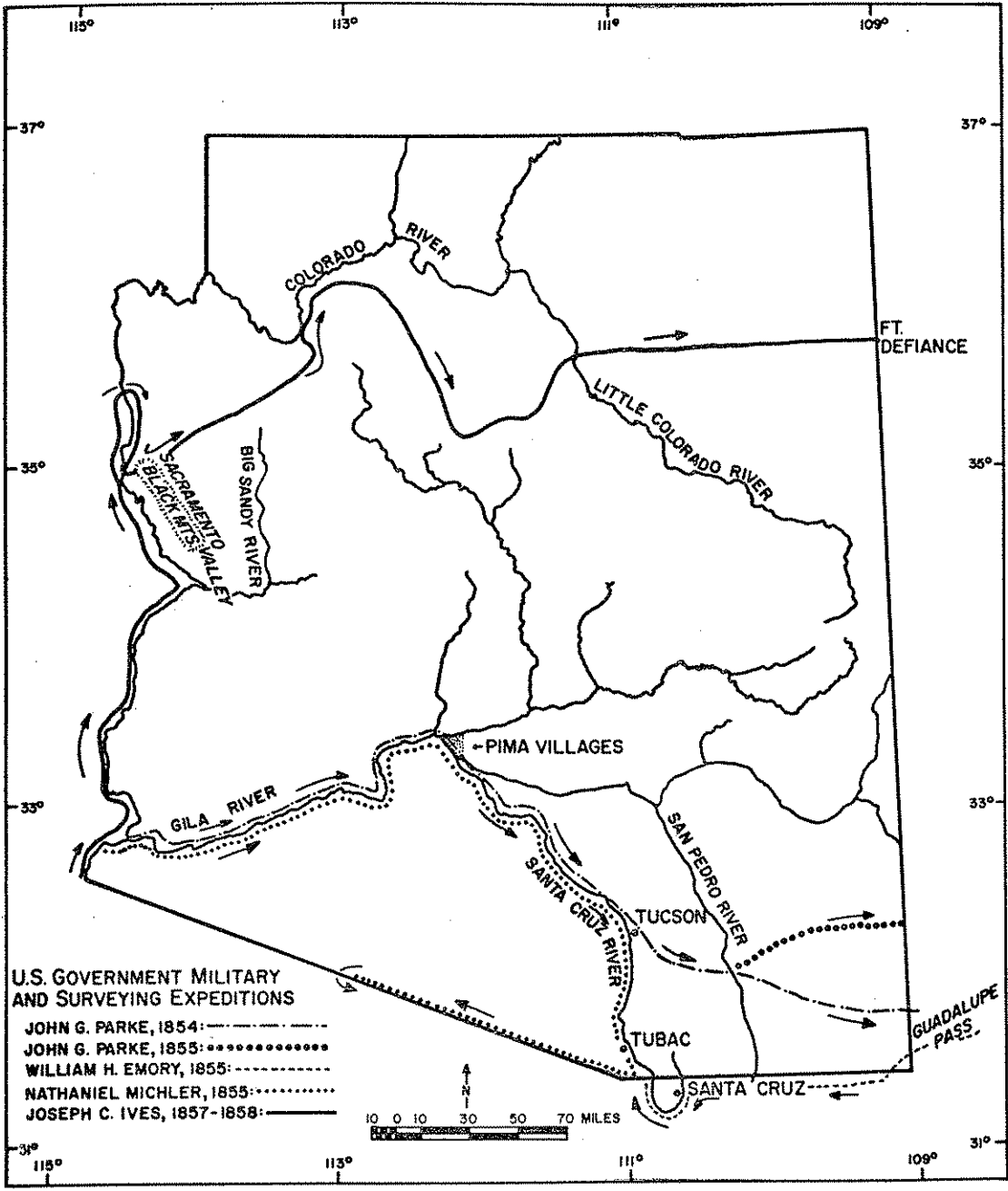


Fig. 4 Federal Expeditions to Survey the Area of the Gadsden Purchase and to Seek a Supply Route for the U.S. Army in Utah, 1854-1858

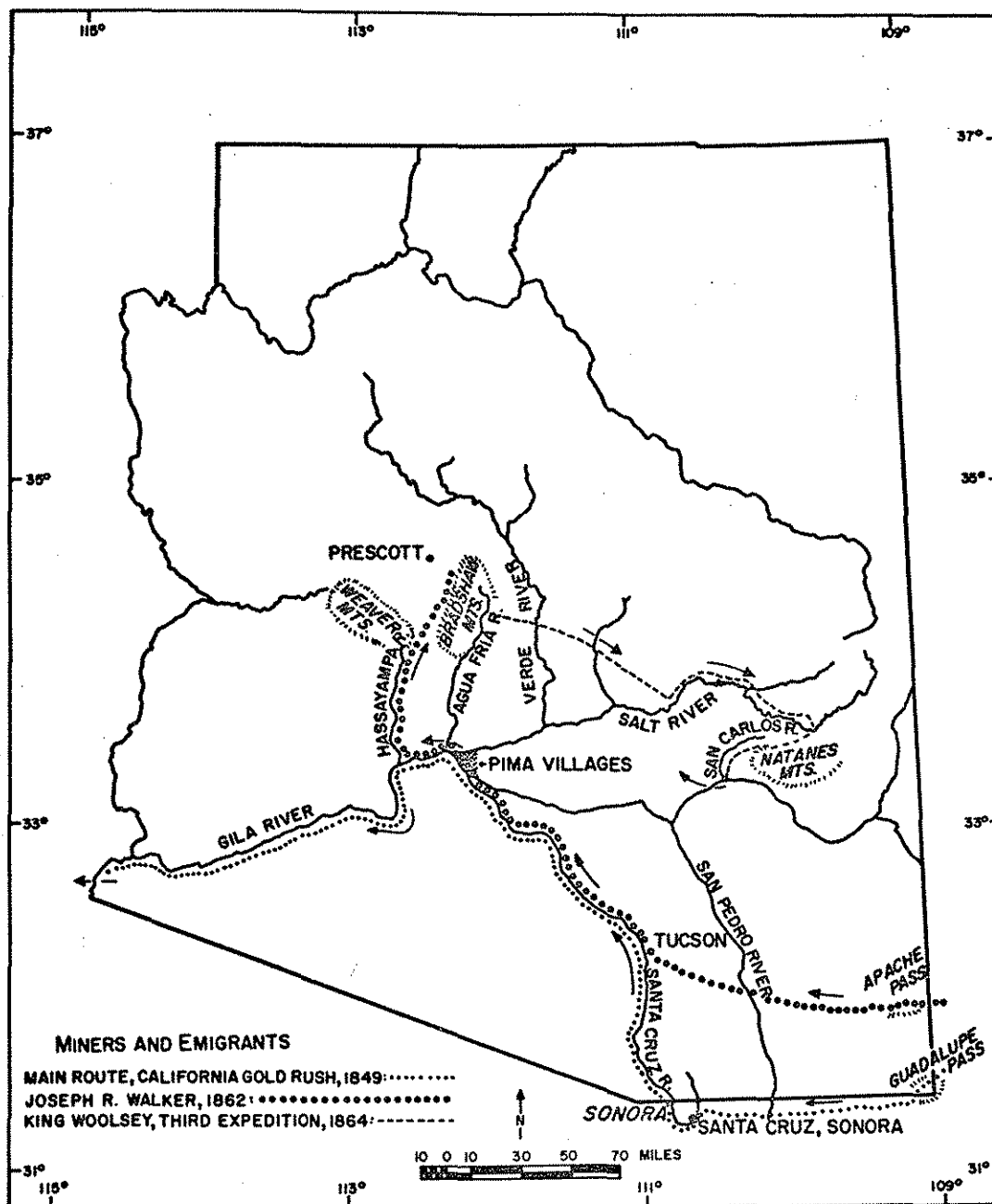


Fig. 5 Major Routes Followed by Gold Prospectors to California and Central Arizona, 1849-1864

REFERENCES

- Aldrich, Lorenzo D., A Journal of the Overland Route to California and the Gold Mines, Dawson's Book Shop, Los Angeles, 1950, 93 pp. ✓
- Allen, J.A., "On a Collection of Mammals from Arizona and Mexico made by Mr. W.W. Price," Bull. of the Amer. Mus. Nat. His., VII (1895), 193-258.
- Arizona Daily Star, Tucson, Arizona.
- Arizoniana, The Journal of Arizona History, Arizona Historical Society, Tucson, Arizona.
- Audubon, John W., Audubon's Western Journal: 1849-1850, Frank H. Hodder, ed., Cleveland, 1906. ✓
- Audubon, John Woodhouse, "Illustrated Notes of an Expedition Through Mexico and California, 1849-50," Magazine of History, XI, Extra Number 41, 1936. ✓
- Bailey, Vernon, Mammals of the Grand Canyon Region, Nat. His. Bull. No. 1, Grand Canyon Nat. His. Assoc., 1935, 42 pp.
- Bakarich, Sarah Grace, Gun Smoke, privately printed, 1947, 152 pp.
- Barnes, Will C., Will C. Barnes Collection, Arizona Historical Society, Tucson.
- Bartlett, John Russell, Personal Narrative of Explorations and Incidents, 2 vols., D. Appleton Company, New York and London, 1854. ✓
v. 1, 501 pp.; v. 2, 624 pp.
- Beale Diorama, Arizona Historical Society, Tucson, Arizona.
- Bieber, Ralph P., "Exploring Southwestern Trails," Southwest Historical Series, The Arthur H. Clark Co., Glendale, 1938, 383 pp. ✓
- Bieber, Ralph P., "Southern Trails to California in 1849," The Southwest Historical Series, v. 5, The Arthur H. Clark Co., Glendale, 1937, 386 pp. ✓
- Bigler, H.W., "Extracts from the Journal of Henry W. Bigler," Utah Historical Quarterly, V (1932), 35-64, 87-112, 134-160. ✓

- Bliss, R.S., "The Journal of Robert S. Bliss, with the Mormon Battalion," Utah Historical Quarterly, IV (1931), 67-96, 110-28. ✓
- Blomstrom, Robert L., "Fur Trading: Forerunner of Industry in Arizona," Arizona State University, Bur. of Business Services, Tempe, 1963, 26 pp.
- Box, James Michael, Capt. James Box's Adventures and Explorations in New and Old Mexico, James Miller, New York, 1869, 344 pp.
- Brand, Donald R., "The Natural Landscape of Northwestern Chihuahua," The University of New Mexico Bull., Nov. 1937, University of New Mexico Press, Albuquerque, 1937, 74 pp.
- Browne, J. Ross, Adventures in the Apache Country, 1st ed., Harper and Brothers, New York, 1869, 535 pp. ✓
- Campion, J.S., On the Frontier, Chapman and Hall, London, 1878, 372 pp.
- Chamberlain, Samuel E., My Confession, Harper and Brothers, New York, 1956, 302 pp.
- Chittenden, Hiram Martin, A History of the American Fur Trade of the Far West, 2 vols., Academic Reprints, Stanford, California, 1954, 1029 pp. ✓
- Clarke, A.B., Travels in Mexico and California, 1st ed., Boston, Wright's and Hasty's Steam Press, 1852, 138 pp. ✓
- Cleland, Robert G., This Reckless Breed of Men: The Trappers and Fur Traders of the Southwest, 1st ed., Alfred Knopf, New York, 1950, 361 pp. ✓
- Cockrum, E. Lendell, The Recent Mammals of Arizona: Their Taxonomy and Distribution, 1st ed., University of Arizona Press, Tucson, 1960, 276 pp. ✓
- Colyer, Vincent, Peace with the Apaches of New Mexico and Arizona, 1st ed., Government Printing Office, Washington, D.C., 1872, 58 pp.
- Conner, Daniel Ellis, Joseph Reddeford Walker and the Arizona Adventure, Univ. of Oklahoma Press, Norman, 1956, 364 pp. ✓
- Cooke, Philip St. George, The Conquest of New Mexico and California, Horn and Wallace, Albuquerque, 1964, 307 pp. ✓
- Cosulich, Bernice, Tucson, Arizona Silhouettes, Tucson, 1953, 307 pp.
- Coues, Elliott, "List of the Birds of Fort Whipple, Arizona," Proc. Acad. Nat. Sci., 18 (1866), 39-100. ✓

- Coues, Elliott, "Notes on a Collection of Mammals from Arizona," Proc. Acad. Sci. Phila., 19 (1867), 133-136. ✓
- Coues, Elliott, "The Quadrupeds of Arizona," Amer. Nat., i, (1867), 281-292, 351-363, 393-400, 531-541. ✓
- Couts, Cave J., Hepah, California! The Journal of Cave Johnson Coutts, ed. Henry F. Dobyns, Arizona Pioneers' Historical Society, Tucson, 1961, 113 pp. ✓
- Coy, Owen Cochran, The Great Trek, Powell Publishing Co., Los Angeles, 1931, 349 pp.
- Cozzens, Samuel W., The Marvellous Country, 1st ed., Sampson, Low, Marston and Searle, London, 1873, 548 pp. ✓
- Curtis, Capt. C.A., "Coues at His First Army Post," Bird-Lore, IV (1902), pp. 5-9. ✓
- Cutts, James M., The Conquest of California and New Mexico, 1st ed., Albuquerque, 1965, 264 pp.
- Daily Alta California, San Francisco, 1849-1891.
- Dellenbaugh, Frederick S., A Canyon Voyage, G.P. Putnam's Sons, New York, 1908, 277 pp.
- Derby, Lt. George H., Derby's Report on the Opening of the Colorado, 1850-1851, ed. by Odie B. Faulk, U. of New Mexico Press, Albuquerque, 1969, 54 pp. ✓
- Diaz, Mariana, Arizona Citizen, June 21, 1873.
- Dye, Job Francis, Recollections of a Pioneer, 1830-1852, Los Angeles: Glen Dawson, 1951, 80 pp.
- Eccleston, Robert, Overland to California on the Southwestern Trail, 1849, ed. by G.P. Hammond and E.H. Howes, Berkeley, 1950, 256 pp. ✓
- Elliott, Wallace W., History of Arizona Territory, Wallace W. Elliott Co., San Francisco, 1884, 322 pp.
- Emory, Wm. H., Report on the United States and Mexican Boundary Survey, Made Under the Direction of the Secretary of the Interior, 1st ed., 2 vols., Washington, 1857. ✓
- Etz, Della Bohn, Reminiscences, MS, Arizona Historical Society (1939), 4 pp.
- Evans, G.W.B., Mexican Gold Trail: The Journal of G.W.B. Evans, ed. Glenn S. Dumke, The Huntington Library, San Marino (1945), 340 pp. ✓

- Faulk, Odie B., Arizona: A Short History, U. of Oklahoma Press, Norman, 1970, 267 pp.
- Foreman, Grant, "Antoine Leroux, New Mexico Guide," New Mexico Historical Review, v. XVI, no. 4, Oct. 1941, 367-377. ✓
- Fouhr, William, "Journal," Collections, Arizona Historical Society, Typed manuscript.
- Gifford, Edward W., "Northeastern and Western Yavapai," Publications in Amer. Archeo. and Ethnology, v. 34, U. of Cal. Press (1936), 106 pp.
- Gifford, Edward W., "The Southeastern Yavapai," Publications in Amer. Archeology and Ethnology, v. 29, U. of Cal. Press (1932), 75 pp.
- Goetzmann, William H., Army Exploration in the American West, 1803-1863, Yale University Press, New Haven, 1959, 509 pp. ✓
- Goetzmann, William H., Exploration and Empire, Alfred A. Knopf, New York, 1966, 656 pp. ✓
- Gracy, David B. II and Helen J.H. Rugeley, "From the Mississippi to the Pacific: An Englishman in the Mormon Battalion," Arizona and the West, vol. 7, no. 2 (summer 1965), pp. 127-160. ✓
- Graham, J.D., Report of the Secretary of War, Communicating, in Compliance with a Resolution of the Senate, the Report of Lieutenant Colonel Graham on the Subject of the Boundary Line Between the United States and Mexico, 32nd Congress, 1st Session, Washington, 1852. ✓
- Granger, Byrd H., Will C. Barnes' Arizona Place Names, Revised and Enlarged, University of Arizona Press, Tucson, 1960, 519 pp.
- Grater, Russell K., "An Unusual Beaver Habitat," Jour. of Mamm., XVII (1936), 66.
- Gray, Andrew B., The A.B. Gray Report, 2nd ed., ed. L.R. Bailey, Los Angeles (1963), 230 pp. ✓
- Gressinger, A.W., Charles D. Poston, Sunland Seer, Globe, Dale Stuart King (1961), 212 pp.
- Griffin, John S., A Doctor Comes to California, California Historical Society, San Francisco, 1943, 97 pp. ✓
- Grinnell, Joseph, An Account of the Mammals and Birds of the Lower Colorado River Valley with Special Reference to the Distributional Problems Presented, Univ. of Calif. Publ. Zool., v. 12 (1914), 51-294. ✓

- Grinnell, Joseph, Joseph S. Dixon and Jean M. Linsdale, Fur-Bearing Mammals of California, Univ. of Calif. Press, Berkeley, 2 vols., 1937, 777 pp.
- Hamilton, James G., My Dear Cornelia, Letters by James G. Hamilton During an Overland Trip, 1857-1858, Copyright 1951 by Katharine Jones Moore (his granddaughter), Fresno, Calif., 18 pp.
- Hand, George O., "Diary," Arizona Historical Society, Tucson, Arizona, Typed manuscript.
- Harris, Benjamin B., The Gila Trail: The Texas Argonauts and the California Gold Rush, ed. Richard H. Dillon, U. of Oklahoma Press, Norman, 1960, 175 pp.
- Hastings, James R. and Turner, Raymond M., The Changing Mile, The University of Arizona Press, Tucson, 1965, 317 pp.
- Hayes, Benjamin, Diary of Judge Benjamin Hayes, Ms in Arizona Historical Society, Tucson, 1850, 99 pp.
- Heermann, A.L., "Zoological Report," Reports of Explorations and Surveys, X, Washington, D.C., Beverley Tucker, 1859.
- Hill, W.W., The Agricultural and Hunting Methods of the Navajo Indians, Yale Univ. Publications in Anthropology No. 18, New Haven, 1938.
- Hoffmeister, Donald F., Mammals of Grand Canyon, University of Illinois Press, Urbana, 1971, 183 pp.
- Hoffmeister, D.F. and W.W. Goodpaster, "The Mammals of the Huachuca Mountains, Southeastern Arizona," Illinois Biological Monographs, 24 (1954), 152.
- Horgan, Paul, The Heroic Triad, Holt, Rinehart and Winston, New York, 1954, 256 pp.
- Hornaday, W.T., Our Vanishing Wildlife, New York Zoological Society, 1913, 411 pp.
- Ives, Joseph C., Report upon the Colorado River of the West, 1st ed., Government Printing Office, Washington, 1861, 185 pp.
- Johnston, Abraham R., "Journal of A.R. Johnston, First Dragoons, 25 September to December, 1846," 30th Cong., 1st Sess., H.R. Exec. Doc. No. 41, Serial 517, Washington, 1848, pp. 567-614.
- Kennerly, C.B.R., "Report on the Zoology of the Expedition," Reports of Explorations and Surveys, etc., 1853-4, vol. IV, Washington, 1856.

- Kroeber, Alfred L., "Walapai Ethnography," Memoirs no. 62, Amer. Anthro. Assoc., Menasha, 1935, 293 pp.
- Kroeber, Clifton B., "The Route of James O. Pattie on the Colorado in 1826: A Reappraisal by A.L. Kroeber," Arizona and the West, vol. 6 (summer, 1964), 119-36.
- Leopold, Aldo, Sand County Almanac, Oxford University Press, New York, 1966, 268 pp.
- Leopold, A. Starker, Wildlife of Mexico, University of California Press, Berkeley and Los Angeles, 1959, 568 pp.
- Little, James A., Jacob Hamblin, A Narrative of His Personal Experience, The Deseret News, Salt Lake City, 1909, 151 pp.
- Lockwood, Frank C., Pioneer Days in Arizona, 1st ed., MacMillan Co., New York, 1932, 387 pp.
- Lowe, Charles H., The Vertebrates of Arizona, University of Arizona Press, Tucson, 1964, 259 pp.
- McNelty, John C., "History of Game on the Prescott National Forest," Arizona Wildlife and Sportsman, Phoenix, Sept. 20, 1941.
- McPherson, William, From San Diego to the Colorado in 1849, the Journal and Maps of Cave J. Couts, Arthur M. Ellis, Los Angeles, 1932, 78 pp.
- Mearns, Edgar Alexander, Mammals of the Mexican Boundary of the United States, U.S. National Museum, Washington, 1907, 530 pp.
- Merriam, C. Hart, Results of a Biological Survey of the San Francisco Mountain Region and Desert of the Little Colorado, Arizona. N.A. Fauna No. 3, Division of Ornithology and Mammalogy, U.S.D.A., Washington, Gov't. Printing Office, 1890.
- Miles, William, Journal of the Sufferings and Hardships of Capt. Parker H. French's Overland Expedition to California, (1st ed., Chambersburg, 1851), Pemberton Press, Austin, 1965, 26 pp.
- Miller, G.S., Jr., and R. Kellogg, 1955, "List of North American Recent Mammals," U.S. Nat. Mus. Bull., 205, Washington, D.C., xii + 954 pp.
- Mollhausen, H. Baldwin, Diary of a Journey from the Mississippi to the Coasts of the Pacific with a United States Government Expedition, 2 v., 1st ed., London, 1858. v. 1, 352 pp.; v. 2, 397 pp.
- Morgan, Dale L., Jedediah Smith and the Opening of the West, Bobbs-Merrill, Indianapolis, 1953, 438 pp.

- Mowry, Sylvester, Arizona and Sonora, (Mowry Mines Co., New York, 1904) ✓
Harper Bros., New York, 1864, 251 pp.
- Murie, Olaus J., The Elk of North America, 1st ed., The Stackpole Co., ✓
Harrisburg and Washington, 1951.
- Oliphant, J. Orrin, On the Arkansas Route to California in 1849. The ✓
Journal of Robert B. Green of Lewisburg, Pennsylvania, Bucknell
University Press, Lewisburg, 1955, 87 pp.
- Opler, Morris E., An Apache Life-Way, University of Chicago Press,
500 pp.
- Pancoast, Charles Edward, A Quaker Forty-Niner, ed. Anna Paschall Hannum,
University of Pennsylvania Press, Philadelphia, 1930, 402 pp.
- Parke, John G., Reports of Explorations and Surveys, etc., VII, ✓
Washington, A.O.P. Nicholson, 1857.
- Parkhill, Forbes, The Blazed Trail of Antoine Leroux, Westernlore Press, ✓
Los Angeles, 1965, 235 pp.
- Pattie, James Ohio, The Personal Narrative of James O. Pattie, ed. ✓
William H. Goetzmann, J.B. Lippincott Co., Philadelphia, 1962,
269 pp.
- Peters, Dewitt C., Kit Carson's Life and Adventures from Facts Narrated ✓
by Himself, Dustin, Gilman and Co., Hartford, 1873, 604 pp.
- Phillips, Paul Chrisler, The Fur Trade, Univ. of Okla. Press, Norman;
1961, 2 vols., vol. 1: 686 pp.; vol. 2: 696 pp.
- Powell, H.M.T., The Santa Fe Trail to California, 1849-1852, ed. Douglas ✓
S. Watson, The Book Club of California, San Francisco, 1931,
272 pp.
- Powers, Stephen, Afoot and Alone; A Walk from Sea to Sea, Hartford,
Columbian Book Co., 1872, 327 pp.
- Pumpelly, Raphael, Pumpelly's Arizona, ed. Andrew Wallace, Tucson, 1965, ✓
141 pp.
- Reeve, Frank D., "War and Peace: Two Arizona Diaries," New Mexico
Historical Review, v. 24 (April, 1949), 95-129.
- Reid, John C., Reid's Tramp, Selma, Ala., John Hardy and Co., 1858, 237 pp.
- Russell, Carl P., Firearms, Traps & Tools of the Mountain Men, Alfred A. ✓
Knopf, New York, 1967, 448 pp.

- Ruxton, G.F., Adventures in Mexico and the Rocky Mountains, New York, Harper and Bros., 1848. ✓
- Ruxton, G.F., Life in the Far West, ed. LeRoy Hafen, University of Oklahoma Press, Norman, 1951, 252 pp.
- Ruxton, G.F., Ruxton of the Rockies, ed. LeRoy Hafen, University of Oklahoma Press, Norman, 1950, 243 pp.
- Simpson, James H., Navaho Expedition: Journal of a Military Reconnaissance from Santa Fe, New Mexico, to the Navaho Country, Made in 1849 by Lieutenant James H. Simpson, edited and annotated by Frank McNitt, University of Oklahoma Press, Norman, 1964, 296 pp. ✓
- Sitgreaves, Lorenzo, Report of an Expedition Down the Zuni and Colorado Rivers, Washington, 1853, 190 pp. ✓
- Spier, Leslie, "Havasupai Ethnology," Anthropological Papers, Amer. Mus. Nat. Hist., 29 (New York, 1928), 311 pp.
- Stacey, May H., Uncle Sam's Camels, ed. Lewis Burt Lesley, Rio Grande Press, Glorieta, New Mexico, 1970, 298 pp.
- Standage, Henry, The March of the Mormon Battalion (taken from the journal of Henry Standage), ed. Frank Alfred Golder, The Century Co., New York, 1928, 295 pp. ✓
- Stephens, Robert C., Ed., Echoes of the Past: Tales of Old Yavapai, vol. 1, Yavapai Cowbells (Prescott, 1955), 160 pp.; vol. 2, Yavapai Cowbells (Prescott, 1964), 312 pp.
- Sweeny, Lt. Thomas W., Journal of Lt. Thomas W. Sweeny, 1849-1853, ed. Arthur Woodward, Westernlore Press, Los Angeles, 1956, 278 pp. ✓
- Tevis, J.H., Arizona in the '50s, 1st ed., Albuquerque, 1954, 237 pp.
- Thrapp, Dan L., The Conquest of Apacheria, University of Oklahoma Press, Norman, 1964, 405 pp.
- Turner, Henry Smith, The Original Journals of Henry Smith Turner, University of Oklahoma Press, Norman, 1966, ed. Dwight L. Clarke, 173 pp. ✓
- Tyler, Sgt. Daniel, A Concise History of the Mormon Battalion in the Mexican War, The Rio Grande Press, Inc., Chicago, 1964, 376 pp. ✓
- Udell, John, "Journal of John Udell," Western Historical Series, Yale University Library, 1952, 45 pp. ✓
- U.S. Congress, House, House Executive Document 108, 35th Congress, 2nd session, Washington, D.C., 1859. ✓

- Wagoner, J.J., History of the Cattle Industry in Southern Arizona, 1540-1940, University of Arizona, Tucson, 1949, M.S. Thesis, 252 pp. ✓
- Walker, Ernest P., Mammals of the World, The John Hopkins Press, Baltimore, 1964, 3 vols. (Text: 1500 pp. Bibliography: 769 pp.).
- Way, Phocian R., "Overland via Jackass Mail in 1858: The Diary of Phocian R. Way," ed. William A. Duffen, Arizona and the West, vol. 2 (1960), 35-53, 147-64, 279-92, 353-70. ✓
- Weber, David J., The Taos Trappers, University of Oklahoma Press, Norman, 1971, 264 pp. ✓
- The Weekly Alta Californian, San Francisco, 1849-1891.
- The Weekly Arizonian, Newspaper initially printed at Tubac in 1859. Later moved to Tucson. Available in Pioneer Historical Society Library on microfilm. ✓
- Wheeler, George M., Report Upon Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian, vol. v, Washington, 1875, 1019 pp.
- Whipple, A.W., A Pathfinder in the Southwest, 1st ed., ed Grant Foreman, University of Oklahoma Press, Norman, 1941, 298 pp. ✓
- Woody, Clara T., "The Woolsey Expeditions of 1864," Arizona and the West, v. 4, 1962, pp. 157-176. ✓
- Young, Stanley P. and Edward A. Goldman, The Wolves of North America, 1st ed., The Peter Smith Co., Washington, D.C., 1944.
- Yount, George C., George C. Yount and His Chronicles of the West, ed. Charles L. Camp, Old West Publishing Co., Denver, 1966, 306 pp. ✓

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