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HOMESTEAD AND FARM: A HISTORY OF FARMING AT THE HUBBELL TRADING POST NATIONAL HISTORIC SITE

Prepared for Southwest
Parks and Monuments
Association

By Charles S. Peterson
Utah State University

MARCH 1, 1986

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FOREWORD

This is a history of 160 acres. A tiny point in the Navajo Reservation of northern Arizona it was the homestead and farm of the Hubbell family at Ganado, Arizona for nearly a century. It has been the Hubbell Trading Post National Historic Site since 1967. An effort is made here to consider the farm's history from its first settlement to the time it was taken over by the National Park Service. As the person who claimed the site and established the farm, Navajo trader John Lorenzo Hubbell was a central figure. Yet, the Hubbell farm was a family farm. This was so both because it survived Hubbell by many years and because it was home to other members of the family during his lifetime and after.

This study traces and describes the means by which John Lorenzo Hubbell's occupation of the farm evolved from business interest to land claim and from land claim to water right and how it all became an operating farm. The relations of human beings, the role of the environment, and the interaction of material culture and farming procedures are also considered. Examined in addition is the influence of the farm on related aspects of the Hubbell business, including freighting and livestock trade, and the way the farm was influenced by government agencies and by Navajos who also farmed at

Ganado. Clearly evident is the fact that the Hubbell farm was part of a much larger context.

Yet this is a case study that looks primarily at what happened on 160 acres. Functions are examined in detail. Pointed attention is paid to values, routines, adaptations, successess, and failures as well as to the farm's premises, buildings and machines. In studying these questions as they pertain to a single farm it is sometimes necessary to utilize overlapping data. This is apparent in the approaches of several chapters where information applied elsewhere appears. In the sense that many interpretive judgements are made this is a creative work. Yet it is hoped that facts give it the ballast and thrust of good history.

The study is organized in three parts that move chronologically but respond also to the topics they involve. Part I addresses the establishment of the resource base including the Navajo farming community at Ganado to which the farm belonged. Part II is an examination of farm-related activities of the Hubbell business. And Part III seeks to come to grips with the farm and the experiences of life on it.

The present work includes and completes the "Hubbell Farmlands Part One: Water and Crops" project written in 1983. The seven chapters of that study have been altered as new information and reorganization have required. In this work they appear as Chapters I to IV and as Chapter XI. All other chapters are essentially new although the point of view remains much the same.

This has been a pleasant but challenging task. It has taken me back to the deserts of northern Arizona and to people and subjects

in which I am deeply interested. Many individuals have made the experience more pleasant and have contributed to any success it achieves. The Navajo people at Ganado and Window Rock were generous, tolerant, and friendly. I am especially indebted to the directors and staff of the Southwest Parks and Monuments Association which funded the project. Superintendents Barry Cooper and Ed Gastellum of the Hubbell Trading Post and Regional Historian Melody Webb of the Southwest Region, along with many other generous people at the Hubbell Trading Post and elsewhere in the National Park Service, did much to help. David M. Brugge especially laid the foundation for this study by years of collecting information at the Hubbell Trading Post. Melody Webb and David Brugge have read several drafts of each chapter and have contributed richly to my understanding. Family member Dorothy S. Hubbell has also been gracious and generous. Her memories of the farm have been essential. Helpful and kind also were curators, librarians, and archivists at the University of Arizona Library, the Arizona Historical Society, the Arizona State Department of Archives and Libraries, and the New Mexico State Records Center and Archives. People in the National Archives and at the regional records centers and other universities were equally kind, as were individuals and offices at Sun City, Ganado, Window Rock, and Ft. Defiance. My colleagues in the Department of History and Geography, the efficient staff at the Western Historical Quarterly, and the library personnel at Utah State University have been gracious and helpful as has my wife, Betty, who aided in research and did much proofreading.

PART ONE: ESTABLISHING THE FARM

CHAPTER I:

A TRADING FAMILY AND ITS FARM

John Lorenzo Hubbell: The Man and the Times

Writing on April 6, 1912, from Phoenix, Arizona, where he was on Republican party business, Navajo trader John Lorenzo Hubbell lapsed into satisfied reflection. "The appropriation for the Ganado Reservoir has passed the House [Congress]," he wrote his oldest son, Lorenzo, Jr., at a Keams Canyon trading post which was part of a flourishing business Hubbell and his family operated in northern Arizona. In fatherly tones, he continued that in the face of "opposition no one thought could be overcome . . . my dream has come true," demonstrating that "through life that what you always want, if it is right, persist in it and you will accomplish anything you start to do."[1]

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[1]J. L. Hubbell to Lorenzo Hubbell, Jr., April 6, 1912, Farm Folder, Working Papers, Hubbell Trading Post, hereafter cited WPHTP. "Working Papers" is a rich collection of material at the Hubbell Trading Post. Gathered at random, some of it is not cited as to its original source.

In the same mood, he also wrote his other son Roman at their Ganado headquarters, informing him that the House had passed a bill authorizing $35,000 for the reservoir and that an additional $30,000 "will be appropriated this Fall without doubt."[2]

John Lorenzo Hubbell could well entertain feelings of satisfaction in 1912. He was at the zenith of his career. In the decades just past he had completed the imposing stone buildings that indelibly marked the Hubbell Trading Post, perfected a homestead entry well within the Navajo Reservation, and in a most remarkable individual achievement had diverted Pueblo Colorado Creek, the only perennial flow of water in a radius of thirty miles, to irrigate his homestead. Now he had accomplished the seemingly impossible by bringing the Ganado irrigation system to the point of an appropriation as an Indian project but with himself, a non-Indian, very much a part of it. As his letters made clear, much of his life had been devoted to this dream. Indeed, the entire achievement of this remarkable man's life may be seen in terms of the development of his Ganado farm and the irrigation system that watered it.

The annals of the West are replete with men who gave their lives to the acquisition of land and water. But among them Hubbell comes near being unique. In the nearest thing to an autobiography, he portrayed himself in well-known western stereotypes.[3] He recalled

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[2]J. L. Hubbell to Roman Hubbell, April 6, 1912, Farm Folder, WPHTP.

[3]. J. L. Hubbell and John Edwin Hogg, "Fifty Years an Indian Trader," Touring Topics, XXII (December 1930), pp. 24-51.

years as a youthful adventurer, as a lawman, a trader, and a politician, but like the myth he and his writer drew from, it was a postured and self-seeking portrait by comparison to the real John Lorenzo Hubbell. Dictated shortly before his death, his account was more the last hurrah of a failing figure than a description of the complex, supple individual Hubbell was at the height of his career.

In reality Hubbell mixed visions and careers to be many things. While he was good at each, he approached greatness in the way he handled them in concert. On the one hand he was a businessman—an entrepreneur who manipulated resources, created markets, and established an empire of modest proportions. He was a consummate master, if indeed not the ultimate virtuoso, of the Navajo trade. At once servant, friend, community molder, diplomat, regulator, and exploiter, he plied his Navajo clients with such effect that his influence lingers still, giving a special character to Ganado and rising now and again above the inroads of time to moderate the tensions that new awarenesses and new needs bring to the reservation.[4] He was also host and point of regional access to

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[4]In addition to Hubbell and Hogg, "Fifty Years an Indian Trader," my impressions of Hubbell rely on Dorothy S. Hubbell Oral History 1979 by Lawrence C. Kelly; and Dorothy S. Hubbell, Oral History 1969 by David M. Brugge. These oral histories and most other oral histories cited below are in WPHTP. Also so Robert M. Utley, "Special Report on Hubbell Trading Post, Ganado, Arizona," National Park Service, Region Three, 1959, pp. 77-102; and Frank McNitt, The Indian Traders (Norman: University of Oklahoma Press, 1962), especially chapters 10, 15, and 16; Dane and Mary Roberts Coolidge, The Navajo Indians (Boston: Houghton Mifflin Co., 1930); LaCharles G. Eckel, "History of Ganado, Arizona," Museum Notes: Museum of Northern Arizona, 6 (April 1934), pp. 48-50; and Richard F. Van Valkenburgh, Dine

politicians, publishers, explorers, artists, and writers--pacesetters for the country, people who conceived its policy, molded its moods, and pointed the direction the West would go. He himself was a creator of image, who through the setting and ambience of his home, the geniality of his hospitality, and the astuteness of his business methods, helped spread the fame of the Painted Desert and created a taste for Navajo rugs and jewelry.[5]

Finally, he was a keen practitioner of frontier politics. A dyed-in-the-wool Republican, he managed and manipulated things at every level, from the Mormon-Gentile struggles in St. Johns to the battle of sheepmen and cowboys that shook Apache and Yavapai counties in the 1880s, and beyond to Arizona's long fight to become a state in the decades before 1912. Throughout the entire period he was also attentive to the interests of Arizona's Spanish-American and native peoples. But with the sense for the jugular vein that often characterizes politicians, he made national government the true target of his political acumen. That this was so was due in large part to the fact that he did business on the Navajo

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Bikeyah, ed. L. W. Adams and J. C. McPhee (Window Rock: The Navajo Nation, 1941); Dorothy C. Mott, "Don Lorenzo Hubbell of Ganado," Arizona Historical Review, 4 (April 1931), pp. 45-51; and Alberta Hannum, Spin a Silver Dollar: The Story of a Desert Trading-Post (New York: Viking Press, 1944), pp. 35-36. Each of these published sources more or less mythologize Hubbell.

[5]For Hubbell's influence on Navajo weaving and his relationship with the Indians generally, see McNitt, Indian Traders, pp. 209-212; also C. A. Amsden, Navaho Weaving (Santa Ana: Fine Arts Press, 1934); and G. A. Reichard, Navajo Shepherd and Weaver (New York: J. J. Augustin, 1936).

Reservation. It was also related to matters of social obligations, land claims, and water rights as surely as it was to profits, Indian relations, and trading licenses.

In dealing with the national government, he was at home at all levels. He curried top-flight officials and political figures. He spent repeated periods in Washington, D.C., where the Office of Indian Affairs and the Department of the Interior were well known to him. He was on friendly terms with Presidents Theodore Roosevelt and William Howard Taft. He made league with lobby groups like the Indian Rights Association and stood in well with journalistic crusaders like Hamlin Garland, who, in that era of muckraking, so often portrayed businessmen, including Indian traders, as robber barons.[6] He maintained amicable relations with Arizona officials, both among congressional delegations and with governors and other state officials, and, although it strained his sense of what ought to be, he could on occasion make common cause with the Democratic opposition which controlled the territory and young state. This was especially true if the issue pertained to land and water claims.

Perhaps most remarkable was his ability to survive the interagency tensions of the army and the Department of the Interior

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[6]Garland spent two weeks at Hubbell's place late in 1899, making "plans for two stories, presumably suggested by Hubbell." Lonnie E. Underhill and D. F. Littlefield, Jr., Hamlin Garland's Observations on the American Indian, 1895-1905 (Tucson: University of Arizona Press, 1976), p. 29. He also got the idea for a thinly disguised article on Hubbell, "Delmar of Pima," McClure's Magazine, 18 (February 1902), pp. 340-348.

and avoid the myriad dangers of the reservation's tribal, agency, and personality relationships. Men less versed and perhaps less lucky than Hubbell, yet in their own right his peers—like Lot Smith of the Mormon community at Tuba City and Richard Wetherill of Mesa Verde and Chaco Canyon fame—succumbed to Indians whose grievances were emboldened by serious infighting among the various white factions that functioned on the reservation.[7] Side-stepping potential enemies, he picked up a friend here and found a supporter there. Only once did he seriously overreach himself. This was at the time of his unsuccessful bid for the United States Senate in 1914, which strained his finances to the point that he never really recovered and can be taken as the point where the tide of his affairs began to ebb.[8]

An affinity for land and activities associated with it stirred deeply within John Lorenzo Hubbell. His mother, Julianita Gutierrez, was of an old and proud New Mexican family and had

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[7]For Wetherill's death see Frank McNitt, Richard Wetherill: Anasazi, re. ed. (Albuquerque: University of New Mexico Press, 1966), pp. 5-8 and 255-318; for Lot Smith's demise see C. S. Peterson, Take Up Your Mission: Mormon Colonizing Along the Little Colorado 1870-1900 (Tucson: University of Arizona Press, 1973), pp. 121 and 203; also C. S. Peterson, "'A Mighty Man Was Brother Lot': A Portrait of Lot Smith, Mormon Pioneer," Western Historical Quarterly, I (October 1970), pp. 394-414.

[8]McNitt attributes the hard times that Hubbell experienced during the 1920s to the cost of this campaign, Indian Traders, pp. 208-209. This may well have been true. If so, it would seem that Hubbell's association with the Roosevelt family may have had some bearing on it due to the fact that Hubbell was encouraged to run by the former president's nephew Nicholas Roosevelt and possibly by T. R. himself. See Nicholas Roosevelt to J. L. Hubbell, October 19 (no year), Roosevelt Folder, WPHTP.

inherited large interests in Spanish land grants. His father, James (Santiago) Hubbell, a Connecticut Yankee who had come to New Mexico as a soldier during the Mexican War, managed her estates, farmed, ranched, and engaged in trade and freighting. Thus John Lorenzo's interest in land partook both of Hispanic and Yankee influences. Instinctively he saw livestock as a source of wealth and personal satisfaction. Homesteading and farm development were passions, soil itself the proper setting. While he owned other property, his instincts for the land found their focus in the Ganado homestead. It was indeed a "dream" he had "always" wanted "through life" and had pursued unremittingly for "many years." In the process he made farm-related contacts not only with politicians but with engineers, soil specialists, publishers, missionaries, and with his Navajo neighbors.[9]

Chronologically his life fell into five distinct phases. His earlist years were spent at the family estate and in frontier activities in northern New Mexico and Arizona. Schooled in parochial institutions at Albuquerque, he was well educated for his time, speaking both Spanish and English as native tongues. He also spoke Navajo fluently, knowing far more than the basic "traders' Navvie" necessary to ordinary trading contact with Indians. By the early 1870s he was well acquainted with the Ft. Defiance area where

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[9]J. L. Hubbell to Lorenzo Hubbell, Jr., April 6, 1912, Farm Folder, WPHTP.

he served as an interpreter, sutler's aid, and troubleshooter, traveling to the Colorado River and beyond into Utah in his wanderings.

The second period of his life, 1876 to 1886, was closely connected with Ganado and St. Johns. Still young, he became a responsible member of northern Arizona's business community, ran stores at both locations, and did much of his own freighting. He also served as sheriff of Apache County. Although he retained interests in the Albuquerque area and made Gallup, New Mexico his wholesale and shipping center, he became increasingly associated with Arizona during these years. By the end of this period the Ganado trading ranch was well established and Hubbell was beginning to acquire the capacity for projecting a favorable image of himself and for promoting his own interests that later marked his career.

The next phase of his life, 1886 to 1896, is less clearly demarked in the record. Certainly he continued as a trader, a freighter, and stockman. He came and went from Ganado, St. Johns, Phoenix, Gallup, and Albuquerque and broadened his political sphere to the territorial level. He gained important contacts in Washington, D. C. and began to emerge as a figure of regional importance in the promotion of the Navajo weaving and silversmithing crafts. Nevertheless, to regard this as a period of unmarred success would be wrong. Indeed, several developments suggest it was anything but an easy time financially. He ceased to play an active role in St. Johns business in 1887. Also suggesting hard times are the facts that he took first one partner about 1883, another in

1886, and finally lost or sold his Ganado interests entirely for a time in the 1890s. Yet, even in this time of false starts and shifting alliances, the Ganado Trading Post did not lose the momentum of its development, as is testified by the construction of what historian Frank McNitt has called its "fortress-like" stone buildings in the years after 1889.[10] John Lorenzo was sometimes said to gamble. This period of his life was apparently one of precarious undertakings that finally turned out well.

From 1896 to 1914 Hubbell's fortunes were at high tide. These years saw his business prosper and expand. His influence was widespread. He was among Arizona's most important Republicans. He established title to his land and acquired water rights, and, as the letters written there in Phoenix to his sons in 1912 implied, he was able to interest the Department of the Interior in developing a Navajo irrigation project at Ganado but still retained his right to a substantial proportion of the region's extremely limited water supply. He also entertained lavishly, gathered his expanding family around him, lived beyond his means, and ran for the United States Senate.

In a real way, the pinnacle of his achievement precipitated the period of decline that followed from 1914 until his death in 1930. Debt left from the unsuccessful bid for the Senate was a sore burden. With his farm contributing as planned to his freighting and

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[10]McNitt, Indian Traders, pp. 208-209.

livestock enterprises and with trade prospering at new trading posts, he and his sons carried the burden of debt successfully through World War I and until about 1922. Thereafter, age, increased competition, mechanization, and the weight of debt bore him down. In his last years he was in important ways a vestige of the frontier, caught by his own years and by conditions with which he was ill equipped to cope.

Beyond or perhaps even before all this, John Lorenzo Hubbell was a most successful though not altogether unflawed family man. In important ways he followed in the footsteps of his father, including his interest in trading and land and his affinity for Hispanic values and customs. He and his brothers were close, functioning together at the edge of the Navajo frontier, as military interpreters and hostlers at Forts Defiance and Wingate, as town builders at St. Johns, as county politicians, and, later in life, as business and ranching associates.

The Ganado Family

Only less important to the Hubbell farm than John Lorenzo were the members of his immediate family. His wife, Lena Rubi, lived apart from him much of the time at St. Johns and Albuquerque. Even when she was at the ranch, summers and in the last years before her death in 1913, she struck no high profile. Yet she must not be discounted. She was a daughter of Cruz Rubi, one of northern Arizona's earliest and most prominent Hispanic pioneers. In the

circle of New Mexican families that made their way into the area around St. Johns, she was famed for her beauty and grace during her youth. Later in life, she was a person of force and character in whom Hispanic values and customs were perpetuated. The Catholic church was important to her and her family. She spoke Spanish. So did others in the Hubbell home. John Lorenzo's preference for employees of Spanish-American blood was enhanced by her genetic and cultural background. The moods of the home, its pace, and perhaps even its reknowned hospitality grew in large measure from Lena Rubi. Pathos, too, was associated with her. About her there was a quality of melancholy, a sense that both time and John Lorenzo neglected her, an undertone of near fatal failure that finally marked the course of the family as death, debt, and defeat took their toll during the decades after John Lorenzo's passing in 1930. Yet the closeness of the family and its bonds with the Ganado farm also stemmed from Lena Rubi in significant ways. Today her grave alone is marked among those on Hubbell Hill behind the Trading Post and farm where she is interred alongside John Lorenzo, her two sons, and Many Horses, a close Navajo friend.

But the story of the Hubbell farm extended well beyond John Lorenzo and Lena Rubi. Their children and their children's families remained close enough to play significant roles. Lorenzo, Jr.'s affiliation was intimate and respectful rather than corporate. Nevertheless, he was all business and work, untiring and anxious to get at things for himself. The miles between his trading posts at Keams Canyon and Oraibi and the family headquarters at Ganado along

with the western thrust of the Hubbell enterprises gave him financial latitude. Yet, on the old gentleman's death, he directed the affairs of the estate with sensitivity for the other heirs and with a special deference for his brother Roman where the Ganado farm was concerned. Like his father, Lorenzo, Jr. had a flare for showmanship and planned a showpiece home at Oraibi, entertained lavishly, and played up to artists and journalists. He failed in his marriage and suffered ill health in his later years. Bent on business and little else, he hung on to much of the property accumulated by the elder Hubbell in spite of crushing debt, but before his own death in 1942 he had lost much of the old gentleman's larger legacy of style, connections, and power.

The second son, Roman, was cut from different fabric. For him the good life was found less in work and more in exploiting the perquisites of his heritage, such as they were. Without his father's capacity for promotion, he indulged his friendships for Indians and whites alike. In few did loyalty run more deeply. He partook more whole-heartedly of the Navajo culture than even his father but sometimes fumbled in business. He was a teen-ager during the turn-of-the-century years of the farm's development and shared the prospect and excitement as well as the challenge of that time. In the decades before John Lorenzo's death, Roman was co-manager of the farm and better than anyone knew the farm and was tied emotionally to its moods and rhythms. Yet he was son of the country more than son of the soil. His first wife died in the World War I

years and in 1921 he married Dorothy Smith, a young lady from Indiana who had come to Ganado to teach John Lorenzo's grandchildren and the children of his employees. Dorothy Smith Hubbell raised Roman's two sons by the earlier marriage, learned Navajo, moved to Gallup with him after the old gentleman's death, and became increasingly involved in the Hubbell businesses. This trend continued as she and Roman moved to Winslow in the early 1940s to manage the family's wholesale outlet. Inheriting the primary obligation for the entire estate at the time of Lorenzo, Jr.'s death, Roman managed it through the second World War and into the 1950s. Modernizing the farm mechanically, he failed to cope with problems of management and production as the soil wore out, weeds set in, and as the Hubbell enterprises changed. After serious disappointments, he and Dorothy moved back to Ganado in 1954 where he died in 1957.

The homing instinct was strong as well in the two daughters of John Lorenzo and Lena Rubi and in their husbands and children. The girls married and started families, living at various places in the West but, by the time of Mrs. Hubbell's death in 1913, were returning to Ganado, bringing their husbands and families to the area with them. There they ran the house and served variously as governess, postmistress, accountant, trader, and spokepersons for the family. Their children grew up around the farm and from the prep schools and colleges to which they went looked to it as a place of stability and home. With an instinct for position and

status, few of them worked the farm, although some of them gave it such managerial attention as it sometimes got.

For all of the second and third generation Hubbells, the Ganado place was home and an emotional bond. Yet as time progressed the bond weakened. John Lorenzo's sons and daughters died. One of Roman's sons, the most likely prospect for holding the place on into the third generation, was killed in World War II. Finally, as Roman's wife Dorothy Smith Hubbell aged, she turned a transaction that showed that the old Hubbell penchant for bringing the elements of the possible together was still alive and well. The outposts of the Hubbell trading system were gone, but she kept the original Trading Post and homestead together and memorialized the family by passing the place on to the National Park Service.[11]

Certainly John Lorenzo symbolized the farm most directly as he did the Trading Post. But the story of the farm was the story of those who were loyal to the values that drew it together as surely as it was the story of its founder. The chapters which follow trace the process by which they moved onto their land, established a homestead claim to it, brought water to it, and built their lives around it.

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[11]For Hubbell biographical information, see Dorothy S. Hubbell Oral History 1969; Dorothy S. Hubbell Oral History 1979; and LaCharles Eckel Oral History 1979 by Lawrence C. Kelly, WPHTP; also Hubbell Papers at the University of Arizona Library, hereafter cited as HPUAL. Also see Robert M. Utley, "Special Report on Hubbell Trading Post, Ganado, Arizona," especially pp. 77-102.

CHAPTER II:

ACQUIRING THE LAND BASE

There can be no question that John Lorenzo Hubbell spent many years in pursuit of the dream that seemed to culminate so fortuitously there in Phoenix. By 1912 he had owned or had major interests in a trading post at Ganado for more than thirty years and had lived there much of the time. In a remarkable homesteading adventure, he established a clear title to 160 acres of land surrounded by the Navajo Reservation. He raised bumper crops on more than a hundred acres of his land and was widely recognized as a successful farmer whose example was instructive to others including Ganado's Indians.

Although many of the steps taken by Hubbell to perfect title to his land are obscured by time, his general course may be established without question. The procedure he followed was by no means unprecedented, but because his land was part of the Navajo Reservation from 1880 to 1902, establishing title involved numerous complications and years of effort. The problem of Indian rights was among the most important of the issues he faced. In addition were the extraordinary measures necessary to prove up on land and water in a situation where shifting reservation boundaries complicated

things. Values, custom, and policies governing natural resource utilization were involved as well as the administrative interests of the Bureau of Indian Affars and Hubbell's own determination. Interesting in its own right, the process by which he established his homestead is one of the most significant elements in the history of the Hubbell farm. In this chapter will be traced the approach of Anglo-Americans to the Ganado Valley, Hubbell's early interests in northern Arizona, and especially the steps by which he acquired his Ganado land.

Late in his life, John Lorenzo often declared that he had intended from the first to homestead at Ganado.[1] Although periods when he lived elsewhere and the partnerships under which his trading post was operated in the 1880s and 1890s suggested lapses in his intent, the fact that he ultimately developed the Ganado homestead is evidence that he recognized the site's agricultural potential from the time he first settled there.

Historical Setting

Others, too, had recognized the locale's potential. The Rio Pueblo Colorado and Ganado Lake were landmarks from time immemorial. Modern Zunis claim the area marked the western bounds of their traditional territory, and Hopis claim it marked the

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[1]J. L. Hubbell and John Edwin Hogg, "Fifty Years an Indian Trader," Touring Topics, XXII (December 1930), pp. 24-51.

eastern bounds of theirs. Spaniards, too, probably knew of it and passed that way. By the time of the Mexican War (1846), Navajos had penetrated that far west and perhaps beyond. They are said to have called it "Lok aah Nitell or Wide Reeds" and because of it referred to Ganado Mucho, a prominent Navajo who headquartered there, as "Totsohni Hastiin or Mr. Big Water."[2]

Anglo-Americans began to approach the Ganado area by 1850. Among early expeditions into its neighborhood were Colonel John M. Washington's military detachment in 1849, Amiel Whipple's railroad reconnaissance in 1853, and Captain Edward Beale's exploration in 1855.[3] In May 1858, Captain Joseph Ives of the Topographical Engineers followed what by then was a well-beaten trail into Pueblo Colorado Valley from the west. With Ives came self-appointed delegations of both Hopis and Navajos, many of whom knew the entire country between Oraibi and Ft. Defiance. The valley's water as well as the "brilliant sheet of verdure" that lay along its bottoms were welcome relief indeed after the "frightfully arid" country through which Ives had passed. The following year, Major O. L. Shepherd and

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[2]Richard Van Valkenburgh, Dine Bikeyah, ed. L. W. Adams and J. C. McPhee (Window Rock: The Navajo Nation, 1941), p. 64.

[3]Navaho Expedition: Journal of a Military Reconnaissance from Santa Fe, New Mexico, to the Navaho Country, Made in 1844 by Lt. James Harvey Simpson, ed. Frank McNitt (Norman: University of Oklahoma Press, 1964); A Pathfinder in the Southwest: The Itinerary of Lieutenant A. W. Whipple . . . in the Years 1853 & 1854, ed. Grant Foreman (Norman: University of Oklahoma Press, 1941); and Uncle Sam's Camels: . . . the Report of Edward Fitzgerald Beale (1857-1858), ed. Lewis Burt Lesley (Cambridge: Harvard University Press, 1929).

Captain J. G. Walker also camped on Pueblo Colorado Wash while on a military reconnaissance of Navajo country, although they likely passed somewhat below Ganado's site. In the years that followed, military campaigns, Indian trade, and mining interests led Anglo-Americans to the Ganado locality with increasing frequency.[4]

Prospects after 1876

Thus the valley was known as a key spot in northern Arizona's desert country by the time John Lorenzo Hubbell first located there. It was situated on the public domain just south of the 1868 treaty line establishing the Navajo Reservation but was well within Navajo country. It was also within what was increasingly recognized as one of the great avenues across the West. A prosperous community of Navajos lived in the neighborhood. Forts Defiance and Wingate lay respectively thirty and seventy miles to the east. Opportunities for trade and government contracts were increasing, and, with railroads already building throughout the West, the valley of the Pueblo Colorado's prospects must have seemed good indeed when in 1876 Hubbell took over the primitive little trading post of one Charles Crary near what later became the Ganado Reservoir. Two

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[4]Lt. Joseph C. Ives, Report Upon the Colorado River of the West Explored in 1857 and 1858, 36th Cong., 1 sess., Hse. Exec. Doc. 90 (Washington, D.C.: G.P.O., 1861), pp. 128-131; and J. G. Walker and O. L. Shepherd, The Navajo Reconnaissance: A Military Exploration of the Navajo Country in 1859, ed. L. R. Bailey (Los Angeles: Westlore Press, 1964), pp. 63-64.

years later the neighborhood's prospects still seemed sufficiently bright to merit the purchase of the more impressive establishment of William Leonard two miles downstream when the killing of two Indians suspected of witchcraft on the premises of Hubbell's little trading post placed it off limits for John Lorenzo's Navajo clients.[5]

Certainly there was some prospect that what was happening at St. Johns, where Hubbell also had interests, could happen here. In 1870, an express carrier had first built a shack at the crossing of the Little Colorado River which later became St. Johns. Others followed by 1873, including several Hispanic families and Solomon Barth and his brothers, who claimed land and water and set themselves up as the dominant influence at St. Johns and neighboring Concho. Apache County was created in the winter of 1878-1879, and Hubbell's St. Johns store became the only hostelry and eating place when the town won the county seat. The Barths parlayed their land and water claims, which could have been no more than a squatter's right similar to the claim William Leonard sold Hubbell, into payments estimated at $19,000 from the Mormons when they settled there after 1879.[6] Near St. Johns, Cruz Rubi, the father of Lena

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[5]For an account of the development of the 35th parallel as a railroad route with emphasis upon land see William S. Greever, Arid Domain: The Santa Fe Railway and Its Western Land Grant (Palo Alto: Stanford University Press, 1954).

[6]James H. McClintock, Mormon Settlement in Arizona: A Record of Peaceful Conquest of the Desert (Phoenix: Manufacturing Stationers Inc., 1921), p. 170; for a description of Hubbell's St. Johns store and the town in 1879 see Joseph Fish, The Life and Times of Joseph Fish, Mormon Pioneer, ed. John H. Krenkel (Danville, Illinois: Interstate Printers & Publishers, Inc., 1970), pp. 200-201.

Rubi whom Hubbell married in 1879, built the first diversion dam on the Little Colorado River in 1873, and in February of 1880 filed claim to a dam site, water, and the right-of-way on which the ditch ran.[7]

As store owner and member of the St. Johns "junta" that picked off the county seat and did battle with the Mormons, Hubbell was keenly aware of the development potential of the Pueblo Colorado Valley.[8] His connection with the valley's key locations, one near the reservoir site where water entered the valley and the other on the largest piece of arable ground, could hardly have been accidental. Taken together with the speculative spirit that characterized northern Arizona's first settlers, his interest in these two spots makes indelibly clear that he recognized the value of water and land and that he understood fully the "possessory" rights that accrued from occupation.[9]

Detracting from the argument that Hubbell was intent on settlement at Ganado from the first were his connections with St. Johns. The town flourished as an Indian trading center for a few years, and Hubbell continued to operate his store there until 1887 when he took shares in the Mormon-controlled Arizona Cooperative

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[7]See Cruz Rubi filings in Notices Effecting Real Estate Book #1, Apache County Recorder's Office, St. Johns, Arizona.

[8]At the height of the Mormon-Gentile conflict in St. Johns Hubbell stated he would fight the Mormons "until Hell froze over and then give them a round on the ice." Later he became their fast political friend. Fish, Life and Times of Joseph Fish, p. 248.

[9]Frank McNitt, The Indian Traders (Norman: University of Oklahoma Press, 1962), pp. 200-202; Hubbell himself used "possessory

Mercantile Institution in exchange for his buildings and stock.[10] He was sheriff of Apache County from 1882 to 1886, a position his own account showed to have been taxing, if not confining. The county's lawlessness during his incumbency and the quickness with which his successor Commodore Perry Owens brought it to an end suggests his attention was elsewhere.[11] His partnerships, first with a "Mr. Pillsbury" and then C. N. Cotton, later a prominent banker and wholesaler at Gallup and long-time friend of Hubbell, probably made it unnecessary for Hubbell to spend much time at Ganado.[12] In addition he spent some time at Albuquerque and Gallup where his family also lived at various times.

Early Land Claims

Nevertheless, Hubbell himself was explicit about his interest in the Ganado homestead. By his own account, he took up "160 acres of

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rights" to describe the value of his improvements and claims at Ganado in an 1889 "Recapitulation", Folder 7, Box 496, HPUAL.

[10]See reference to "January 1887 Record Book, HPUAL" in a typescript item entitled "Documentation of J. L. Hubbell for the 19th Century," in WPHTP.

[11]Hubbell and Hogg, "Fifty Years an Indian Trader," pp. 24-51; and Earle R. Forrest, Arizona's Dark and Bloody Ground, rev. ed. (Caldwell: Caxton Printers, 1962), Chapters 7 and 15, gives a good account of Apache County's outlawry and strife during these years that credits Sheriff Commodore Perry Owens and a vigilance committee with bringing things under control in 1887.

[12]By implication and statement McNitt keeps Hubbell in the foreground at Ganado during the entire decade (1885-1896) of his association with Cotton, yet offers almost no evidence to locate Hubbell at Ganado, Indian Traders, pp. 213-224.

land" in 1876 "which was then open to homestead."[13] Since no survey had yet been made and land at Ganado was consequently not subject to entry, it is not clear what he meant by "open to homestead." One thing, however, was evident. Several whites did establish squatter's claims about that time in the vicinity of the reservation and later proved up on them as homesteads. Some were at Cienega Amarilla, or present St. Michaels, which like Ganado was a bit south of the 1868 treaty-reservation line. There a handful of Anglo-Americans jobbed for the government, traded, and freighted, and some married Navajo women. Some also farmed, and a few, including Sam Day, Sr., Anson C. Damon, Caddy Stewart, and J. R. Wilkins, or their successors, ultimately proved up on homestead claims.[14]

Trading Ranches

That Hubbell's interests extended to something more than trading was suggested by several references to his place as a trading ranch. In 1881 the phrase was used by military journalist John Gregory Bourke to describe the place of George M. (Barney) Williams at Kinlichee, a few miles up Pueblo Colorado Wash from Ganado. According to Bourke, Williams' ranch was "of the Arizona order of

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[13]Hubbell and Hogg, "Fifty Years An Indian Trader," p. 5.
[14]McNitt, Indian Traders, pp. 245-258; for an excellent treatment of the Treaty of 1868, see John L. Kessell, "General Sherman and the Navajo Treaty of 1868: A Basic and Expedient Misunderstanding," Western Historical Quarterly, XII (July 1981), pp. 251-272.

architecture, a single-storied, long low building of 'jacal' or palisade, filled in with mud chinking, and roofed with a covering of earth and brush." At his ranch Williams "surrounded himself with many of the creature comforts, not the least important of which were one hundred chickens" and ran "a thriving and lucrative wool trade with the Navajoes," over whom he wielded great influence.[15]

Bourke also referred to Englishman Thomas V. Keam's establishment at Keams Canyon as a "trading ranch." In addition to "bales of wool and sheepskins . . . packed in every nook and cranny of the long low building . . . awaiting a favourable season for transportation," Bourke described Keam's water supply and garden. Keam himself later inventoried stone walls and other agricultural improvements in a letter offering to sell his place to the Bureau of Indian Affairs.[16]

Indian reformer Herbert Welsh, who reported a trip through Navajo country three years after Bourke, made frequent references to trading posts, including one run by Hubbell's brother Charles in a "great tent."[17] By contrast Welsh described John Lorenzo Hubbell's place as a "trading ranch." As Welsh related, his party stopped "at the ranch of Hubbell and Pillsbury." In addition to

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[15]John Gregory Bourke, The Snake-Dance of the Moquis of Arizona . . . Journey from Santa Fe . . . to the Villages of the Moqui. . ., rprt. (Chicago: Rio Grande Press, 1962), pp. 67-78.

[16]Ibid., pp. 82-84; and Thomas V. Keam to Herbert Welsh, November 24, 1888, Keam-Welsh Correspondence in Indian Rights Association Archives, Philadelphia, Pa., cited hereafter IRAA.

[17]Herbert Welsh, Report of a Visit to the Navajo, Pueblo, and Hualapais Indians of New Mexico and Arizona (Philadelphia: Indian Rights Association, 1885), pp. 22-24.

suggesting that John Lorenzo had a well-established claim to the Ganado "ranch", Bourke described him personally as being "most courteous and agreeable, and possessing a clear and intelligent mind."[18]

Another reference to a Hubbell trading post as a ranch was made in 1906 by artist J. J. Mora, who gave Lorenzo Jr. a water-color painting of his Keams' Canyon holdings, inscribed "To the Boss of the Ranch." Much later historian Richard Van Valkenburg, who knew Navajo country as well as anyone, still referred to the Ganado place as the "Hubbell ranch and trading post" in his 1941 history of the Navajos, Dine Bikeyah.[19]

Certainly such passing references do not establish legal claims to land. When taken together, however, they do lend credence to the idea that from the first John Lorenzo Hubbell saw a ranching potential at Ganado and placed a clear value on such rights as "squatter's claims" conveyed. If nothing more, he recognized that a "possessory right" might well have a market value in the eventuality the government crowded him from the site as Indian needs grew.[20] Also clear was the fact that "improvements" had sale value in case

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[18]Ibid., p. 32.

[19]McNitt, Indian Traders, p. 197; and Van Valkenburg, Dine Bikeyah, pp. 64-65.

[20]This is apparent in Hubbell's purchase of William Leonard's claims. He also listed "improvements and possessory rights" at $1,000, the largest single item in an 1889 "recapitulation". Folder 7, Box 496, HPUAL.

of a private transaction and that they would validate the reality of his ownership at such time as he decided to patent the land.

Whatever Hubbell's land claim amounted to from the standpoint of equity or custom, it was on extremely shaky legal grounds for a time after 1880. That year Ganado was included in the reservation by an executive order extending the boundary south six miles. Thereafter the Hubbell site was part of the reservation for more than two decades. It is clear that the trading post was occupied constantly during this period. However, neither Hubbell nor either of his early partners fenced farm ground, diverted water from the Pueblo Colorado or irrigated any part of the homestead prior to 1900. Furthermore, no specific move was made to secure legal title to the land or claim water until after 1889. However, from 1890 until 1917, when a second patent was issued, easily traceable evidence exists of Hubbell's prolonged campaign to clear up the vexed questions raised by his place's location on the reservation and his struggle to acquire clear title and rights. It was a battle waged in Congress and the public agencies and one in which Hubbell pulled every available political string in both Arizona and New Mexico.

The Partnership of Cotton and Hubbell

The first step toward a clear title was taken by Hubbell's partner C. N. Cotton in the summer of 1890.[21] It is not entirely

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[21]C. N. Cotton to J. J. Belden, August 11, 1890, in Adjustments of rights of Settlers on the Navajo Indian Reservation,

clear why Cotton's name was used or what prompted the move at that moment. However, a number of considerations have some bearing on these questions. The year 1890 was midway in the era of the Hubbell-Cotton relationship. Not only was Cotton actually at the trading post much of the time, but it was often referred to as his place, not Hubbell's. Typical was an 1892 irrigation survey which listed the trading post simply as "Cotton's".[22] Record books maintained by the trading post were often, but not uniformly, in Cotton's name.[23] In addition, the partnership traded under a license issued to Cotton.[24]

A number of external factors were developing at that time which probably influenced the partners to believe that if they were ever to establish claim to land and water it would be better to act quickly. Land generally was in a state of flux in northern Arizona. In the late 1880s settlers who had acquired squatter's claims more than a decade previously were still unable to establish title because much land was unsurveyed and technically closed to settlement. Furthermore, the Santa Fe Railroad (earlier the

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57 Cong., 1 sess., Sen. Rept. 2042 (Washington, D.C.: G.P.O., 1902), p. 2.

[22]W. C. Brown, Report Upon Condition of the Navajo Indian Country, 52 Cong., 2 sess., Sen. Exec. Doc. 68 (Washington, D.C.: G.P.O., 1893), pp. 26-27 and Map 16.

[23]See Guide to Hubbell Papers, prep. Clinton Colby (Tucson: University of Arizona Library, 1978), p. 5 for a quick survey of papers in Cotton's name.

[24]McNitt, Indian Traders, pp. 213-224; and McNitt to David Brugge, August 31, 1968, WPHTP.

Atlantic and Pacific Railroad) land grants were still subject to confusion and controversy.[25] It was only a year or so since the Pleasant Valley feud between cattle owners and sheepmen had torn northern Arizona, and the giant Aztec Land and Cattle Company (the Hashknife) continued to run on a strip of land along the Little Colorado south of the reservation. Land jumpings were common and contests in and out of court frequent.[26] Settlers were distressed and complained to Arizona and General Land Office officials. They also took steps to clear up titles clouded by railroad claims. In Congress, Arizona's delegates made protests about affairs on the public lands a stock in trade. Special agent S. B. Bevins of the General Land Office toured Apache County, taking depositions and studying the situation. Mormon settlers at Tuba City and along the Little Colorado redoubled their efforts to secure legal title. Ultimately, surveys were made and in some cases land long occupied was "repurchased" from the railroad, thus settling the matter.[27]

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[25]Greever, Arid Domain, pp. 10-35; and C. S. Peterson, Take Up Your Mission: Mormon Colonizing Along the Little Colorado 1870-1900 (Tucson: University of Arizona Press, 1973), pp. 164-175.

[26]Will C. Barnes, Apaches & Longhorns: The Reminiscences of Will C. Barnes, ed., Frank C. Lockwood, rprt. (Tucson: University of Arizona Press, 1982), pp. 118-196; and Stella Hughes, Hashknife Cowboy: Recollections of Mack Hughes (Tucson: University of Arizona Press, 1984).

[27]Peterson, Mormon Colonizing, pp. 172-175; G. S. Tanner and J. M. Richards, Colonization on the Little Colorado: The Joseph City Region (Flagstaff: Northlands Press, 1977), pp. 85-88; and S. B. Bevins to General Land Commissioner, February 9 and 24, 1888, in Cattle on the Public Lands, 50th Cong., 1st sess., Hse. Exec. Doc. 232 (Washington, D.C.: G.P.O., 1888), pp. 21-23.

Closer to home for Hubbell were developments along the southern and western boundaries of the Navajo Reservation. Navajos were driven by increasing population and growing herds to ranges adjacent to the reservation where they clashed with whites and Hopis for water and grass. This was a serious problem to which agents referred again and again in reports to the Commissioner of Indian Affairs.[28] The competition between the two tribes, particularly, became keen by 1888, and army detachments were dispatched several times to bring expansive Navajos back or to quiet angry Hopis. Agents toured the reservation in quest for unused springs and talked optimistically of wells and pumps. Agent C. E. Vandever also responded to a national movement to survey and classify public lands by calling for a survey of water supply, arable land, and potential dam sites on the Navajo Reservation in 1890.[29]

Thomas V. Keam's Example

During these same years, Hubbell's neighbor to the west, Thomas V. Keam, made a determined but unsuccessful attempt to acquire title

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[28]See Navajo Agency Reports in the Annual Report of the Commissioner of Indian Affairs (Washington, D.C.: G.P.O.) for virtually any year between 1882 and 1900. Good examples are report of S. S. Patterson, Report of Commissioner 1886, pp. 420-422 and report of Agent C. E. Vandever, Report of Commissioner 1889, pp. 255-261.

[29]Report of C. E. Vandever, Report of Commissioner 1890, pp. 160-161; the Commissioner recommended that army officers be assigned to carry out the survey and estimate costs; see S. E. Shoemaker, "Report to the Commissioner of Indian Affairs, March 14, 1900." Series 7, File 139, Richard F. Van Valkenburgh Papers, Arizona Historical Society, hereafter Van Valkenburgh Papers, AHS.

to his ranch and trading post at Keams Canyon. He settled there initially in 1875 "for purposes of farming . . . and raising stock." He developed his claim as quickly as possible, and in 1881 asked a Prescott friend "Governor Erville" to help him enter a section of land under the newly passed Desert Land Act. Erville learned that Keam could not complete his title, "the land being unsurveyed." Keam did, however, "furnish a plat of the land to the Register" to be placed "on file . . . showing my intention."[30] Repeated efforts thereafter failed, and Keam was apparently never issued a patent. With the aid of the Indian Rights Association, he shifted his tack in 1888, now promoting his place as a government school and asking $18,500 for his improvements, which included several buildings and "Ditches, Iron pipes, Dams, Transplanted Trees" and more than two miles of stone walls and wire fences. His unquestioned interest in educating the Indians notwithstanding, Keam was deeply chagrined at the meagerness of the $10,000 Congress finally appropriated to pay for his improvements.[31]

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[30]Thomas V. Keam to Herbert Welsh, November 24, 1888, Keam-Welsh Correspondence, IRAA. Although Keam addressed Erville as governor of Arizona Territory, he was apparently not appointed governor, and the writer can find no reference to him in other official capacity.

[31]McNitt, Indian Traders, pp. 186-189, leaves the reader with the impression that Keam acquired title by the Desert Land Act entry. The Keam-Welsh Correspondence, however, makes it seem very unlikely that he did. Information on the value of Keam's improvements and transactions with the Indian Service are found in Keam to Welsh, November 24, 1888 and in an attachment to that letter and other letters that followed in 1888 and 1889, IRAA.

Campaign to Reverse the Executive Order of 1880

Prompted by such developments, Hubbell and Cotton appealed to the Commissioner of Indian Affairs in August 1890 to have "Cotton's" homestead excepted from the executive order of 1880, which had extended the reservation to include their trading post. In view of the process that Keam had gone through before he took his problem to Washington, D.C., it seems certain that they took preliminary steps in Arizona. This done, Cotton wrote the Indian Office in Washington, which immediately referred the matter to the Department of the Interior. From there it was sent to Ft. Defiance for investigation by Agent C. E. Vandever, a capable, hard-working advocate of the current policies of assimilation, education, and Christianization for Indians. On September 25, Vandever stretched the truth when he returned a favorable recommendation along with the report that Cotton had himself lived "within the limits" of the reservation since the "spring of 1878." "With intention of making it his home," Vandever explained, Cotton erected "a large number of buildings" and ran the "best store on the reservation."[32]

On December 10, the commissioner forwarded an opinion that the Executive Order of 1880 was within legal rights and that it "made no exception" within the added land for "tracts settled upon or

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[32]Rights of Settlers on the Navajo Reservation, Arizona, 56 Cong., 1 sess., Sen. Rept. 699 (Washington, D.C.: G.P.O., 1900), p. 2; and Congressional Record, 35, Pt. 8 (Washington, D.C.: G.P.O., 1902), p. 7649.

occupied" prior to 1880. The commissioner also indicated that because the land was "unsurveyed" Cotton had "acquired no vested right to" it. Then, in a qualifying note that was key to the federal government's position, he continued that it was not "the policy of the Department" to recommend the appropriation of "lands occupied by settlers in good faith unless it was considered necessary for the wants of the Indians."[33] Even in such cases, it was recommended that settlers be paid for improvements. He also explained that a remedy existed for Cotton's dilemma. "Where lands to which private parties have acquired valid or even inchoate rights, have been included in an Indian reservation by executive order, such order may now be so modified as to except such lands from the operation thereof."[34] The entire correspondence was then returned to the department with "a draft of an executive order modifying such order of January 6, 1880, with a recommendation that the same . . . be presented to the President for his signature."[35]

New issues were soon raised but the case continued through channels. The department conceded "that Mr. Cotton has acted in good faith, and that it is a great hardship to extend said reservation over the premises occupied by himself." It also held, however, that because of the General Allotment Act (the Dawes Act)

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[33]Adjustment of Rights of Settlers on the Navajo Indian Reservation, 57 Cong., 1 sess., Sen. Rept. 2042 (Washington, D.C.: G.P.O., 1902), p. 2.

[34]Ibid., p. 3. Italics original.

[35]Rights of Settlers on the Navajo Reservation, Arizona, p. 2.

of 1887, Cotton's "remedy must be given by congressional action." Then in the most significant element of this entire process, the Secretary of the Interior concluded that "to enable Mr. Cotton to secure relief by Congressional action you are hereby directed to reserve the land covered by his improvements and occupied by him . . . until further advised."[36]

On February 9, 1892, New Mexico's territorial delegate, Antonio Joseph, introduced House Bill 5565 in Cotton's behalf "For Relief of Actual Settlers on the Navajo Reservation." This bill was assigned to committee and was never heard from again.[37] It is not clear why a New Mexico delegate rather than one from Arizona introduced the bill or why it failed to attract support. Whatever else it accomplished, it apparently taught that future efforts should be supported by careful preparatory work. Indeed, dissolving the partnership and assigning the Ganado place to the man with Arizona connections was probably a business decision aimed in part at securing the land.

The record shows no direct action after 1892 until the end of the decade, but the position of Hubbell and Cotton was significantly improved. Their squatter's claim was fortified by official recognition and for the moment the property was under no threat. Greatly encouraged, they proceeded with improvements already

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[36]Ibid., p. 3.
[37]Ibid.

underway, including the construction of new stone buildings to replace the aging and crude trading post Hubbell had originally purchased from William Leonard before pushing the matter of legal title further.[38] It may also have seemed prudent to postpone further action until the partnership was dissolved. Or again, the break in the campaign to patent the land may have been more apparent than real, as Hubbell actually continued to create the economic and political base necessary to develop a successful homestead surrounded by the reservation.

The Hubbell Land "Excepted" 1899 - 1902

However, in time the drive to acquire a clear title was renewed. Between 1899 and 1902, the necessary action to exempt Hubbell's claim from the reservation was slowly worked through Congress. One of the initial steps was taken by Cotton, who, although no longer directly involved, wrote with reference to "his claime" on January 3, 1899. There followed on February 9 a communication addressed to the president by N. O. Murphy, Republican governor of Arizona, "in the interest of" Hubbell.[39] On March 9, S. M. Brosius, sometime

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[38]For archaeological reports on the timing of construction of the Trading Post, the Hubbell home, and other buildings see Gerald R. Gates, "Hubbell Trading Post National Historic Site Archaeological Project - Grade Testing," May 14 - June 22, 1973; and William J. Robinson, "Dendrochronology of Hubbell Trading Post and Residence," September 30, 1979, WPHTP.

[39]Rights of Settlers on the Navajo Reservation, Arizona, pp. 1-4; and Adjustment of Rights of Settlers on the Navajo Indian Reservation, pp. 1-5.

congressman from Pennsylvania and sometime Indian Rights Association lobbyist whose services were engaged by Hubbell, also submitted a communication with affidavits supporting Hubbell's claim. Since it appeared that the Cotton and Hubbell claims were in conflict, the Indian commissioner contacted Lt. Colonel Constant Williams, formerly acting Navajo agent, and G. W. Hayzlett, the current agent, requesting that they help clear up the issue and ascertain if there were other claimants. On April 11, Williams advised the commissioner that A. C. Damon "makes claim" to a tract of land he had occupied at Ft. Defiance (apparently at Cienega Amarilla or St. Michaels) for "about thirty years." Williams also explained that the "land at Ganado, Ariz., was occupied at the time the reservation was extended . . . by Mr. J. L. Hubbell, who had purchased the improvements thereon a year or two before from a man named Williams, and that Hubbell afterwards sold all, or a part, to C. N. Cotton."[40] In August of the same year, Constant Williams wrote informing "Dear Hubbell" that Brosius had approached him, requesting that he write an affidavit supporting Hubbell. To this Williams replied that he had already written in behalf of Cotton and that he could serve Hubbell better if Brosius would get the Indian commissioner to approach him for information. Williams ended his letter to Hubbell with the "hope that next winter may see you put in legal possession of the property or properly compensated for it."[41]

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[40]Rights of Settlers on the Navajo Reservation, Arizona, pp. 1-4; and Adjustment of Rights of Settlers on the Navajo Reservation, pp. 1-5.

[41]Constant Wlliams to J. L. Hubbell, August 12, 1899, WPHTP.

Questions about private claims to land on the Navajo reservation were quickly resolved as support for a resolution to the matter continued to build. On June 29, 1899, Agent Hayzlett reported that "the interests of Messrs. Cotton and Hubbell are identical." In support of this, he enclosed a letter from Cotton declaring that "if Hubbell's claim is allowed it will be perfectly satisfactory to me."[42] Hayzlett also confirmed Anson Damon's claim and indicated that he had heard of no others. A letter from Hayzlett on December 2, 1899, to D. B. Henderson, Speaker of the House, appealed for his support. It is apparent that Hubbell not only secured the backing of Indian reformers like Brosius, but that the agent himself justified his claim as serving the Indians. In a key passage not only for understanding this situation but for the light it throws on Hubbell's outlook and indeed the mentality of whites generally, Hayzlett explained to Speaker Henderson:

> J. L. Hubbell . . . was a resident and occupant of the Quarter section of land on which he still lives long before the Executive Order of January 1880. . . . He started and occupied the place expecting to make a permanent home, has improved and expended considerable money on it, I should think in the neighborhood of $10,000, and if an act can be passed that will secure to him a title he will . . . <u>give the Indians in that part of the country a daily object lesson, in the way of farming and stock raising</u>. As it is he keeps some hogs, cows and hundreds of chickens, and gives Employment to many Indians during the year, he does a great deal for the Indians.

Hayzlett continued that he thought "the Indian office" would support Hubbell because "they understand the justice of" his case and that

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[42]<u>Rights of Settlers on the Navajo Reservation, Arizona</u>, pp. 1-4; and <u>Adjustment of Rights of Settlers on the Navajo Reservation</u>, pp. 3-4.

his own request for the speaker's support was made "as a matter of justice" and because giving Hubbell the land would "be a benefit rather than injury to the Indians."[43]

It is apparent from this letter and indeed the entire turn-of-the-century correspondence that Hubbell enjoyed the good will of people at the agency and Indian office as well as of reformers. He was widely regarded to be a friend of Indians and a supporter of the assimilationist policy then in vogue. Contributing to this was his role in encouraging the establishment of a mission at Ganado. He also stood well with the Catholic missionaries at St. Michaels, which had been established in the years just past, and tried to get them to bring a Catholic mission to Ganado. Discouraged on this prospect because of Ganado's proximity to St. Michaels, Hubbell welcomed a group of Presbyterians who were touring the reservation in 1900 and, indeed, suggested the site where the Presbyterian Mission was subsequently located. The first Presbyterian missionaries assigned at Ganado lived at Hubbell's during the period that "his bill" was being worked through Congress in 1901 and 1902. His efforts to develop his place and Ganado generally were regarded as a force for "civilizing" the Navajos and

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[43]Italics added. G. W. Hayzlett to Col. L. B. Henderson, December 2, 1899, Ft. Defiance Letterbooks, FD-27, pp. 185-186. The writer's access to this was a typed copy in WPHTP. It was copied by David Brugge or by Frank McNitt and given to Brugge. It demonstrates the problem with sources in the "free floating" documents in the WPHTP. D. H. Henderson, congressman from Iowa, was speaker of the house in the 56th and 57th Congresses. See Who's Who in America 1906-1907, p. 817.

taken by all whites to be in their best interest.[44]

As a consequence of this wide support, Bill 4001 was introduced in the House of Representatives on December 13, 1899, by J. F. Wilson, Republican delegate from Arizona. The bill's intent was to except from the executive order of 1880 "all lands claimed by actual settlers or persons to whom valid rights attach." Wilson's bill passed the house on March 5, 1900. The Senate also passed it but in an amended form, making the Navajo Reservation subject "to the mining laws of the United States," which led the president to veto the bill.[45] It was reintroduced on January 7, 1902, by Marcus Smith, who replaced Wilson as Arizona's delegate, in identical language except that the offensive amendment was dropped. Responding to S. M. Brosius's strong urgings to broaden its base of support, a slightly modified version was introduced in the House by Smith in April and at the same time in the Senate by William Stewart of Nevada, chairman of the Senate Committee on Indian Affairs. The bill passed both houses by June 30 and was signed by the president on July 1. The next day Brosius forwarded a certified copy of which, he assured Hubbell, "Local Land Offices" would "take due congnizance." Hubbell could thus "go right ahead even before the statute is printed" and file his homestead application. Brosius

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[44]For Hubbell's role with the Presbyterians see Cora B. Salsbury, Forty Years in the Desert: A History of Ganado Mission 1901-1941 (n. p., n. d). Salsbury also indicated that Hubbell "pointed out a fine site for a Mission and also a site for a future dam which would irrigate the whole Ganado Valley." p. 14.

[45]Adjustment of Rights of Settlers on the Navajo Indian Reservation, Arizona, pp. 4-5.

concluded by expressing his intent to visit Ganado to "go over the ground and see what improvements you contemplate now that the bill is law, and you can secure title to lands."[46]

This was another major milepost on Hubbell's path toward establishing an irrigated farm secure in both its land and water claims. He must have felt much the same satisfaction on learning the way to ultimate ownership had been cleared that he would later feel upon learning that Congress had funded the reservoir project. On the other hand, much remained to be done and many a crisis yet lay ahead.

Homesteading

Brosius's enthusiastic haste to initiate the homesteading process notwithstanding, Hubbell could have done no more than file a letter of intent in 1902 because the area had not been surveyed. It is not known what was done to get the survey made, but a rule of thumb existed that when three settlers in a township petitioned for a survey, the surveyor general was authorized to proceed without cost to the settlers as funds became available.[47] It may be that Anson Damon and other St. Michaels settlers shared Hubbell's need

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[46]S. M. Brosius to J. L. Hubbell, July 2, 1902, WPHTP. Brosius had been a congressman from Pennsylvania in the late 1880s and early 1890s. By 1900 he was head of the Washington office of the Indian Rights Association.

[47]This rule of thumb, as well as problems connected with the resurvey of Hubbell's land after 1912, was spelled out in a letter from lawyer R. E. Morrison of Prescott to Hubbell, September 18, 1912, WPHTP.

for a survey, and it appears that survey work was needed on the reservation as well. Even so, things moved slowly, and it was 1906 before the survey was completed by Hubbell's neighbor and friend Sam Day, who in his colorful past had surveyed a railroad grade up Pike's Peak as well as much of the south boundary of the 1868 treaty reservation.[48] Hubbell probably did not make a formal homestead entry until that time.

Proving up did not proceed smoothly even then. Various minor mistakes created some delay, and real trouble came when Hubbell failed, after all he had experienced in the way of dealing with federal agencies, to provide evidence certifying occupancy of the place. As a result the register of the Phoenix land office wrote him a curt demand giving him sixty days to "furnish" the necessary proof or face cancellation of his entry "without further notice."[49] Friends well acquainted with Hubbell's operation quickly filed three depositions. These turned the trick with the land office and today provide a core of information about the development of his land. (See Appendices II-IV.)

Finally, in 1908 a patent was issued. For the moment all seemed well, but it soon became evident that serious problems in the Sam Day survey flawed Hubbell's title. To clear this up, a new survey was necessary. Correspondence in 1912 suggested that Hubbell himself might have to pay for this survey, but the notes of

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[48]S. E. Day to J. L. Hubbell, July 22, 1906, Day File, Box 23, HPUAL; and McNitt, Indian Traders, p. 247.

[49]Lyman W. Wakefield to J. L. Hubbell, March 18, 1906, WPHTP.

Frederick C. Miller who did the resurvey in September 1915 included data on other farming plots along the Pueblo Colorado, suggesting that the Indian Service at least bore part of the cost.[50] The resurvey completed and duly filed, Hubbell was issued a new patent in 1917, which withstood the test of time. Nevertheless, the errors of the Day survey and procedures of homestead entry and the on-site development of Hubbell's farm combined to leave untitled several acres of prime farm ground that Hubbell had been cultivating. Recognized at least as early as the initial assignment of irrigated farms to Indians in 1921, the unprotested use of that piece of unowned property attested to the high regard the Hubbell family enjoyed among Ganado's Indians and with BIA officials.

Thus long-term occupancy and a vigorous campaign to secure a legal title enabled Hubbell to prove up on claims to land that for more than twenty years was part of the Navajo Reservation. His success in this endeavor is a testament to the temper of the times as well as the character of the man. It laid the essential foundation for the successful farm that was developed in the first three decades of this century and was a process of upmost significance to the development of agriculture at Ganado. Equally important and in some ways involving even greater challenges was the process by which Hubbell simulataneously established claim to water.

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[50]See survey notes and maps of T. 27 N., R. 26 E., conducted during September 1915 by Frederick C. Miller, U. S. Surveyor. Filed on November 24, 1917, in Book 2962 of the Phoenix Land Office, extracts in WPHTP; also see Miller to Hubbell, July 1, 1915 with further reference to the survey, WPHTP.

CHAPTER III:

THE HUBBELL WATER CLAIM

Even more than elsewhere in the West, matters of water and water rights were of crucial importance on the desert plateaus of Navajo country. Adding special complexity to the general problems of water's scarcity for the Hubbell homestead were specific problems rising out of the site's inclusion within the reservation's boundaries. Surprisingly, however, Hubbell established a water claim that no one challenged seriously and, as far as the modern record indicates, he did it by appropriation alone without filing on the water in county or state records.

Indeed, the most satisfactory documentary evidence of Hubbell's water right is a 1913 agreement with the Department of the Interior. (See Appendix I.) The 1913 agreement stated that Hubbell had acquired "water rights under the laws of Arizona" and that they were of several years' standing.[1] It is not clear what documentation Department of the Interior officials used in preparing this agreement, but under the doctrines of prior appropriation and beneficial use fundamental to Arizona water law, Hubbell's claims

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[1]J. L. Hubbell-Department of the Interior Agreement, 1913. Copies exist in Water File, WPHTP; and Box 329, HPUAL.

can easily be traced to 1902. As seen in the foregoing chapter, his as yet unsurveyed and unfiled on land was opened to the functioning of federal land acquisition procedures during that year, enabling him to initiate the formal process of homesteading and to implement plans for an irrigation system. There is much evidence of Hubbell's developing irrigation project in the years thereafter, and the system itself became evidence that water rights existed.

In addition to the Department of the Interior agreement, two depositions made in the spring of 1908 attested that Hubbell's water rights date to 1902 or 1903. (See Appendices II-IV.) Mathew Howell, who although living in Long Beach, California knew northern Arizona well, stated that "during the last five years" Hubbell had "brought under cultivation about one hundred and forty acres." It was watered, said Howell, through "a main irrigating ditch about two and one-half miles in length, terminating in a reservoir, through which all the land is irrigated by means of laterals." Paul Brizzard of Phoenix rehearsed this information and declared that Hubbell's "irrigating system must have cost about fifteen thousand dollars" and the leveling and planting "must have cost about ten thousand dollars more."[2]

Since specific documentation does not provide clear evidence of earlier water rights, the matter could be left at that. Yet there is more to the history of Hubbell's water claims than is seen if the

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[2]These depositions were taken in April 1908. Copies exist in Water File, WPHTP; and Box 329, HPUAL.

question is left at 1902 where specific documentation places it. Without undertaking a legal brief, historical comment can be made and light thrown on the circumstances out of which Hubbell's water right emerged. To examine these considerations, discussion may be guided by questions of intent, negative evidence, and water development in the area of Ganado in the years prior to 1902.

Of Intentions and Rights

Although acquisition of water rights under the doctrines of prior appropriation and beneficial use clearly depended upon action, intention to appropriate and make beneficial use of water had some bearing upon when rights began to attach in Hubbell's case. From time to time in the long proceedings by which his land was excepted from the reservation, his intention to homestead at Ganado was cited as relevant. Thomas Keam, too, put his intent to settle Keams Canyon forward as his best hope of getting title there. Even in 1930, a few months before Hubbell's death, he was still declaring he had intended to homestead when he first went to Ganado.[3] Where settlement ran ahead of surveys and land entry, occupation was often the ultimate and accepted statement of intent.

Custom was similar with respect to water. Initial use often ran ahead of formal policy. Posting at the site of an anticipated diversion announced intent and carried a right before water was

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[3]J. L. Hubbell and John Edwin Hogg, "Fifty Years an Indian Trader," Touring Topics, XXII (December 1930), p. 26.

taken out. Even the water notice books found in every arid county were a means of recording and dating intention. In addition, it would seem that intent to homestead carried with it an implied intent to claim water, either by prior appropriation and beneficial use or by purchase. If Hubbell intended to homestead in 1876 as he asserted in his autobiographical sketch, such an objective implied an intent to use water.[4] His first trading post near the future reservoir site and his acquisition of the Leonard trading post which occupied the largest piece of arable ground in Ganado Valley tend to support the idea that he intended to claim and utilize the water of the Rio Pueblo Colorado from the time of his first settlement there.

Whatever his early intent, however, it is difficult to document that he sustained it by any effort to prove up on the land or otherwise develop it between 1876 and 1890.

In light of this, 1890 becomes a better date to attach such claims to water as may inhere in intent to homestead. Although there was a break of several years between the unsuccessful effort of Hubbell and his partner C. N. Cotton to get the land question cleared in the early 1890s and Hubbell's successful effort later, "occupation" with anything it may have implied about improvements and development continued during these years. It might be argued that the successive official decisions and legislative enactments by which the Hubbell-Cotton land claim was progressively legitimated

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[4]Ibid.

recognized that intention to use water had taken on some of the attributes of a claim by 1890 and perhaps before.

Negative Evidences and the Winters Doctrine.

Certain negative evidences also support the existence of an early water claim. Put differently, the fact that no one challenged Hubbell's development of his irrigation system suggests that his water rights were fortified by time. Indian agents, surveyors, and United States Geological Survey scientists came and went for years. Some saw prospects for an Indian irrigation project, but no one questioned Hubbell's water rights. An example is Special Agent Levi Chubbeck, who inspected Ganado Lake in 1903 and again in 1904. On the second visit Chubbeck reported that Hubbell's irrigation system was under construction and recommended that the Indian Service consider a proposal Hubbell had made for the government to buy his system at cost, "reserving the right to have it carry enough water for his use."[5] Totally lacking in Chubbeck's report was any sense that Hubbell was appropriating what was not his, which in its way was a recognition of right.

An even more telling consideration of this kind lay in a benchmark decision of the Supreme Court defining the existence of unique Indian water rights. To understand how this applied, it is necessary to recall that Hubbell's 1913 agreement with the

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[5]Report of Levi Chubbeck to the Secretary of the Interior, May 6, 1904, WPHTP.

Department of the Interior accepted without question that he owned land adjacent to the Navajo Reservation and that he had "acquired . . . water rights under the laws of Arizona" with which to irrigate that land.[6] (See Appendix I.)

Just as Hubbell was taking the final steps to prove up on his homestead in 1908, the Supreme Court ruled in the case of Winters vs. United States that on reservations Indian water rights existed without the workings of either prior appropriation or beneficial use "because of an implied reservation of water with and at the time of the reservation of the land sufficient for the irrigation thereof."[7] Historian of western water rights Norris Hundley has explained that "this so-called 'reserved' water right constitutes a special right." Unlike the doctrines of prior appropriation and beneficial use, it "exists whether or not Indians are actually using the water, and it continues unimpared even if the Indians should subsequently cease their uses."[8]

The Winters Doctrine clearly pertained to water on or flowing from the Navajo Reservation where Navajo water rights would date from at least 1868 on the original treaty reservation and from 1880 on the executive order extension in which Hubbell's homestead site was located. It may be argued that Hubbell and William Leonard

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[6]Hubbell-Department of the Interior Agreement, 1913, WPHTP.

[7]Annual Report of the Commissioner of Indian Affairs 1913 (Washington, D.C.: G.P.O., 1913), p. 19.

[8]Norris Hundley, Jr., "The 'Winters' Decision and Indian Water Rights: A Mystery Reexamined," Western Historical Quarterly, XII (January 1982), pp. 17-18.

before him had acquired inchoate or possessory water rights prior to the Executive Order of 1880 extending the reservation to include Ganado. But the Rio Pueblo Colorado drained in excess of 220 square miles, much of which extended well within the 1868 treaty reservation, which made its waters subject to the Winters Doctrine, unless appropriations and beneficial use prior to that date existed.

By 1913 the Commissioner of Indian Affairs and the Secretary of the Interior as well as the solicitors who advised them were well aware of the Winters Doctrine. It had been a bitterly contested and widely publicized case upon which subsequent decisions were based.[9] Moreover, the commissioner himself reported in 1913 that Indian rights rested upon it and announced the "urgent necessity for looking thoroughly into all conditions pertaining to water rights on the various reservations to protect the Indians against the loss of such rights."[10] Thus there can be no doubt that Hubbell's case was considered in light of the Winters ruling before the Hubbell-Department of the Interior water agreement of 1913 was drawn up.

This, of course, raises questions that are difficult to answer. It is possible that any adverse implications the Winters Doctrine

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[9]For excellent examinations of the Winters Doctrine including the situation from which it grew and what its impact has been, see Hundley, "The 'Winters' Decision and Indian Water Rights," 17-42; and Hundley, "The Dark and Bloody Ground of Indian Water Rights: Confusion Elevated to Principle," Western Historical Quarterly, IX (October 1978), pp. 455-482.

[10]Report of Commissioner 1913, p. 19.

held for Hubbell's water rights were simply ignored because it was believed his farm would benefit the Indians. Officials in 1913 may have felt justified in ignoring the Winters Doctrine's relationship to him because they were convinced he would "give the Indians . . . a daily object lesson, in the way of farming," as some of those who supported his land claims in 1899 had argued.[11]

More likely, Department of the Interior solicitors concluded he had a valid claim and that it would stand up in court. Although substantiating evidence has not been found, it is well to remember that according to the 1913 contract Hubbell was acknowledged to have rights "acquired . . . under the laws of Arizona."[12] By that time his land rights, with whatever they implied about water rights, had been judged valid by three separate processes: first, the 1890 departmental action "reserving" his rights from any adverse action of the Indian Service; second, the congressional act of 1902 reversing the Executive Order of 1880 as far as Hubbell's homestead went; and third, the homesteading process through which he acquired title in part by performing irrigation development work. Furthermore, the departmental action of 1890 had rested on the "opinion" that he had previously acquired "valid . . . rights."[13]

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[11]G. W. Hayzlett to L. B. Henderson, December 2, 1899, Ft. Defiance Letterbooks, FD-27, pp. 185-187, copy in WPHTP.

[12]J. L. Hubbell-Department of the Interior Agreement, 1913, WPHTP.

[13]Decisions of the Department of the Interior Relating to Public Lands, XII (Washington, D.C.: G.P.O., 1891), pp. 207-208.

Regional Development and Hubbell's Water Rights

A climate of development and promotion in which water became a critical issue for Hubbell existed in northern Arizona during the decades before the turn of the century. Mormons had settled at Tuba City and along both the San Juan and the Little Colorado rivers where they built diversion dams, miles of ditch, and thriving farms. Others, too, located along the San Juan, and the interest of the Wetherills turned from archaeology to trade and ranching at Kayenta and Chaco Canyon, while even such Indian country oases as Keams Canyon and Cienega Amarilla were claimed and developed. By 1890 water development and land speculation had become a contagion in southern Arizona, and even Apache County water took on new value as speculators filed a welter of overlapping claims on Zuni and Little Colorado rivers.[14]

A region-wide cycle of dry years accompanied the speculative land and water boom of the late 1880s, and speculation and resource utilization reform seemed briefly to find a common cause in 1888. Congress acted on a plan submitted by John Wesley Powell, sometimes canyonlands explorer but then director of the United States Geological Survey, for an irrigation survey throughout the entire

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[14]See Arizona Hearings, especially Maricopa and Pima counties, in Report of the Special Committee . . . on the Irrigation and Reclamation of Arid Lands, 51 Cong., 1 sess., Sen. Rept. 928 (Washington, D.C.: G.P.O., 1889), pp. 400-498; also Notices Water Locations Book #1; Notices Water Locations Book #2; and Application for Water Right Book #1, Apache County Recorder's Office.

arid region. By year's end, money was appropriated, and in a measure that shook the entire West, all public lands were closed to settlement and development. A select senate committee took to the road, holding hearings in virtually all the arid states. Powell put engineers in the field, surveying sites for reservoirs and canal works and launching long-term hydrographic studies. Although a public outcry from Arizona and elsewhere soon forced the government to reopen the public domain to settlement, Powell's surveyors continued their work into the mid-1890s, ultimately surveying and classifying much of the West's water and land resources.[15]

Of significance here is the fact that interest in storage reservoirs became important in the desert West for the first time. Previously, diversion dams and use of what may be termed primary waters had occupied attention. Now unclaimed secondary waters, huge dams, and vast delivery systems became the order of the day as first private capital, then state and local public monies and, after 1902, large infusions of federal funds through the Bureau of Reclamation, undertook to redeem western deserts. A generation-long land boom ensued that badly overreached itself. Hundreds of millions were spent, hundreds of thousands of settlers located on submarginal

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[15]Report of the Special Committee on Irrigation, pp. 400-498; Wallace Stegner, Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West (Boston: Houghton Mifflin Co., 1957); and Thomas Alexander, "John Wesley Powell, the Irrigation Survey and the Inauguration of the Second Phase of Irrigation Development in Utah," Utah Historical Quarterly 37 (Spring 1969), pp. 190-206.

lands, and, as the generation aged in the 1920s and 1930s, a retreat ensued that was only less traumatic in the plateau deserts than in the Dust Bowl.[16] Certainly John Lorenzo Hubbell was influenced by the land boom spirit. Many of his values and efforts were inspired by it. His dreams and claims grew from it, and the support others gave him makes sense when viewed in its climate.

Resources and Assimilation

Closer to home, the flux of the turn-of-the-century decades influenced water rights in various ways. Navajo country underwent an extended drouth beginning in the late 1880s. Sheepherds and ponies had multiplied rapidly. Human population also soared, and Navajos, who may have numbered as few as 8,000 in 1868 when they

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[16]For good treatments of the tragedy connected with overpopulation of marginal and submarginal regions, see Donald Worster, Dust Bowl: The Southern Plains in the 1930s (New York: Oxford University Press, 1979); and Walter J. Stein, California and the Dust Bowl Migration, (Westport, Conn.: Greenwood Press, Inc., 1973). No adequate account has been found of the impact of the overexpansion of the farmer's frontier in the Four Corners Area, but the impact on the Navajos gives some hint, see Richard White, The Roots of Dependency: Subsistence, Environment, and Social Change among the Choctaws, Pawnees, and Navajos (Lincoln: University of Nebraska Press, 1983), pp. 212-323. What overextending meant in Utah was apparent in the five northwestern counties into which more than 5,000 families followed hard-sell promotion between the enactment of the Enlarged Homestead Act in 1909 and 1920. By the mid-1930's the failure rate was nearly ninety percent. Experience was only somewhat less disastrous in the Uinta Basin and in Utah's San Juan. See J. Howard Maughan, "Continuation of Study of the Extent of Desirable Major Land-Use Adjustments and Areas Suitable for Settlement," (Salt Lake City: Utah Resettlement Administration Office, July 1936); and A. F. Bracken, "State Report on Land-Use Study for Utah," (Salt Lake City: Utah Resettlement Administration Office, May 1935), copies at Utah State University Library.

returned from Fort Sumner, now numbered more than 15,000. Nearly half of them ranged beyond the limits of the reservation in quest of forage for their stock. As drouth deepened, they competed with white ranchers who were driven onto the reservation by similar forces.[17]

Hard pressed by settlers and civil authorities, the Indian Service sought to curtail the expanding Navajos in the short run and yet move them in the direction of assimilation in the long run. Specifically, they sought to advance irrigation so the Navajos could support themselves without running their livestock beyond the reservation. At the same time they encouraged an increasing number of Indians to work off the reservation and to educate their children.

Education and Christianization were pursued with a vigor that was sometimes ruthless. Keam parlayed his claim into a government school by the mid-1880s, and in time a boarding school was established at Ft. Defiance and mission schools at Two Gray Hills, St. Michaels, and Ganado, among other places.[18] Dispatched to recruit reluctant pupils, the military from Ft. Wingate sometimes

17White, The Roots of Dependency, pp. 212-234; and annual reports of the Navajo agent in Report of Commissioner each year between 1883 and 1900.

18Frank McNitt, The Indian Trader (Norman: University of Oklahoma Press, 1962), pp. 192-199 presents Keam's story; the Keam-Welsh Correspondence, IRAA allows one to trace Keam's interest in education for the Indians from 1887 to 1895. Growth of schools between 1888 and 1900 may also be seen in the reports of the commissioners, especially in Report of Commissioner 1899, p. 158.

complained. For example, one officer wrote in 1892 that "use of the military to compel separation from their families is the one great question with the Navajo." The officer thought that nothing was more likely to send Indians "on the warpath quicker" than "this compulsory attendance of his children." Even the death of "stock and relations" during "this winter of starvation" would be "a small item compared to the taking of . . . children." Reflecting a sharp distaste for enforced assimilation, the officer concluded "there are milder ways of educating this tribe."[19]

Among the assimilationists were Agent George W. Hayzlett, who had gone out of his way to advance Hubbell's land claim in the name of civilization in 1899, and his associate C. H. Lamar, superintendent of the boarding school at Ft. Defiance. Lamar wrote in 1901 that, although the "generous spirit" of the "Government in opening schools had often "been explained" to the Navajos, "the feeling and disposition of camp Indians on the reservation toward schools and education work generally is not encouraging." In Lamar's eyes, this attitude resulted from "the fact" that Navajos were "'left alone in their glory'" because there was "little to induce white people to come among the Navaho." Lamar concluded that it was "not surprising" that Indians, "shut in 'by the nature of the place'" and with very limited contact with other people, clung

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[19]W. C. Brown, Report Upon Condition of the Navajo Indian Country, 52 Cong., 2 sess., Sen. Exec. Doc. 68 (Washington, D.C.: G.P.O., 1893), p. 22.

"tenaciously to the time-honored customs and superstitions of their race."[20]

Also committed to the development of irrigation, Hayzlett and his colleagues were sometimes willing to sacrifice Indian resources to education and assimilation. In 1901, for example, the Presbytery of Arizona applied to Hayzlett for "160 acres situated near Ganado on the Navaho reservation" but indicated its preference to wait until Hubbell's irrigation project took form before the "exact site" would be chosen. Hayzlett answered that it was not "advisable to ask for so much land" but still forwarded the request to the Office of Indian Affairs. In response the acting commissioner demonstrated a willingness to traffic in a trade-off between assimilation and resources when he instructed Hayzlett to "report just how much land can . . . be spared without detriment . . . to the Indians."[21] The mission was later assigned only thirty acres of farming land, but the suggestion is strong that the system worked to the interest of whites, including Hayzlett, Hubbell, and the Presbyterian Mission.

Early Indian Service Irrigation Projects

The Indian Service made only a limited effort to develop water holes and irrigation systems on the Navajo Reservation prior to 1900. Indians had farmed in northern Arizona since time immemorial

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[20]Report of Commissioner 1901, p. 103.

[21]The Acting Commissioner to G. W. Hayzlett, September 25, 1901, Series 7, File 139, Van Valkenburgh Papers, AHS.

and the army's effort to cultivate a little land at Ft. Defiance extended back to 1852, but irrigation development was actually initiated on the Navajo reservation in 1886 when $7,500 was appropriated for that purpose. In 1887 fifteen springs were developed and improved, five dams constructed, and fourteen small reservoirs and nine ditches were built. With impossible optimism, the agent estimated that "12,000 to 15,000 acres of tillable land" had been opened to irrigation and water supplied for 100,000 animals. To encourage irrigated agriculture, farm implements were also distributed, including twenty-six wagons and "nearly one hundred corn-cultivators" which the Indians "refused to take away" because they were "worthless to them in their method of farming."[22] The following year another $3,000 was appropriated to build a dam and "three ditches aggregating two miles in length."[23]

The form of the future, however, was already apparent. Hastily designed and poorly built, the waterworks constructed the year

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[22]Major E. Backus, Ft. Defiance, "Report of Farming Operation Carried on by Troops During the Year 1852," July 1, 1852; Box 1, Frank McNitt Collection, New Mexico State Records Center and Archives, hereafter cited as McNitt Collection, NMRCA. Enthusiastically proclaimed efforts were also made to divert "Canon Bonito Creek" by Agent D. M. Riordan in 1884; see Riordan letters to Indian Commissioner January 31 and February 4 and 8, 1884, Series 7, File 139, Van Valkenburgh Papers, AHS. By September when he wrote his report to the Commissioner, high hopes had been supplanted with disgust: "As there are no running streams it [the reservation] can only be watered with a bucket," Report of Commissioner 1884, p. 177. Agent S. S. Patterson was still down on farming at Ft. Defiance, but more sanguine about the beginnings of irrigation generally when he reported in 1887, Report of Commissioner 1887, pp. 255-257.

[23]Report of Commissioner 1888, p. 190.

before were already proving to be as worthless as the cultivators. Successive agents scornfully reported their uselessness and their quick decay in the face of desert weather conditions.[24]

The Lt. W. C. Brown Survey

With the drouth unabated and the Powell irrigation survey getting underway, the Commissioner of Indian Affairs recommended in March of 1890 that a similar survey be made on the Navajo Reservation. It seemed that the reservation was to be subject to a thorough reconnaissance and that major projects might grow from it. But the wheels of the bureaucracy ground slowly, and by the fall of 1892 when the so-called Lt. W. C. Brown Survey was conducted its prospects were already considerably reduced. Indeed as it turned out, the survey was superficial. Three detachments, each under the command of a lieutenant with engineering training, rode the reservation at a ten-to-twenty-miles-a-day rate. Lt. Brown worked the San Juan River section. Lt. Odon Curtovits surveyed the northwestern and central portions of the reservation, and Lt. E. M. Suplee took the south and southwestern portions, including Ganado.[25] Using maps produced by earlier Powell surveys, they visited springs and watercourses demarked by Powell as well as

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[24]The next agent wrote in deep scorn about the efforts of his predecessors: "I have been over the ground where the work was done, and am sorry to say it amounts to nothing," Report of Commissioner 1889, p. 257.

[25]Brown, Report Upon Condition of the Navajo Country, pp. 1-6.

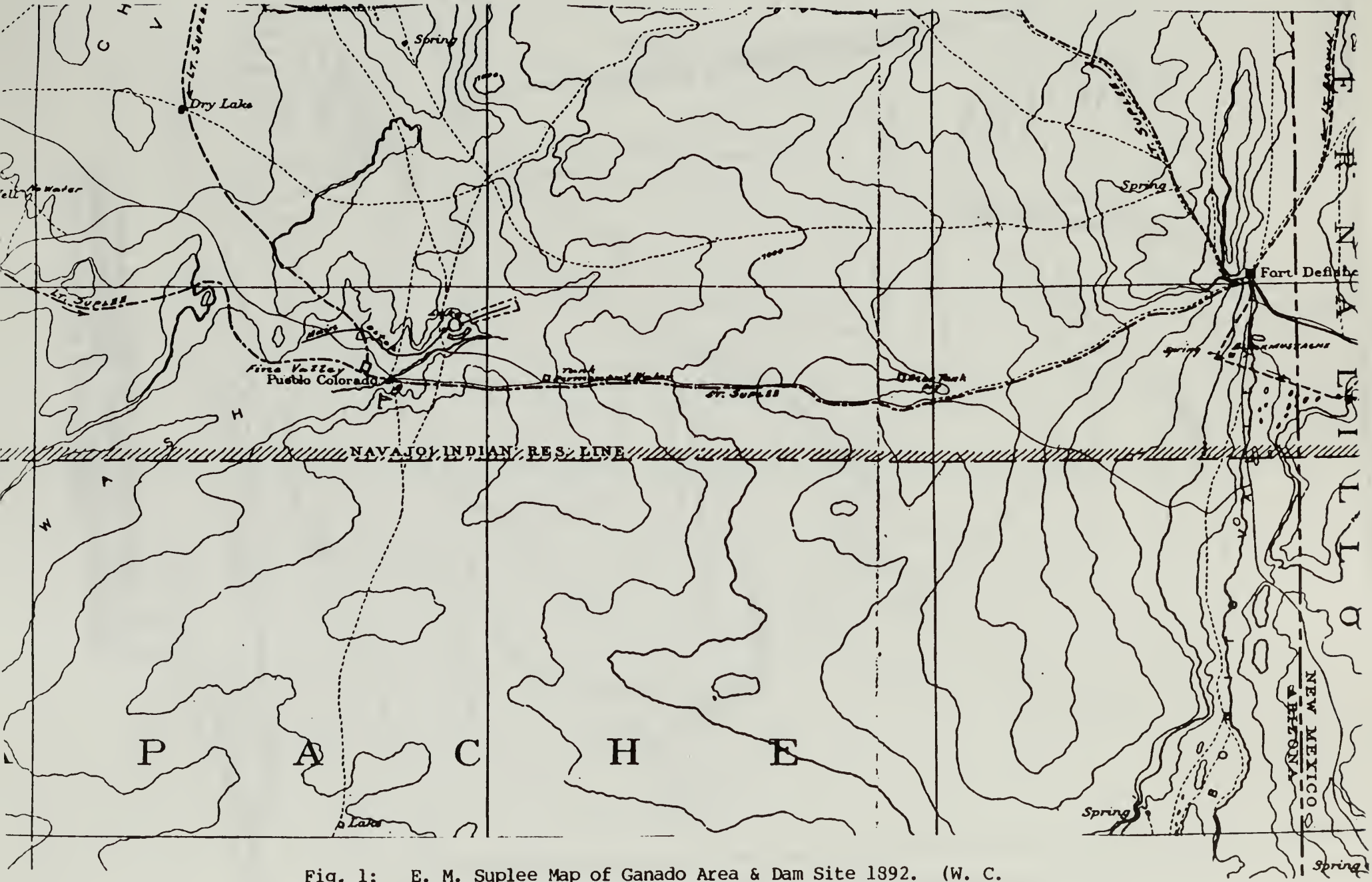
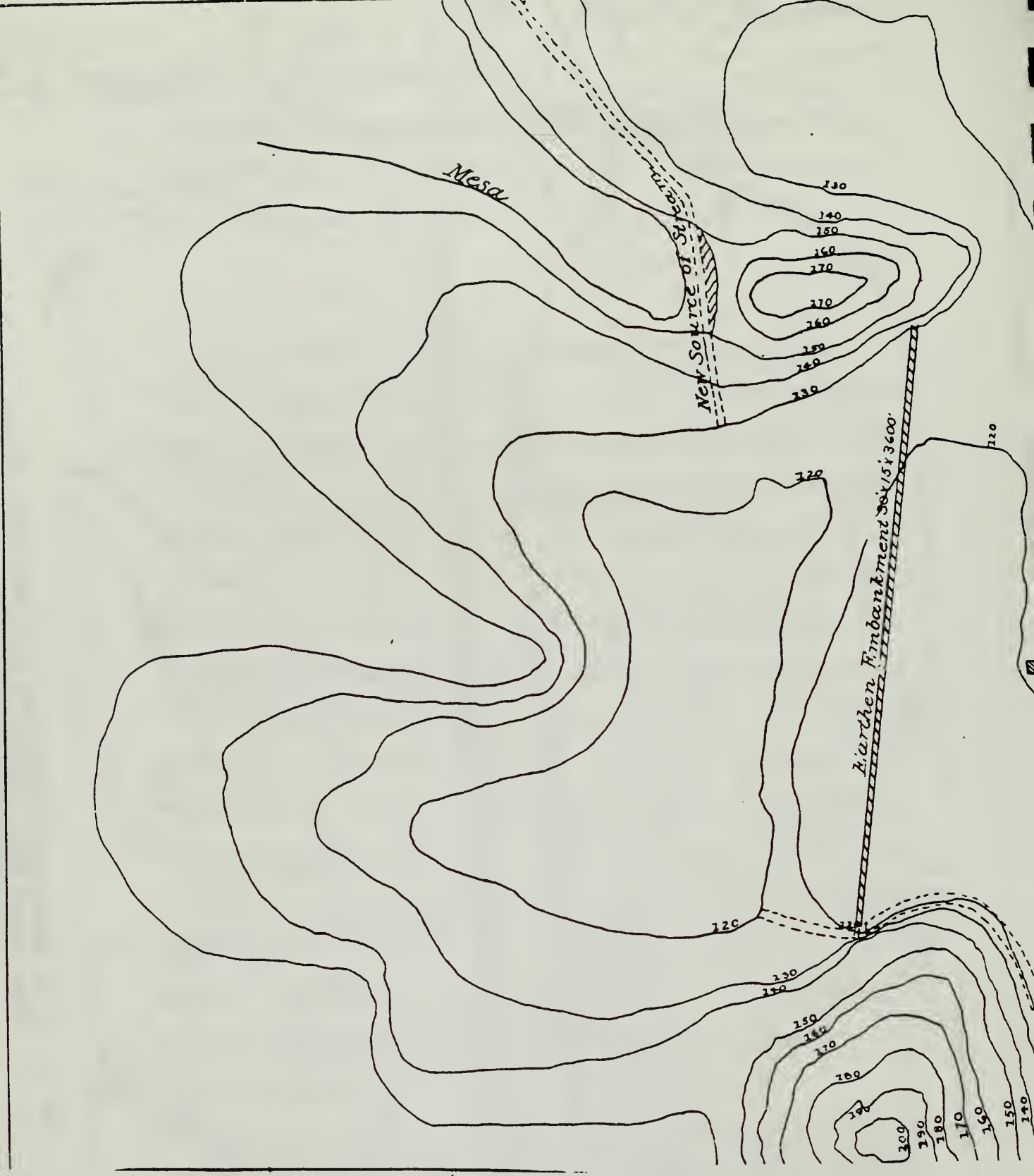


Fig. 1: E. M. Suplee Map of Ganado Area & Dam Site 1892. (W. C. Brown, Report Upon Condition of the Navajo Country.)



(Signed)
E. M. Suplee
2 Lieut. 2 Cal.

S Ex 68 52 2

Fig. 2: E. M. Suplee Sketch of Proposed Dam & Supply Ditch 1892. (W. C. Brown, Report Upon Condition of the Navajo Country.)

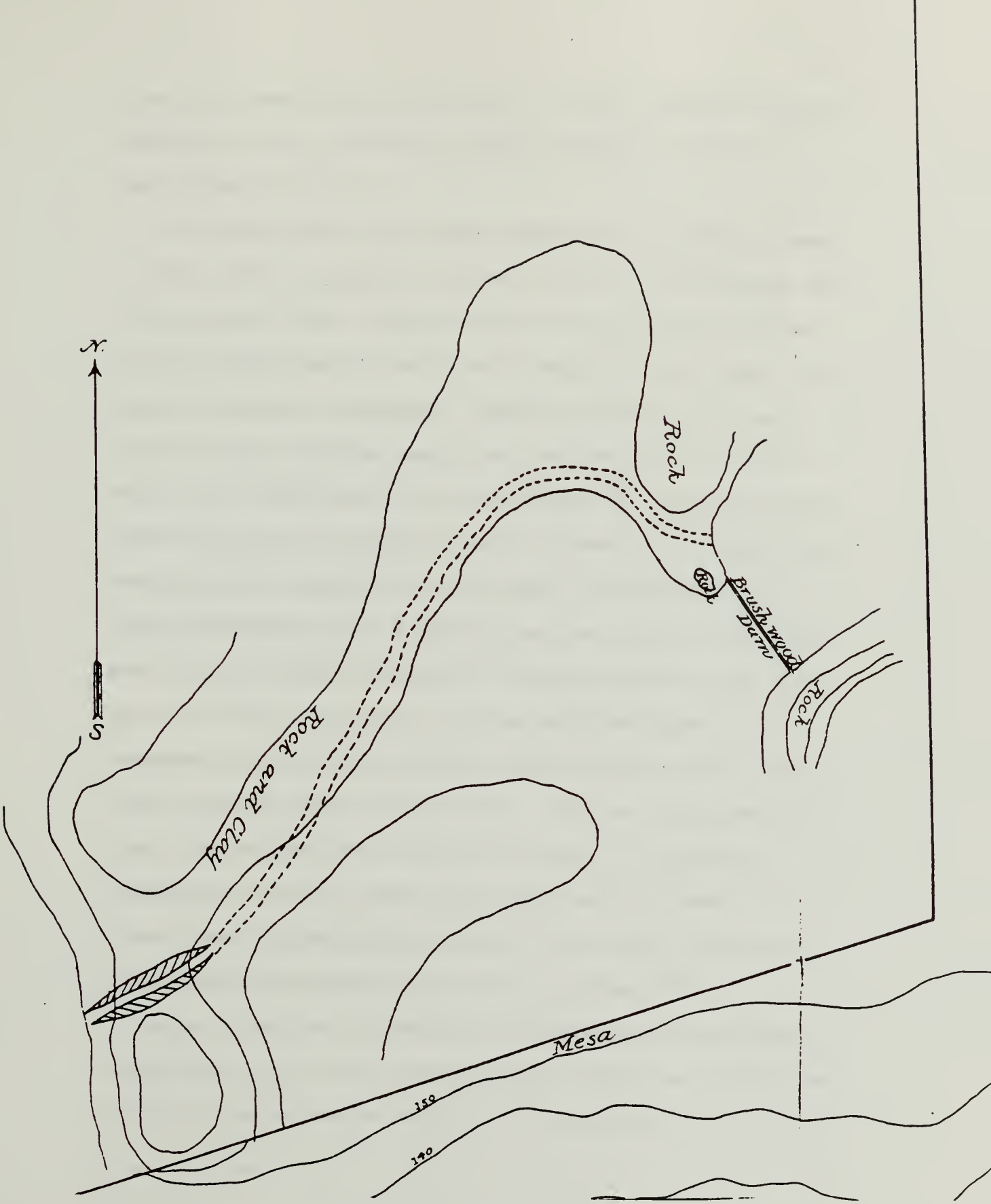


Fig. 3: E. M. Suplee Sketch of Proposed Diversion Dam & Feeder Ditch 1892. (W. C. Brown, Report Upon Condition of the Navajo Country.)

others they heard about or discovered. In all, seventeen maps were published, which, like the Brown report generally, were done in haste. (See Figures 1-3.)

Lt. Suplee made a major camp at Ganado where he spent at least six days while he explored the surrounding area. He inspected "the Arroya Colorado" and a "natural lake" some "three miles upstream" from the trading post "in which water remains the year around, this year being the only exception." During Suplee's stay at Ganado, "it rained six days" with the result that the lake "had 8 inches of water in it" when he left. He reported that the "Arroya Colorado" flowed "100 gallons per minute" where it passed the lake but that it went "dry about a quarter of a mile below" the trading post. He compiled engineering data describing the practicality of diverting water from the stream by means of a "brush-wood dam 200 feet long" through "a notch to the lake." He also submitted plans for "an embankment 3,500 feet long, 30 feet thick at the base and 15 feet high" to dam the lower end of the lake. This he thought "should give a lake ten feet deep covering 200 acres." In addition he contemplated a ditch "5 miles long" on the north, or side of the stream opposite from Hubbell's, which "if the water is sufficient" would allow "1,000 acres or more, to be irrigated."[26]

Suplee's maps and recommendations are interesing from several standpoints. In the first place his report marked the trading post as Cotton's rather than as Hubbell's or as belonging to a

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[26]Ibid., p. 27 and Map 16.

partnership. Second, his Ganado recommendations established beyond any question that the stream and lake were not utilized for irrigation purposes prior to 1892 by Hubbell or any other Euro-American. Although time has proven that Suplee was both right and wrong in his recommendations, his plans do represent a considerable forward step from the first fumbling irrigation projects of the Navajo agency. To the extent that the diversion dam still stands where he visualized it and the storage dam approximates his 3,500 feet in length, his grasp of how the system would work was sound. On the other hand, his projected north-side canal and the "1,000 acres of fine land" it was supposed to irrigate badly misread prospects. Later efforts to build the north-side canal failed for a variety of reasons. Land on the south side of the Rio Pueblo Colorado, including Hubbell's, proved to be much easier to get water on.[27]

Although everything about Suplee's report denies the possibility of Hubbell or Cotton owning established water rights, the relationship of the Indian commissioner's recommendation in 1890, and the Suplee survey of 1892, to the initial effort of Hubbell and Cotton to have their land excepted from the Executive Order of 1880 was almost certainly one of cause and effect. Suplee and his

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[27]Ibid. On December 5, 1922 the agent at Ft. Defiance wrote the Commissioner that "the north side canal contains a great deal of adobe and is badly cut up by arroyos, and if leveled and graded would take an enormous amount of work to put in tillable condition. I believe that the Indians would be unable to irrigate and farm this land successfully." Water File, WPHTP.

detachment headquartered at Cotton's during their exploration of the locality. This suggests they were received with the hospitality typical to the place. It is also evident that the partners were fully apprised of the survey and Ganado's potential for water development.

The Hubbell Water Act of 1893

Hubbell's role in the passage of key water legislation the following year suggested even more strongly that his mind was on water rights. He was elected to the Territorial House of Representatives the same fall Suplee was at Ganado, and from January to April 1893 he was active in his legislative role. From that session of the legislature issued two important water laws.

Previous water law was limited. Dating from 1864, the territory's bill of rights declared all "water capable" of navigation or irrigation "to be public property." A law of 1871 reiterated this declaration, and, in a clause that indicated that storing or impounding water was largely beyond the capacity of early settlers, further specified that water was applicable "to the purposes of irrigation and mining" and "provided that the appropriator should post a notice at the point of diversion and file a copy of the notice with the county recorder."[28] Finally, in

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[28]Arizona's basic water laws as of 1890 are to be found in U.S., Bureau of the Census, Fourteenth Census of the United States, 1920, Irrigation and Drainage, VII, Arizona (Washington, D.C.: G.P.O., 1922), p. 110; and Report of the Special Committee on Irrigation, pp. 495-497.

1887 a law had been enacted declaring that riparian rights had no force in the territory.

One of the major objectives of the seventeenth legislature in which Hubbell sat was to improve upon this situation, and Hubbell made it his business to have an influence on the outcome. The more important of the two bills was Act 86, "Relating to the Appropriation of Water and the Construction and Maintenance of Reservoirs, Dams and Canals." This law clearly enunciated the doctrine of priority, spelling out that the "first appropriating water . . . shall always have the better right." It then laid out the rules by which water could be appropriated and specified "reasonable time" governing the "construction of dams, reservoirs and canals." Bill No. 20 was introduced and shepherded through the legislative process by Hubbell himself, clearly putting him at the forefront of the legislative water interests. This act's purpose was "To Encourage the Impounding and Storage of Water in the Territory of Arizona." It was undoubtedly as much an indication of Hubbell's interest in what became Ganado Reservoir as it was a statement of law.[29] Whatever Hubbell's motives were during his later political career, it seems clear the 1893-94 term in the

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[29]Session Laws of the 16th Legislative Assembly (Phoenix: Herald Book and Job Office, 1893), pp. 15-16 and 119; also Journals of the 17th Legislature of Arizona (Phoenix: Herald Book and Job Office, 1893), pp. 87, 96, 145, 344, 358, 359.

that would enable him to compete effectively with the Indian Service in developing the waters of the Pueblo Colorado. legislature grew more from his interest in land and water rights than it did from political aspiration or public interest. Hubbell could return to Ganado content that the legal apparatus was in place

Thus by 1893 Hubbell and his "trading ranch" were clearly part of what people were calling "The Irrigation Age." Regionally, the spirit of water development was rampant. Surveys had taken the first scientific measure of water's potential both on and off the reservation. Although crude and inefficient, the reservation's earliest irrigation works were in place. Hubbell himself helped refine the territorial policy under which he later established "water rights" that were beyond challenge. Water rights, dams, and ditches were prominent in his mind. In 1893 actual work on the "Hubbell ditch" was still a decade away, but much of the foundation was laid on which his irrigation system came to rest.

CHAPTER IV:

BUILDING AN IRRIGATION SYSTEM

In addition to establishing his water right, John Lorenzo Hubbell developed a well-conceived and in many respects efficient "irrigation system" between 1902 and 1908. Development included not only the construction of waterworks but clearing and leveling new land. It was a big undertaking that guided future events at Ganado. The period was one of general activity in the locality. The Presbyterian Mission was developing. There was progress at St. Michaels as the Catholic fathers and several of their neighbors developed farms. Irrigation projects for the Navajos were beginning to take form along the San Juan River and elsewhere on the reservation. In this setting John Lorenzo committed the Hubbell family, his Navajo neighbors, and the Bureau of Indian Affairs to what proved to be more of a long-shot gamble than anyone realized when he moved ahead on plans to irrigate his farm.

Just what his first steps were is not clear. It is apparent, however, that he did some planning. County engineer Sam Day, Sr., who conducted the government survey at Ganado in 1906, was employed by Hubbell to do surveying work during 1903 and corresponded with him about his ditches and farm thereafter. It seems logical to conclude that Day's services included engineering plans for the

diversion dam, the ditch, and the storage reservoir at the head of Hubbell's property. The laterals that carried water to the fields, as well as the terraced layout of the fields themselves also required fairly sophisticated survey work although it is not impossible that the Hubbells themselves did it or that they hired other engineers.[1]

The Diversion Dam

Hubbell's diversion dam, like all the dams built on the reservation up to that time, was a low, earth and brush barrier.[2] It diverted water from the south side of Pueblo Colorado Creek at a point somewhat below the present diversion dam, perhaps as far downstream as where the later ditch coming from the government reservoir was flumed from the north to the south side of the arroyo. At the present diversion dam site the terrain is such as to deny the possibility of a south-side diversion ever having been built. Downstream, floods later washed a large gully eradicating earlier diversion sites for a half-mile or so to the south. Recorded experience elsewhere in northern Arizona suggests that Hubbell's first attempts to dam the stream for diversion purposes washed out frequently, creating erosion and requiring frequent

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[1]S. E. Day to H. L. Hubbell, July 7, 1906, Day File, Box 23, HPUAL.

[2]Herbert E. Gregory, The Navajo Country, United States Geological Survey, Water-Supply Paper 380 (Washington, D.C.: G.P.O., 1916), pp. 110-111.

changes.[3] Each succeeding round of repairs was more difficult and pointed up the need for a reservoir and diversion works that could be controlled. Thoughts about developing Ganado Lake as a reservoir which had been in Hubbell's mind at least since the Lt. E. M. Suplee survey of 1892 took on new urgency leading Hubbell to try to interest others in a dam there.[4]

The Hubbell Headgate and Canal

Equally vulnerable to natural damage were the headworks which took water from the stream. In the beginning Hubbell may well have done no more in the way of headworks than to dig an outlet from the stream. In time, however, he improved on this, making a heavy wooden headgate that was raised and lowered by a lever. (Figures 4-5.) While this had obvious advantages, the stream tended to wash around it and to cut back into the arroyo a few yards downstream. In building this headgate Hubbell utilized local resources as he did

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[3]Repeated washouts had been the experience on and near the reservation. For examples see S. E. Shoemaker, "Report to the Commissioner of Indian Affairs," March 14, 1900, Van Valkenburgh Papers, AHS; D. M. Riordan letters to the Indian Commissioner January and February 1884, Val Valkenburgh Papers, AHS. Also C. S. Peterson, Take Up Your Mission: Mormon Colonizing Along the Little Colorado 1870-1900 (Tucson: University of Arizona Press, 1973), pp. 176-191; and Look to the Mountains: Southeastern Utah and the La Sal National Forest (Provo, Brigham Young University Press, 1975), pp. 37-54 detail several irrigation project failures on the Little Colorado and the San Juan rivers.

[4]H. F. Robinson, "Proposed Reservoir Near Ganado, Arizona," March 1910, Folder 2, Box 18, Irrigation District 5, Bureau of Indian Affairs, Record Group 75, National Archives, hereafter cited BIA, RG 75, NA.

in his barn and stockaded corrals.[5]

The canal Hubbell built to his farm was variously reported as being from two-and-a-quarter to three miles in length. It ran the entire distance on the south side of the Rio Pueblo Colorado. This required skirting several hills and building a number of flumes to cross washes running into the stream. (Figures 6-7.) Bridges were also built at one or two points. Hubbell's flumes were shored up by heavy posts or piles, supported by logs and wooden trusswork and made of lumber acquired from the agency sawmill. Stone walls and bastions were used at some points but support works of rip-rapped wooden poles were much more common. (Figures 8-9.)

To facilitate construction Hubbell acquired a pile driver at a time when neither the city of Gallup nor McKinley County owned one. It was borrowed periodically in behalf of the city by Hubbell's friend C. N. Cotton. No description of this apparatus has been found. Pile drivers were sometimes designed and constructed locally, and, in view of the blacksmith always employed by Hubbell, it seems probable this pile driver was homemade as well. When moved it was stripped of its wooden parts and took much abuse when on loan in Gallup. It was probably horse-powered, but early catalogs from internal combustion engine companies in the Hubbell papers and the

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[5]Photographs and information for the above come from Robinson, "Proposed Reservoir Near Ganado, Arizona," March 1910, Box 18, Irrigation District 5, BIA, RG 75, NA; and Robinson, "The Ganado Reservoir and Irrigation Project," October 1910, Correspondence and Reports 1909-1946, Box 18, Irrigation District 5, BIA, RG 75, NA.

remains of old engines on the farm suggest that it could possibly have been powered mechanically.[6]

In spite of being judged "substantial and well built" by the standards of the day, the flumes and bridges of the Hubbell canal were fragile and subject to malfunction. They were also vulnerable to natural stresses, including shifting soil, erosion, and the rapid deterioration of the yellow pine from which they were built. (Figures 10-11.)

The canal itself was well made. Although during the irrigating season there was little need for a ditch of large capacity, Hubbell made his main canal "five feet wide at the bottom and about seven feet wide at the top"—dimensions that compared favorably with the canal as it was later finished by the Indian Irrigation Division. Perhaps Hubbell's intent was to take full advantage of spring runoff, and he may have had some thought of the ditch's trading value or of its future use by Indian irrigators. The ditch may also have been built with capacity to spare so it would be less subject to overflow and washouts during floods. Hubbell also excavated at least one major cut that he once reported cost $6,000.[7]

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[6]Agent R. Perry to J. L. Hubbell, March 24, 1904, BIA File, WPHTP; P. W. Lanigan to J. L. Hubbell February 20, 1912, and January 22, 1913. Writing about the pile driver in behalf of Cotton, Lanigan explained: "The frame, which they made for same while it was here, was so badly broken up, it was not worth the freight. We sent out all the iron and parts we received." Hubbell charged $30.00 for its use and freight both ways. Cotton Folder, Box 20, HPUAL; see Witte Engine Works and Fairbanks-Morse catalogs, Folder 5, Box 564, HPUAL.

[7]See F. H. Abbott to Secretary of the Interior, February 21, 1913, Ganado 1909-1930 Folder, Irrigation District 5, BIA, RG 75, NA.

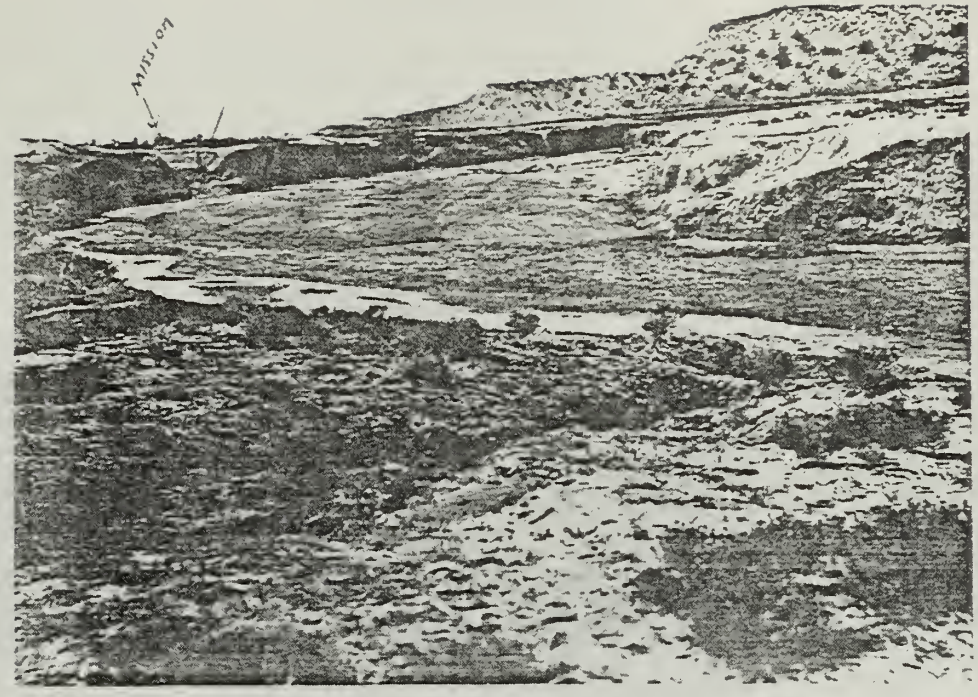

Fig. 4: The Rio Pueblo Colorado Below the Ganado Reservoir ca. 1910, Ganado Mission in Background. (NA.)

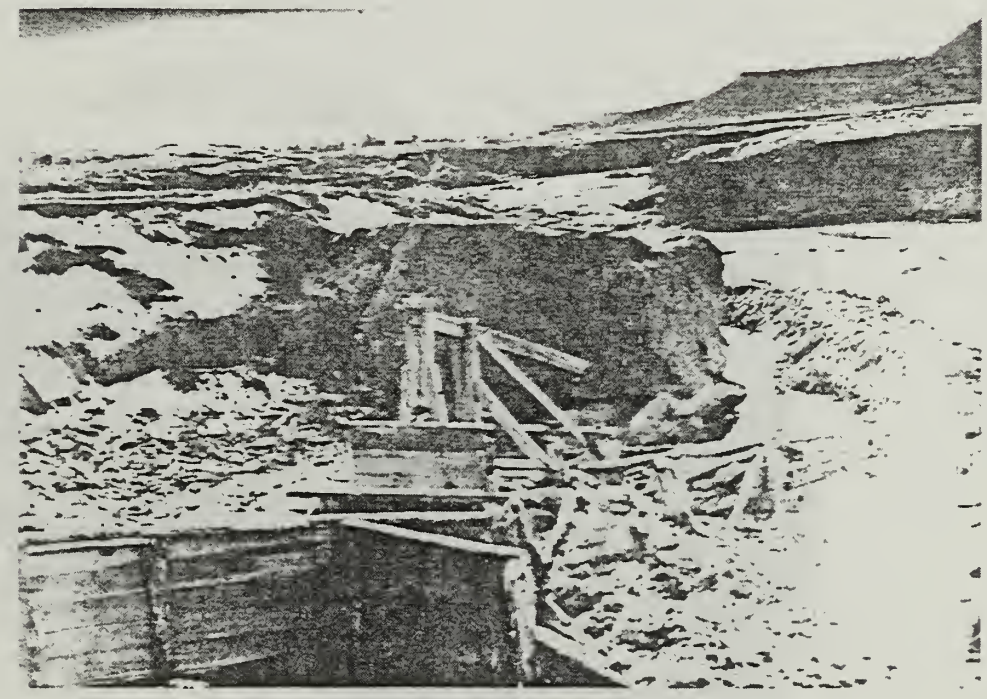

Fig. 5: Winter Close-up of Hubbell Headgate and Canal ca. 1910. (NA.)

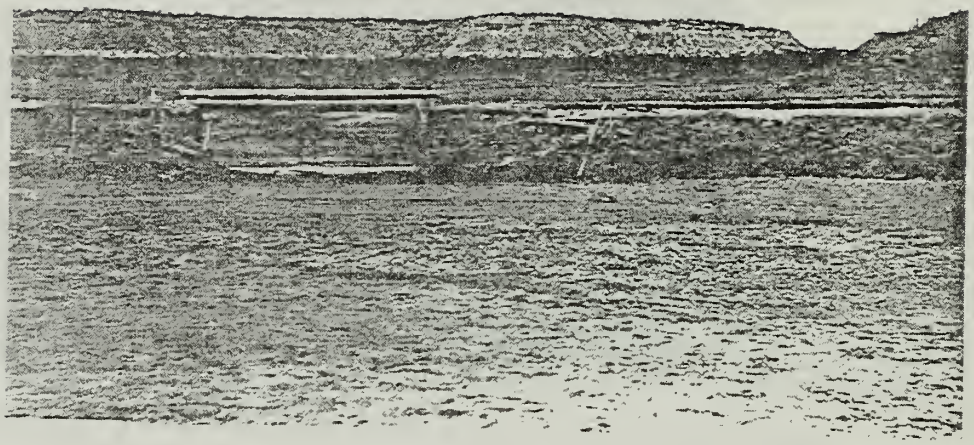

Fig. 6: Hubell Bridge ca. 1910. (NA.)

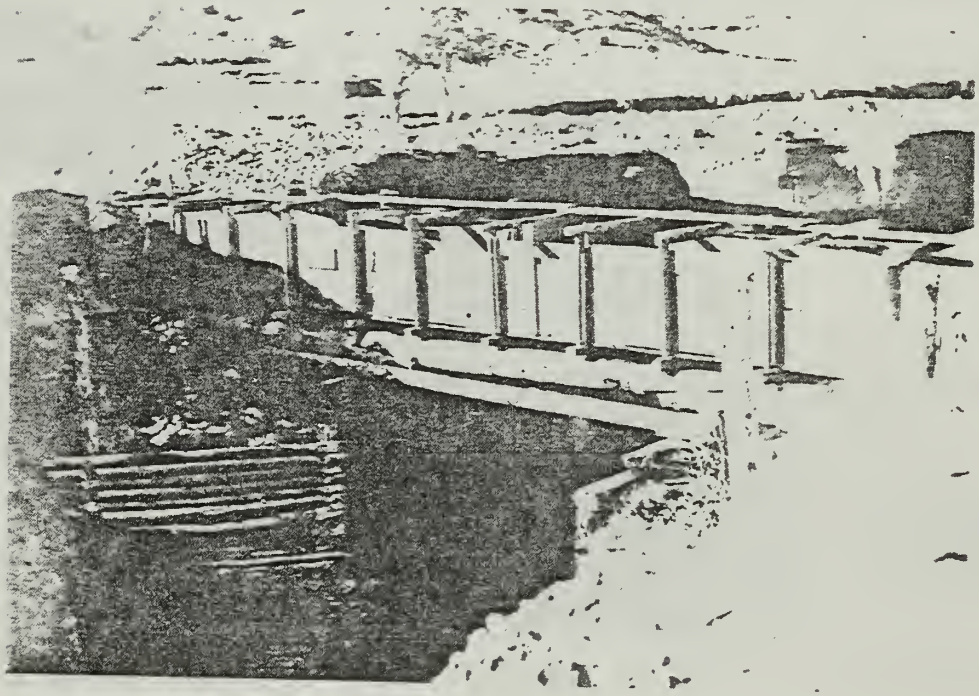

Fig. 7: Wooden Flume on the Hubbell Canal Showing Evidence of Upkeep Problems ca. 1910. (NA.)

Fig. 8: Large Flume on the Hubbell Canal, Upstream View (?) ca. 1910. (NA.)

Fig. 9: Large Flume on the Hubbell Canal, Downstream View (?) ca. 1910. (NA.)

Fig. 10: Head of the Hubbell Canal ca. 1910. (NA.)

Fig. 11: A Cut on the Hubbell Canal During a Period of Disuse ca. 1910. (NA.)

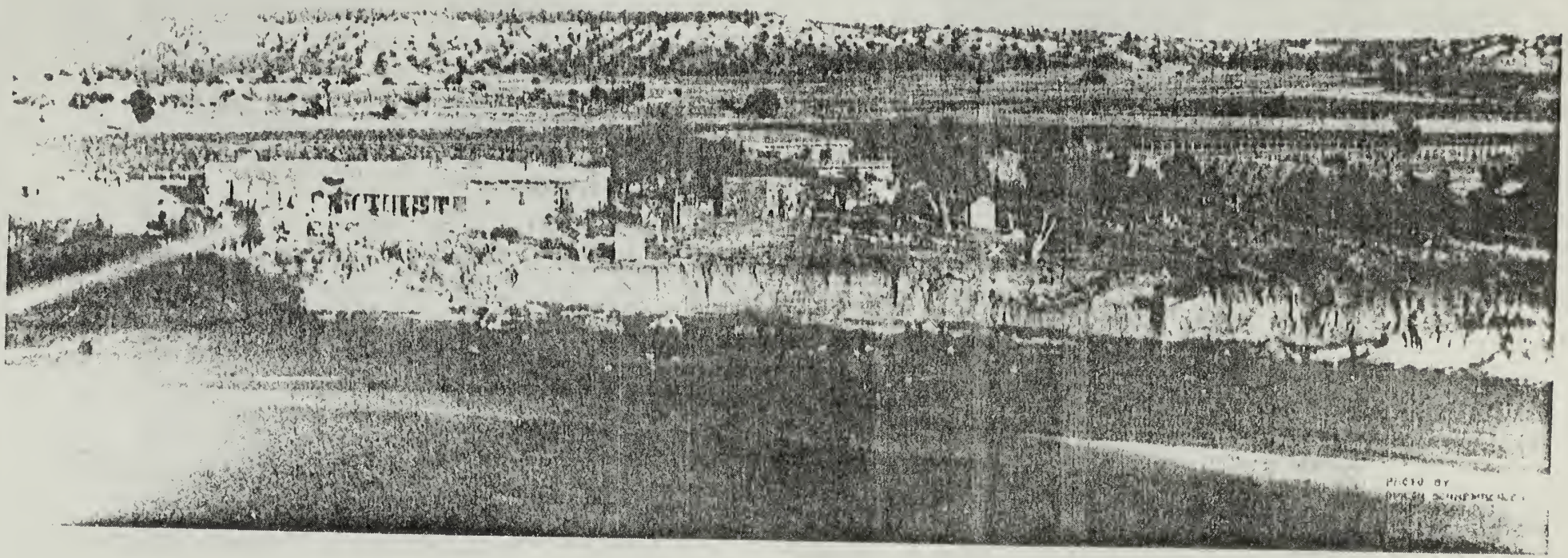

Fig. 12: The Hubbell Farm with the Holding Pond & Drainage Visible in Upper and Middle Right. (HTP #2140.)

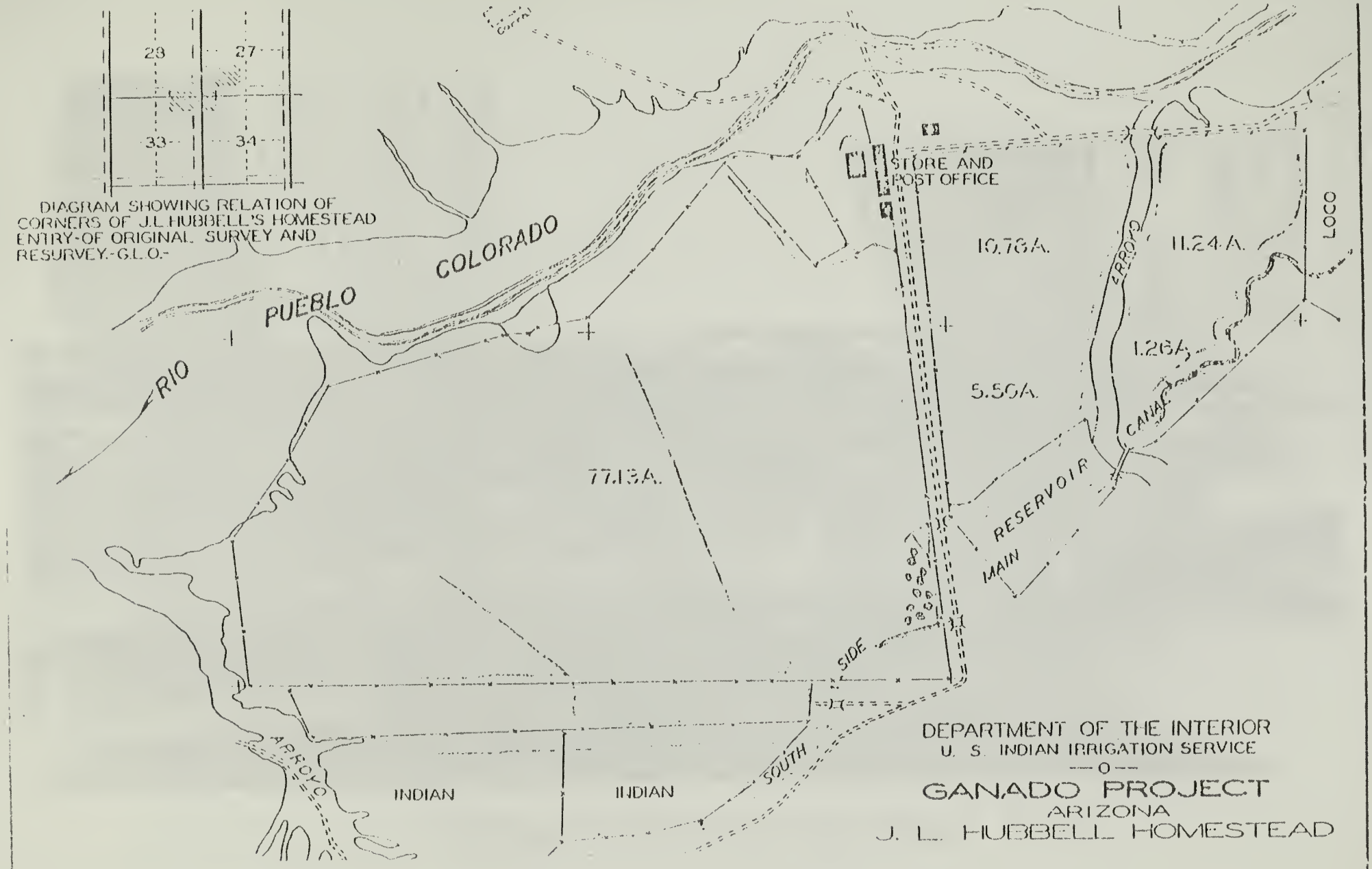

Fig. 13: Irrigation Service Map of Hubbell Fields and Laterals 1931. (BIA Office of Land Operations, Window Rock.)

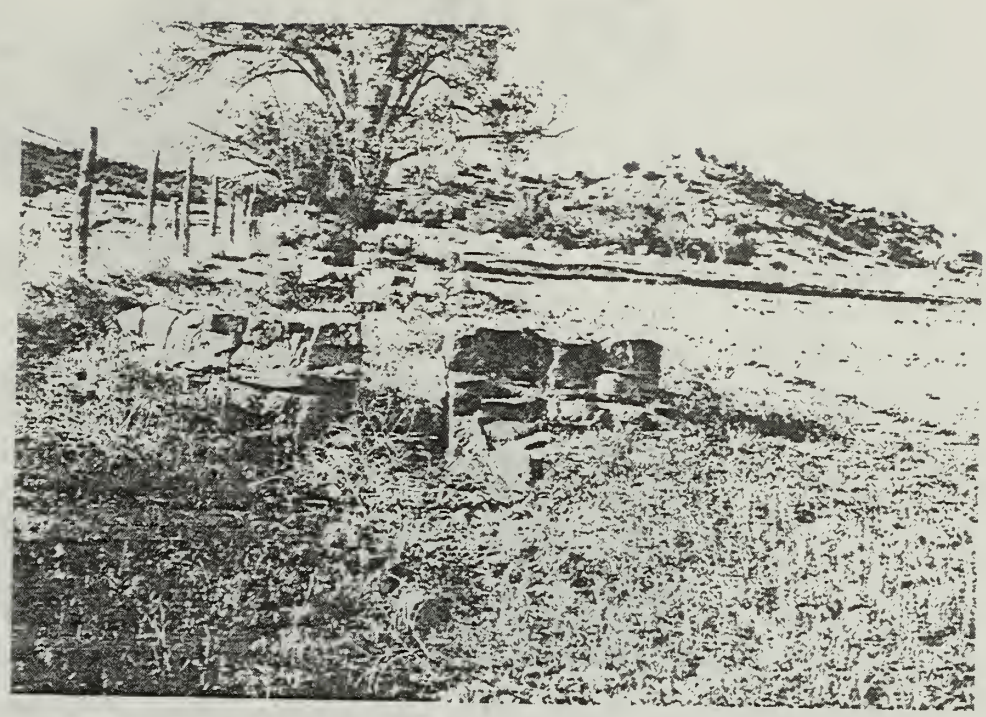

Fig. 14: View of Hubbell Headgates Along the "Lane Lateral" from Downstream. (1984.)

Fig. 15: Headgates South of Corral from Upstream. (1984.)

Fig. 16: Cottonwood Tree in Headgate on "Lane Lateral." (1984.)

Fig. 17: Cottonwood Tree in Headgate on "Trailer Court Lateral." (1984.)

The Holding Pond

Hubbell's holding reservoir covered about five acres then as it does now. Contemporary accounts referred to it as being the point where the Hubbell canal terminated. Herbert Gregory, a United States Geological Survey geologist who visited Ganado before 1909, wrote of Hubbell's "low earth dams," suggesting the storage reservoir was impounded by a much less imposing dike than now surrounds it.[8] Water flowed in at the southeast corner. Presently there is a break at the southwest corner as well, suggesting that at some time water may either have been let into the pond or taken back into the main ditch at that point.[9] A weir that was evidently in working shape when farming was discontinued in the 1960s was located about a third of the way from the northeast corner where it controlled the flow of water from the holding reservoir into a head ditch. Remains of an older outlet a few paces to the west are also evident today, as is a masonry "race" away from the weir.

While the holding pond was an essential part of Hubbell's irrigation system, it was a supplementary unit designed more to

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[8]Herbert Gregory, The Navajo Country, pp. 110-111.

[9]Much of the information relating to the farm and the layout of its irrigation system comes from the writer's field notes taken from thorough on-site examinations while in Ganado August 3 and 25, 1983 and May and June 1984; and from Indian Irrigation Service Map of Hubbell Homestead, 1931, original at BIA Office of Land Operations, Window Rock, Arizona. A copy of this most useful map is included as Figure 13.

provide flexibility and efficiency in irrigating than as a storage facility. In describing the Hubbell system in 1910, H. F. Robinson, supervising engineer of the Navajo Irrigation Service, reported that the pond held enough water to irrigate forty acres.[10] Sediment deposited by the Rio Pueblo Colorado's muddy water regularly reduced the pond's capacity. Periodically this dirt was scraped from its bottom onto the surrounding embankment, increasing the amount of water that could be impounded over the years.

Although, as it finally turned out, the pond was not on the Hubbell homestead, it was well situated in several respects. It was adjacent to the canal and at the "head" of his farm, almost all of which could be irrigated from it. It was also strategically located to catch the runoff from a drainage basin immediately above it to the south and southeast. (Figure 12.) Indeed, Hubbell may have been influenced to build his pond where he did precisely because of the runoff potential of this local drainage system. He was well acquainted with the Indian practice of building brush diversion dams to spread local freshets onto alluvial deltas where they planted corn. Furthermore, in the days before erosion cut the arroyo east of the holding pond there was no technical barrier to adapting Indian irrigation methods to his needs. (See Chapter VI.) Certainly the pond is located at a point where the drainage basin

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[10]H. F. Robinson, "Proposed Reservoir Near Ganado, Arizona," March 1910, Box 18, Irrigation District 5, BIA, RG 75, NA.

necked down before spreading onto the alluvial fan below.[11]

Early Plans for the Ganado Reservoir

In addition to the holding pond, Hubbell considered a larger reservoir at Ganado Lake. This natural depression collected water from a small drainage northwest of Ganado Valley and emptied into the Pueblo Colorado through a low pass that spread about a half-mile between a rocky intrusion on the east that formed the shoulder of the stream's arroyo and the hills on the west. This "throat" could be easily dammed and the reservoir thus created conveniently filled with water diverted from the larger drainage. Yet the lake's location out of the immediate course of the stream made it an ideal storage prospect because it avoided many of the hazards connected with frontal obstructions of larger drainages. (See Figure 13.) However, the land adjacent to the lake was occupied by Indians from early times, and Hubbell was unable to establish claim to the site.[12]

Frustrated in this and unable to carry the burden of development alone, Hubbell began a campaign to interest the government in

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[11]The holding pond is difficult to photograh but the Simeon Schewmberger photo from ca. 1905 shows it from a distance. One also gets a feeling for its relationship to the drainage above it. For a short description of "flood-water" irrigation practiced by Indians see Kirk Bryan, "Flood-Water Farming," Geographical Review, 19 (1929), pp. 444-457.

[12]H. F. Robinson, "Proposed Reservoir Near Ganado, Arizona," March 1910, Box 18, Irrigation District 5, BIA, RG 75, NA.

damming the reservoir site soon after 1903. One of his earliest supporters was special inspector Levi Chubbeck who reported favorably on Ganado Lake for a government reservoir during that year. Chubbeck also described Hubbell's project and reported that Hubbell had "proposed that" his "ditch be used for conveying the water from the proposed Government reservoir to the Indian land to be irrigated." Anticipating the arrangement that was worked out a decade later between Hubbell and the Department of the Interior, Chubbeck continued, "Hubbell offers to sell the ditch at what is cost to him, reserving the right to have it carry enough water for his use." Chubbeck also indicated that another option was for the government "to lease it at an annual rental which will equal interest on the cost of the ditch."[13]

The Irrigation Age Correspondence

Correspondence from D. H. Anderson, editor of Irrigation Age, the leading irrigation journal of the time, suggests that Hubbell considered other adaptations. A long-time subscriber to the periodical, Hubbell wrote Anderson about a pumping station. Unfortunately, only Anderson's letters have survived and the detail of Hubbell's interest can only be inferred. However, it is obvious that he investigated a pumping system and that among other things he considered the various attributes of gasoline and steam power.

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[13]Levi Chubbeck to the Secretary of the Interior, May 6, 1904, Water File, WPHTP.

Anderson wrote numerous people in the pumping trades about Hubbell's problems and did his best to get Elwood Mead, the Department of Agriculture's chief of irrigation, to visit Ganado. Most of the correspondence took place in 1903 during the very formative months of Hubbell's irrigation system. However, it extended to 1908, suggesting that pumping was still a possibility in Hubbell's mind. There is some hint that the object was to lift water out of the arroyo, but Hubbell apparently thought that ground water was available.

Anderson also described the merits of various fluming materials including lumber, galvanized iron, and concrete. Under the circumstances Anderson counseled him to use lumber. But for headgate purposes and ditch crossings on the farm, Hubbell investigated the possibilities of concrete pipe, corresponding often with a former Hopi agent named Burton, who was currently superintendent of an Indian boarding school at Grand Junction where he had observed the use of farm cast pipes. While Hubbell purchased molds and experimented with making his own pipe, there is no evidence that his correspondence with Anderson came to anything. Elwood Mead apparently never paused in his peregrinations over the West to advise or help him. Anderson himself promised to come but was far more interested in snake dances and Navajo rugs than in shouldering the problems of Hubbell's water system. The one thing that did grow out of the correspondence was a 1903 article in Irrigation Age that extolled Hubbell's hospitality and his

enlightened views but said not a word about his irrigation system.[14]

Clearing the Land and Building the Laterals

Nearly as demanding as the construction of the delivery system was the task of getting the water to the various fields on the farm. To do this Hubbell built six laterals and a head ditch connecting five of the laterals to the holding pond. (See Figure 13.) The laterals varied some in width and depth, but physical remains suggest that they were about two feet wide at the bottom and three at the top. Remains of the head ditch indicate it was of similar size, suggesting that only one stream was used at a time from the holding pond. Elsewhere, additional headgates were situated to take water directly from the canal to be used either as independent streams or together with the stream from the pond to make a good head of water.[15] An Indian Service map showed five such direct headgates in 1931. They are to be found in the same places now and still show evidence of early stone and concrete construction.[16]

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[14]The D. M. Anderson correspondence consists of five letters written in 1903, three in 1905 and two in 1908, see microfilm photocopy WPHTP; see also Rufus Eley, "The Arizona Home of J. H. Hubbell," Irrigation Age (July 1903), pp. 269-271, and Hubbell advertisement, p. 312.

[15]Friday Kinlichinee Conversation August 3, 1983.

[16]Writer's field notes, August 1983 and May-June 1984; and Indian Irrigation Service Map of Hubbell Homestead 1931, BIA Office of Land Operations, Window Rock; see Figure 13.

In all, some 110 acres were actually under the ditch system in six different fields. What may be called the first field was located on the land now occupied by the Park Service trailer court. It consisted of 13 acres and was watered by a lateral coming directly from the main canal. Second was the 16-acre piece that lies east of the Trading Post and directly north of the holding pond. It was irrigated from a lateral that ran from the holding pond down its east side and in 1931 was apparently under the same fence as the 13-acre field but was separated from it by an arroyo and with a distinct ditch system. This arrangement still exists except for fences that also divide them now. Across the lane and to the south and west of the Trading Post was an 80-acre tract of land that may be called the big field. It was fenced as a unit but divided into fields by four laterals that ran from south to north and northwest.

Examination on the ground in 1983 and 1984 indicated that at some time or other all of the big field laterals were served at least in part by the holding pond. The 1931 Indian Irrigation Service map showed that the third of these laterals (the one now marked by elm trees) was also served by the main canal and that a supplementary ditch ran some 200 yards through a neighboring farm in an effort to maintain grade and bring a stream in directly from the south to water high ground at the homestead's west side. Evidence of this arrangement is still very much apparent. How successful this upper ditch was or when it was put in is not known, but it was likely tried as an expedient after experience had shown the elm tree

lateral would not do its job otherwise.

A very early lateral not discovered in the 1983 period of fieldwork was found in the summer of 1984. It extended to the left from the elm tree ditch and was almost totally obscured under blow sand and brush but ran almost due west through areas nearly returned to a natural state. Vague evidence of terraced borders were nevertheless apparent as well as partially buried stone headgates. Aerial photographs from 1970 gave some hint of this ditch's existence and suggested that efforts were made to bring water down a long dike along the south fence.

Several gullies where ditches once ran through an undeveloped high point at the southeast corner of the big field suggested washouts and adaptations over the years as the Hubbells sought to get water around the rough south end of their farm to fields on the west side. In addition, stretches of ditch where old car parts were used for rip-rapping and something of a dike developed to provide elevation for ditches suggested that the Hubbells conducted a long but losing struggle to keep water on that distant part of the farm. Perhaps tax records that showed irrigated land varying downward from 112 acres to 60 acres over the years reflected accurately a losing battle to keep water on the high fields in the farm's southwest corner.[17]

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[17]See Apache County Tax Assessment Papers 1902 and from 1906 for each year to 1939, Box 128, HPUAL.

Terraces

The land in each of these fields was laid out during the early period of construction in checks or terraces, signs of which are plainly visible now. This is borne out by long-time employee Friday Kinlichinee's memory and by Mrs. Hubbell's impression that the terraces were part of the original watering system as well as by photographs from before 1910 showing borders in the fields south and east of the barn. In further support is the fact that in the turn-of-the-century years check irrigation was popular, particularly in the Southwest. Thus, it is possible, as Kinlichinee thinks, that Hubbell brought the idea for it from New Mexico. He could also have learned of it from the irrigation books and government publications that were in his library.[18] Bureau of Indian Service engineers with whom Hubbell was in contact may well have advocated the use of terraces and borders also. It is certain that on later BIA projects

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[18]Hubbell's library still contains Bureau of the Census and Department of Agriculture publications dealing with check irrigation as well as D. H. Anderson, The Primer of Irrigation (Chicago: D. H. Anderson Publishing Co., 1903), see especially pp. 135-237. Also see U. S., Bureau of the Census, Twelfth Census of the United States, 1900, Agriculture, Crops and Irrigation, VI, Pt. 2 (Washington, D.C.: G.P.O., 1901), pp. 810-811 from which the following is taken. "Flooding is done by the check system and wild flooding. By the latter process, the irrigator turns the water from a ditch over a level field and completely submerges it. Perfectly level fields are, however, comparatively rare, and the first step in primitive agriculture by irrigation has been to build a low ridge around two or three sides of a slightly sloping field, so that the water is held in ponds. These low banks are commonly known as levees or checks. In construction they are frequently laid out at right angles, dividing the land into a number of compartments. Water is turned from a ditch into the highest of these compartments,

land was prepared in this manner with heavy equipment. While furrow irrigation probably predominated in northern Arizona, Hubbell may also have deemed it prudent to go with checks because of his dependence on hired labor for irrigating. Bordered terraces also provided a good means of controlling the degree of fall in his land's approach to the Pueblo Colorado, which was a little too abrupt for water to follow naturally. Without the added reinforcment of terraced borders, furrows across the direct slope of the land would have gullied badly.

The check system required that a major earth-moving task be undertaken to level the twelve-to-fifteen-yard-wide terraces. Each terrace dropped appropriately from top to bottom (generally east to west) but maintained grade between borders (generally south to north) and then dropped a foot or so to the next terrace. This process was repeated on down the ditch. Once established, check irrigating was relatively simple, as water was let into each terrace and ran on it until it was completely flooded. If the borders were not unnecessarily abrupt to complicate crossing with machines, it made for smooth fields and easy management for hay and certain other crops.

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and when the ground is flooded the bank of the lower side is cut or a small sluiceway opened, and the water passed into the next field. This flooding in rectangular checks is practiced most largely by the Chinese gardeners and <u>by the Mexicans living along the Rio Grande</u>. . . . Many of the early settlers in the southwest imitated the Mexicans, or employed them as laborers, building checks upon the same general plan, but usually enclosing more ground." Italics added.

On the other hand, it was not every northern Arizona outfit that was equipped technically and with horsepower to install a terraced system in the first decade of the century. Even granting that Hubbell, and Leonard before him, had chosen the land wisely to minimize leveling, the original installation was doubtlessly a big job. Long-time Ganado resident, Arthur Hubbard, who was not old enough to remember the original leveling, recalled twelve-mule hookups on levels or floats at work as fields were replanted during his boyhood.[19]

Walking the land, especially in the fields east of the store, one observes a phenomenon in these terraces that probably led Friday Kinlichinee to remark that the terraces had been made in a very shallow "V" extending gradually from a slight trough in the middle to the elevated borders on either side. It appears that rather than being designed that way, some terraces were repeatedly plowed with one-way moldboard or disc plows that threw the soil out towards the borders, leaving the dead furrow at the exact center of the terrace. Under proper management, dead furrows were turned at the center at one plowing and at the outside the next to maintain level land. The "V" or "swaled" effect observed by Mr. Kinlichinee thus seems likely to have been the product of poor plowing.

Masonry Headgates

Perhaps the most impressive physical remains of the entire

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[19]Arthur Hubbard Conversation August 25, 1983.

system, including the government dam, are the concrete and stone headgates that turned water from the laterals into the checks. Located twelve to fifteen paces apart according to the width of the terraces, about 185 of these remain. Although they vary somewhat in size according to the lift required to get water onto the land, they were of a single design and construction. (Figures 14-15.) They were ideally suited for use with the terraces of the Hubbell fields, playing the role of drops as well as headgates, thus coordinating the rate at which ditches and terraces lost elevation in their approach to the Pueblo Colorado. In addition, masonry construction lent itself to chutes or races where water came out of the main canal on a sharp decline. One masonry race, particularly, brought the water out on a steep pitch to the head of the "Trailer Park" field, then after a flow of perhaps a rod diverted the stream to the left and on into the lateral. It was a successful solution to a difficult problem and represented a nice bit of engineering.

The headgates were apparently all built at the same time and show remarkably little repair work. They were formed in a winged construction with outriders extending a foot or so above the top of the ditch bank on an easy angle. A slot was poured into each for a board to make the actual dam. The crafting was less refined than much of the stonework throughout the West dating to the WPA and CCC days, but the headgates were well made and have obviously stood the stress of time. At one or two places wooden headgates made of one-inch boards held in place by cedar posts were added later but showed evidence of great age in 1984.

Who the mason(s) was (were) is not known. A Navajo named Des Cheenii Nez did much Hubbell Trading Post masonry work during the 1930s.[20] Stone masonry was among the skills agents reported Navajos had by 1900, and it seems altogether probable that some Navajo craftsman or craftsmen did this work.[21] It is also possible, of course, that Hispanic or Anglo workmen did all of it or part of it. Not only was the stonework generally sound but each headgate was individually designed. Some were of perhaps twice the height and bulk of others. On the west laterals, the headgates opened to both right and left to aid in watering stretches where the grading left something to be desired.

The stone headgates, like the Trading Post and barn, reflected Hubbell's flare for massive, well-built construction. They gave a stamp of quality to the entire irrigation system and made a statement about the place that doubtlessly impressed visitors. If Hubbell's intent was to project a baronial image to the likes of writer Hamlin Garland, he could scarcely have chosen a better device.[22] If his interest was to enhance the trading value of his canal works in the eyes of government engineers, the headgates would have been pursuasive indeed.[23] And if he hoped to set an example

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[20]Dorothy Hubbell Oral History 1969, WPHTP.

[21]Annual Report of the Commissioner of Indian Affairs 1905 (Washington, D.C.: G.P.O., 1905), pp. 167-171.

[22]Hamlin Garland, "Delmar of Pima," McClure's Magazine, 18 (February 1902), pp. 340-348.

[23]Among others, Levi Chubbeck, Herbert Gregory, and H. F. Robinson, Superintendent of Irrigation in the Indian Irrigation

from which Indians could learn, there was nothing jerry-built to encourage bad habits here. And finally, the modern observer who knows the moldering remains that mark other defunct irrigation systems throughout the desert West is humbled at what these stone markers say about Hubbell's character and industry in much the same way that one is humbled by the prehistoric buildings at Chaco Canyon or Hovenweep.

Timing, Costs, and Work Force

Three questions remain, one relating to the headgates and the others to Hubbell's work force and to the entire system's cost. One would like to know when the headgates were installed. The laterals, or at least the first of them, were in place by 1903. Were the masonry headgates installed at that time? Or was there a period of experimentation with dirt dams or with wooden or canvas headgates? The latter is probably the case. It would be logical to think of a time of development, a time of trouble with washing, gopher and prairie dog holes, and then, as the work of constructing the entire system tapered off, a time for the installation of the headgates in a costly but necessary attempt to make the system work.

With one or two notable exceptions, the record offers only inferences. The crops raised during these years included

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Service were acquainted with the Hubbell irrigation system during its years of construction. Particularly the latter two were instrumental in the negotiations leading to the government's take-over of Hubbell's canal and diversion works.

considerable rye, a drouth-resistant grass and grain crop that was very popular in dry-farm circles during the turn-of-the-century decades.[24] While Hubbell's cultivation of rye suggests a period of dry farming before the irrigation system was put in, it says more surely that everything was not properly watered during the first years. Other problems contributed to erratic irrigation, but earthen outlets cutting the laterals every twelve to fifteen paces would certainly have been among complicating factors.

Another possibility is that the headgates were put in at a much later date, after cheaper but efficient yellow pine gates began to rot away. No evidence was found on the headgates themselves to aid in dating. Nowhere was there a scratched date or name as there is at the diversion dam, indicating that the last time the lip on its overflow was raised was in 1959 and that one H. Reid did the work. Yet a few bits of evidence bear on the question of when the headgates were built. Mrs. Hubbell remembers with certainty that the headgates were there in 1920, and to her eyes they appeared to have had long use. Friday Kinlichinee is also certain that their

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[24]Before the development of drouth resistant strains of wheat, rye was often planted in water-short areas. A typical situation developed in Utah's west deserts where people came after 1909, hoping to grow wheat. A million-and-a-quarter acres of land were "broken and grain planted, but about the only crop that ever grew was rye and that was usually a failure." Howard Maughan, "Continuation of Study of the Extent of Desirable Major Land-Use Adjustments and Areas Suitable for Settlement," (Salt Lake City, Utah Office Resettlement Administration, 1936) p. 7, Utah State University Library.

installation dates to the same period as the rest of the system.[25]

On the lateral running north along the lane toward and around the corral, two large cottonwood trees grew in 1984, one out of the middle of headgate number four and one in the middle of the ditch between headgates thirty-three and thirty-four.[26] They were mature trees and conveyed a sense that it has been a long time indeed since the ditch was properly maintained. (Figures 16-17.) Apple trees, all but a few of which are dead, marked the course of the head ditch and the first and second laterals in the big field. They were almost certainly planted in 1905. Chinese elms marked the course of the third lateral in the big field. Stunted and prematurely aged by drouth, they hinted that either the third lateral was not used until the 1920s and the 1930s when the Chinese elm was much in vogue in northern Arizona, or more likely they signified a time when irrigating was renewed in the elm tree lateral after a period of disuse of sufficient length to kill the fruit trees.

There is, however, one matter of record that supports the belief that the headgates were installed in 1908 and 1909. In September of 1908 a bill of lading from Sam Day was entered in a Hubbell account book, indicating that Day had loaded out three wagons for Hubbell

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[25]Dorothy Hubbell Oral History 1979, p. 15; and Friday Kinlichinee Conversation August 3, 1983.

[26]Writer's Field Notes, August 1983 and May-June 1984.

with cement.[27] Although before many years Hubbell was hauling far larger consignments of sacked cement to government projects at Ganado and elsewhere, there is no evidence that any such project was underway during the fall of 1908. Nor was evidence found that Hubbell resold or delivered the cement elsewhere. In other respects, the timing seems right, as the foregoing discussion suggests. Consequently, the stone headgates may indeed date to the fall and winter of 1908-1909.

Moving to the question of work force, it is apparent that the Hubbells always employed Indians. This was especially true with reference to development work on the farm and the irrigation system. Evidence of John Lorenzo's use of Indian laborers may be seen in the plan to employ Navajos in a contract proposal he submitted in 1907 to construct the large reservoir he and the Bureau of Indian Affairs were then considering.[28] In view of his campaign to have the Bureau take over the project, employing Indians not only made economic sense, it was politically necessary. No time sheets or other direct evidence exists establishing how many men worked for him during this development period, but later references to regular farm crews of eight or nine men and peak crews during

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[27]S. E. Day to H. L. Hubbell, August 15, 1908, Day Folder, Box 23, HPUAL.

[28]Typical of oral histories and other records that bear this out were the memories of Chester Hubbard of Ft. Defiance, who recalled riding with his older brother Arthur in the 1930s as the latter hauled dirt to raise the dam. Chester Hubbard Conversation August 5, 1983; and Arthur Hubbard Conversation August 25, 1983.

haying and baling of "20 or 30 Indians" suggest that Hubbell may have mobilized a formidable force indeed as he put in his irrigation system and cleared his land.[29] Clearly workers came from many parts of the reservation to work on his project and the government dam that followed.

Two questions bear on this matter. How much were the men paid and how did Hubbell afford it? Labor generally was cheap during this era. This was particularly true as it related to farming and livestock, with a dollar a day being a common wage and managerial pay going as high as $60 to $75 per month. Indians were doubtlessly paid at the bottom of the wage scale. The Hyde Expedition, for example, paid 50¢ per day at Chaco Canyon.[30] Navajos who worked for the railroad received from $1 to $1.25 per day, and reference is occasionally made to 75¢ as a going reservation wage.[31] As late as 1940 the Hubbell Trading Post paid $1.50 for Navajo farm labor

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[29]About haying and plowing crews, Dorothy Hubbell recalled: "When we could work our fields with plows we had seasonal employment for 20 or 30 Indians." Oral History 1969, p. 59, WPHTP.

[30]David M. Brugge, A History of the Chaco Navajos, Reports of the Chaco Center 4 (Albuquerque: National Park Service, 1980), pp. 155 and 159 indicates that Chaco Canyon archaeological digs paid $13 per month for Indian labor in the early 1890s and 50 cents per day and board in the late 1890s

[31]Between 1899 and 1905 agents reported that from 300 to 400 Navajos worked for the Santa Fe Railroad each year. The lowest rate given was 1899 when it was reported they received about $21 per month. In 1905 they were said to receive $2 per day. Several times it was reported they were paid $1.10 or $1.25. Work in Colorado's beet fields was erratic and brought only $1 per day. See Report of Commissioner 1899, pp. 156-157; Report of Commissioner 1900, p. 191; Report of Commissioner 1901, pp. 100-102; Report of Commissioner 1903, p. 126; and Report of Commissioner 1905, p. 169.

and twice that for a man and a team and three times as much if he brought his own mowing machine. At the same time Little Colorado ditch companies a few miles to the south allowed $2 per day "ditch credit" for beginning teen-age "shovel hands" and from $2.70 to $3.00 for more mature shovel workers.[32] Liberal though Hubbell was said to be in his Indian relations, he could not have paid more than $1 per day during the construction period and probably paid less, possibly as little as the Hyde Expedition. In his 1907 proposal to build the dam for the government, Hubbell based his cost estimate on what was apparently an acceptable wage but proposed an overlong working day. When the government objected to the long hours, he responded with a 15 percent increase on the total cost of construction, suggesting that he may have planned a nine-or ten-hour day as contrasted to the eight-hour day advocated by the BIA.[33]

Low wage scale notwithstanding, the large work force involved was costly. Hubbell expedited this large expenditure by working wages into his business, enlarging sales and turning a profit even as he paid for work done on the ditch. Any question that this was part of the formula is dispelled by the fact that many years after

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[32]Time sheets, Book 1, Box 403, HPUAL. The writer recalls vividly the first days he worked ditch at Snowflake about 1940 and his disappointment when he was paid less than older workers.

[33]Robinson reported that "On February 16, 1907, Mr. Hubbell" proposed to "construct" the dam at the following rates "8 foot dam, $3987.28; 14 foot dam, $9600.53; and 20 foot dam, $19,366.78." In 1910, Robinson wrote that Hubbell still wanted to do the work but had said "If he should be bound down to work the indians but 8 hours a day then his price should be increased 15% as he based his offer on a longer day's work." See "Proposed Reservoir Near Ganado, Arizona," March 1910, Box 18, Irrigation District 5, BIA, RG 75, NA.

he had abandoned his original trading post near the future dam site Hubbell opened a new store there in 1913 to take advantage of the population that construction and operation of the reservoir attracted. Similarly, the store at the dam was opened again in the early 1930s as preparations were made to enter another period of construction. On both occasions hay and grain were sold to feed Indian teams as well as food and clothing for the workers themselves. Not surprisingly, the store absorbed most of what the Navajos were paid. Of course, the dam store was set up to exploit crews working on the government project, but employees on Hubbell's own project were caught even more closely in the web of credit and tin money that prevailed on the reservation generally.[34]

As anthropologist William Adams explained about Navajo traders of the mid-twentieth century in his Shonto, Hubbell maximized long-term profits by exploiting all the elements of the situation.[35] In this case the system was in effect a form of

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[34]As part of his deal with the Department of the Interior, Hubbell agreed to reopen the store at the dam. His son Roman was directed to apply for a license. Company books, as well as the memory of local people indicate that the store at the dam functioned much of the time well into the 1930s. See J. L. Hubbell to Roman Hubbell, April 6, 1912, WPHTP. David Hubbard, who farmed nearby, is said to have run the dam store for a time in the 1920s. Arthur Hubbard Conversation August 25, 1983. A daughter of David Hubbard, Katherine Quimaiyousie Oral History 1973, WPHTP, makes it very clear that the dam store opened and closed in response to construction work on the dam and that her father was there in the early to mid-1930s.

[35]William Y. Adams, Shonto: A Study of the Role of the Trader in a Modern Navaho Community, Bulletin of Bureau of American Ethnology 188 (Washington, D.C.: G.P.O., 1963).

vassalage. Ably applied it enabled an individual to establish an irrigation system comparable in scope to the cooperative systems of the Mormons at Tuba City and Bluff and superior to projects on the Navajo reservation, with the possible exception of one or two on the San Juan River where the potential was far greater. As pointed out in Chapter X, Hubbell, with his Hispanic connections, came by the paternalistic relationship that existed between himself and "his Indians" naturally. With a good deal of altruism and goodwill, he exploited his Indian neighbors to complete a very impressive project.[36]

Record of how Navajos viewed their work on the Hubbell project is limited in the extreme. Nevertheless, oral histories taken by David M. Brugge and Roberta Tso in the early 1970s do yield glimpses of individual contributions to the irrigation system and field development. Almost to a person, the Indian respondents that mentioned Hubbells' farm, attributed major credit to John Lorenzo for developing the irrigation system. Several also credited him with teaching the Navajos how to farm.

Among those who recognized his role in training Navajo farmers were T'Ahasbaa' Slivers and Kee Guy. Slivers, who remembered hungry

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[36]Frank McNitt noted a "fortress"-like quality in Hubbell's buildings and attributed his affinity for building "on a massive scale" to "something in his Spanish heritage," The Indian Traders (Norman: University of Oklahoma, 1962), pp. 216-217. This seems likely enough, but even more important was his ability to play the role of the "Hidalgo" and to play it well. All traders tended to develop a community around them. Hubbell once asked Sam Day to bring "your Indians," evidently to help on some aspect of irrigation development. Hubbell, too, was able to manipulate "his Indians" to the benefit of his project. Day Folder, Box 23, HPUAL.

times, was of the impression that Hubbell had accepted certain obligations when he took up his homestead on the reservation. As she explained, even "after he was given the land for the trading post he continued to teach the Navajos how to farm and prepare food to eat out of corn." Kee Guy was impressed that Hubbell could "cut hay three times" in the summer, "so the hay for winter was abundant." He continued: "This is how the Navajos learned to farm more modern than before they walk to Ft. Sumner."

The memories of others give framed views of the Indian role in land and water development that are almost like good photography in how they reveal vivid bits of the past. For example at the time of YaNaBah Winker's earliest memory "people were living . . . even where the dam is . . . taking care of their farms. . . . Now it is nothing but water." She also recalled that both the ditch and dam construction were "done according to old man Hubbell," and that several false starts were made on the ditch with construction on one aborted effort going "as far as the Mission Site" before they "gave up."

Yazzie Holms worked for Hubbell "in the fields on his farm, when the first irrigation started up by the dam . . . with my horses."Hu Yellowhair worked "for Don Lorenzo on the fields and dam" and "all the way up [down?] the valley from the dam filling up the arroyos." According to him, "John Curley and Tom Morgan [two prominent Ganado Navajos] and Nakai Sani [Old Mexican, as the Indians called John Lorenzo] worked to get [the] irrigation system at Ganado." Asdzaa Dloo Holoni remembered her husband had been "paid with octagonal

tin" which Hubbell used "here alot." In Holoni's mind, the connection between tin and land was clear. Indeed, "the land that he had developed into farmland was made for this tin money."

Lacheenie Blacksheep, who also remembered the tin money, worked on erosion control "in the upper valley" where "there was a beautiful farming land." Later while Blacksheep was "the leader of the place . . . the wash kind of detoured and it started to erode." At that time "the people" hauled "the red, green, gray and big willows" from the mountains and planted them. "It helped control the eroded farm land. The farm land survived." Blacksheep was not among those who worked on Hubbell's project but did help build the dam. "The water came from this other place we guided it to the new dam and eventually it filled. We blocked it with sand and thats how we built this dam." Sam Taliman credited Hubbell with building the big dam and helped himself to put in the holding pond dike. He cut and hauled timber to build bridges, the first of which "washed away when a tornado came at Cross Canyon." He also worked in Hubbell's fields along with other Navajos bossed by "Mexican foremen." Tailiman concluded that "land clearing, earth moving and leveling the cornfields . . . was accomplished by horses." Jim James, who like many others was "recruited" to "work on the dam at Ganado Lake" by "Nakai Sani", got "used to the work right away because all my young life I was working on the farm." Among others, James worked with "John Abe, Ben Wilson and Pete Ned." Tully Lincoln, who later worked on the Hubbell farm for many years, claimed that he and two others had leveled Hubbell's land with wheeled carts and other

"things" drawn "by four horses." Ned Slivers "worked with Mexicans on farms, making fences and corn and wheat fields." As a young man Charlie Ganado "worked for Nakai Sani at the Ganado Lake dam and the irrigation ditches from the lake and to the fields at Hubbells." Don Lorenzo's friend Manyhorses was a foreman on the dam project, as were his brothers "Silver Make and Tyoni."

An account that puts water development in historical perspective was Ben Wilson's. According to his account Hubbell became friends with Navajo leaders and with them and the government planned to "build the Ganado Lake dam." Wilson "was about 13 years old when people from Chinle, Black Mountain and Ganado started working on the dam. There were alot of teams of horses with horse drawn bucket shovels digging and spreading on the dikes. In addition wagons hauled rocks and timber from Fluted Rock." According to Wilson "they worked continuously for 2 1/2 years" on the dam. Thereafter "these leaders and Nakai Sani" initiated work on the "diversion dam." As before "teams of horses and hands were used." Wilson concluded in a statement that suggests just how long it took to stablize the Ganado irrigation works, that it took "approximately . . . 20 years time" to complete "the dam and the irrigation ditches."

Joe Tippecanoe, one of the Hubbells' most loved workers, moved to Ganado during the farm's development and apparently worked on it until John Lorenzo more or less dragooned him into clerking in the Trading Post. As Tippecanoe recalled, he and his brother started with the Hubbells "When they were first putting up the fence posts

around Naakai Sani's farm . . . by cutting down the fence poles from juniper trees, also the never small pine trees to go around on top of the fence and hauling them out. . . . Then when they were making the irrigation ditch I also worked there." Although Tippecanoe thought Spanish-Americans did the first planting, including the fruit trees, he credited four Navajos, bossed by Red Point, whose name is associated with the locality adjacent to the Hubbell homestead on the south and southwest, with clearing and leveling "this place [which] was like a forest at that time . . . by removing the trees, by the roots clearing off the land for farming." Red Point and the others "were the ones who pulled out these big trees. . . . They all lived right, here under the trees, but in the winter time, they moved back into the woods to their winter homes."[37]

Cost of the Hubbell Irrigation Works

There remains the question of cost. Because it was worked into his general business, there is probably no way to determine the real cost of Hubbell's irrigating system, but some observations may be made that will give a sense of what he paid. At different times and

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[37]All of the oral histories cited were taken by David M. Brugge and Roberta Tso in the early 1970s. Most of the respondents were of advanced ages and many are no longer living. Where available, pages from which quotes are taken will be listed in order of appearance in the text. Slivers, n. p.; Kee Guy, n. p.; Winker p. 8; Holms [apparently spelled Holems and Holmes in some documents] p. 8; Yellowhair, n. p.; Holoni p. 8; Blacksheep pp. 54-56; Taliman pp. 1-2; James pp. 2-3; Lincoln p. 22; Ned Slivers p. 1; Ganado pp. 1-4; Wilson p. 1; and Tippecanoe pp. 4, 60-61; Oral Histories, WPHTP.

for different purposes John Lorenzo estimated costs and value variously. The depositions made in support of his homestead application in 1908 estimated that the ditch cost $15,000 and land preparation $10,000, or a total of $25,000.[38] Much later Dorothy Hubbell also presented these figures as her understanding of what the irrigation improvements had cost.[39] Similar figures were also used in dickering with the Department of the Interior as Hubbell exchanged his canal for a water right in the Indian Service system. In each case there was an obvious advantage to keeping the figure high.

Tax records for the first decades of the century, on the other hand, listed farm improvements at or below $4,000.[40] Any inclination to minimize tax filings notwithstanding, Hubbell listed his farm at a full 160 acres of irrigated land in pre-1908 tax forms. This figure was dropped progressively thereafter until he showed only 60 acres as irrigated for many years after 1915. Two possibilities suggest themselves here. The first would be that weather conditions and other things considered, no more than an average of 60 acres could be irrigated. Consequently, that figure represented an accurate assessment. Second is the possibility that

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[38]Paul Brizzard Deposition Before the Register, Box 329, HPUAL.

[39]Dorothy S. Hubbell Oral History 1969. This is found only in David Brugge's hand-written notes of the interview. The same information less the $25,000 figure is found in the typescript of the interview, p. 36, WPHTP.

[40]See J. L. Hubbell Tax Assessment Papers, 1902 and from 1906 for each year to 1939, Box 128, HPUAL.

there was a strategic advantage to the homestead process in listing the full 160 acres as irrigated ground in the years prior to 1908.[41]

Hubbell also left a most revealing cost summary of his irrigating works. In 1902 he opened a ledger book in which over the next five years he entered general inventories and in other ways tried to summarize his business.[42] The first entry was undated but by other entries would seem to be January 1, 1902. Here a "Property Account Ganado" was entered at $12,000, but no differentiation was made as to buildings, stock, land, or improvements. On December 31 of the same year, his inventory entry included "Ganado and Cornfield Improvements and 160 acres of Land, $15,400." This figure included an expenditure of at least $3,400 on farm and water improvements during the year but may have represented an even larger outlay because he now entered a separate account of stock and sundries. By January 1, 1905, his inventory summary read in part:

Ganado Buildings	$13,400.00
Farm Land & Improvements, 160 acres	6,000.00
Ditch Account	8,990.90

All other items brought his total to $85,545.78. Of importance here is that the ditch account had come into being since the last entry two years before. The total real property had risen from $15,400 to

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[41]See Tax Assessment Papers 1915 and thereafter; also Figure 13.

[42]Ganado Ledger Book 1902-1907, pp. 1, 79, 225, and 346, Box 346, HPUAL.

nearly twice that amount, or $28,390. The following year's summary on January 1, 1906, was entered differently but is of equal interest:

Farm Account	$10,893.53
Ditch Account	8,990.90
Buildings and Improvements at Ganado	15,260.00

With other items, these brought his total worth to $106,019.50. Cost and value as they related to Hubbell's irrigation system and land preparation now came to more than $15,000. Although not the $25,000 of some estimates, it was nevertheless a substantial amount of money.

Conclusion

In retrospect, there can be no doubt that the years of farm and irrigation development were an important time at the Hubbell homestead. John Lorenzo's family was maturing. Business was expanding farther west into Navajo country, and Hubbell's Navajo rug sales had assumed national proportions. For Americans generally it was a time of discovering the Navajo Reservation. The Hubbell irrigation system consisted of diversion dam, canal, holding pond, laterals, checks and terraces, stone headgates and leveled land. It was in place and working soon after 1903. A large Indian work force was used to install it, contributing to the growth of Ganado as an important Navajo center. Irrigation development cost at least $15,000 and by some accounts as much as $25,000. The Indian Irrigation Service was well aware of Hubbell's efforts to develop water. Although generally supportive of what he was doing, some of its enginneers advocated a government project that would incorporate

his system at least as early as 1903. Hubbell promoted this arrangement vigorously and to hurry things along made offers to undertake the construction of a government dam to enlarge Ganado Lake as a reservoir himself. John Lorenzo and Roman were farmers in practice as well as interest; the family was a farm family as well as traders. John Lorenzo's and Roman's role was one of management or overseership, but there can be no doubt of their personal interest in the soil and their involvement in working it and irrigating it. Problems were numerous, but crops were encouraging, and for people with an affinity for the soil satisfactions were great. With its promise of "benefit for the Indians" and the interest it prompted on the part of government officials, it was an important agricultural enterprise for the Navajo Reservation.

CHAPTER V:

THE GANADO IRRIGATION PROJECT

As John Lorenzo Hubbell anticipated there in Phoenix when he learned Congress had appropriated money for the Ganado Reservoir, the circumstances under which his homestead and farm operated changed dramatically in 1912. During the decade before, Hubbell was the prime mover in water development. In those years he struggled to claim land and water, build a private water system and interest the government in irrigation. In maneuvering the Ganado issue into and through Congress, he in effect created a partnership in which he played a decreasing role. After 1912 irrigation came increasingly under the auscpices of the Indian Irrigation Service, an arm of the Bureau of Indian Affairs which was assuming responsibility for water development throughout the reservations of the West. To begin with, Hubbell's role in the process of this shift was that of catalyst, his efforts generating interest and action on the part of the federal government. As the elements of the project came together and gathered momentum, he continued to be a deeply interested but unofficial supporter whose influence was often crucial.

In 1912 even Hubbell did not realize the problems confronting his powerful new ally. Indeed, the Ganado project seemed a fairly straightforward proposition; build the reservoir, connect it to

Hubbell's canal, improve a few flumes, develop Indian farms, turn the water in and enjoy the fruits of the labor. But as it turned out, in taking over John Lorenzo's water system the Irrigation Service committed itself to an unremitting battle that drew on for four decades, ending only after 1954 in a period of slow collapse as funds and energy necessary to continue the fight were shifted elsewhere and as Indian policy and national interests changed.

In the years after 1912 the role of the Indian Irrigation Service was central. It planned and built the Ganado dam, developed canals and ditches, implemented Indian settlement on the land, and for decades struggled to keep water in the system. Under other circumstances its role might have been termed heroic. By contrast even the dramatic contest between Mormons and the Little Colorado paled. Nevertheless, the experience of Indian Service officials lacked the hardship and pathos suffered by Mormon families.[1] On the other hand, pathos and hardship were found in abundance in the lives of the Ganado Navajos as well as in the price paid by the

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[1]On Mormon irrigation see D. K. Udall and Pearl Udall Nelson, Arizona Pioneer Mormon, David K. Udall, History and His Family 1851-1938 (Tucson: Arizona Silhouettes, 1959), pp. 161-186; and D. K. Udall to J. L. Hubbell, April 7, 1904, October 4, 1908, and April 12, 1912, Udall Folder, Box 81, HPUAL which detail irrigation and other problems at St. Johns. Also C. L. Wilhelm and M. R. Wilhelm, A History of the St. Johns Arizona Stake (Orem, Utah: Historical Publications, 1982), pp. 60-71; G. S. Tanner, and J. M. Richards, Colonization on the Little Colorado: The Joseph City Region (Flagstaff: Northland Press, 1977), pp.89-98; and C. S. Peterson, Take Up Your Mission: Mormon Colonizing Along the Little Colorado River 1870-1900 (Tucson: University of Arizona Press, 1973), pp. 176-191.

Hubbells. Yet until the mid-1950s the Irrigation Service and its successors were central to a drama of hope, applied science, technological achievement, mismanagement, frustration and desert environment at the Ganado Reservoir. The project became a vital factor in the farming experience of the Hubbell family and its story a necessary part of this study.

Hubbell's Connections and the Indian Irrigation Service

During the first decade of the new century Hubbell's growing political influence contributed to a course of development of which the Ganado Project was part. At no time during John Lorenzo's long career were his connections as widespread and well placed as at this time. He actively cultivated people both in and out of government, seeking to advance his interests at Ganado as he had done in the years just past. Among the most prominent of the Hubbell friends was Theodore Roosevelt, who some think helped get the Ganado Irrigation Project through Washington's red tape. This tradition is strong among Ganado area Navajos. Howard Gorman, one-time tribal councilman, for example, recalled that Hubbell took Roosevelt to see the reservoir site. Recognizing its merit, Roosevelt worked for it in Washington. There is no question that from 1911 to 1915 Hubbell corresponded frequently with members of the Roosevelt family including the former president. He also helped stage a visit to northern Arizona for Roosevelt in 1913. It is less clear that Teddy himself ever visited Ganado, and by the time of Roosevelt's 1913 reservation tour the Ganado project was well underway, raising real

question about his role as an advocate.[2]

Moreover, it was during the years of the William Howard Taft administration (1909 to 1913) that the primary lobbying for the Ganado Project was done. At that time Hubbell had several close friends in the Bureau of Indian Affairs. Prominent among them were Commissioner Francis Leupp, who had been to Ganado, and especially Robert G. Valentine, Leupp's secretary and sometimes acting commissioner, whom Hubbell contacted frequently after 1906. In addition Valentine visited Hubbell and the reservoir site on two different occasions and wrote confidentially about many issues including President Taft and Republican Party politics as well as John Lorenzo's 1914 senatorial candidacy. After Woodrow Wilson became president, Hubbell's contact in the BIA was often E. B. Meritt, assistant commissioner. During this period Hubbell also continued to work with representatives of the Indian Rights Association. F. H. Abbott, assistant to the Commissioner of Indian Affairs in the Taft years, regarded Hubbell's opinion highly and was an important contact when he later became Secretary of the Board of Indian Commissioners. Certainly Hubbell would have met with some of these people during his trips to Washington, especially with Francis Leupp and Robert Valentine.

Closer to home, Hubbell maintained close relationships with the superintendents of the Navajo agencies. Especially important in

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[2]Roosevelt Folder, WPHTP; Howard Gorman Conversation August 1983; also Chester Hubbard Conversation August 1983.

terms of supporting the Ganado Project were Reuben Perry, who watched Hubbell put his own diversion system together in the years after 1902, and Peter Paquette, who was himself determined to farm at Ft. Defiance and a strong advocate of irrigation on the reservation generally.[3]

With his wide connections, Hubbell was a valued ally to the Indian Irrigation Service as it was established on the Navajo Reservation in the years after 1905. Active in the Irrigation Service's development were a group of professional engineers whose sound training and remarkable dedication replaced the fumbling efforts of inexperienced but optimistic agents. A number of these worked closely with Hubbell as the Ganado Project progressed.

Among the earliest professionals was Samuel Shoemaker. In two different assignments Shoemaker spent more than a half-decade developing several small Navajo projects on the San Juan River and at Wheatfields, Red Lake and Ft. Defiance. He also wrote thoughtful reports that are among the first attempts to analyze water problems on the Navajo Reservation scientifically and fought for better utilization of irrigation development appropriations in Wyoming and

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[3]For samples of correspondence suggesting how Hubbell stood with officials of the BIA during these years, see Reuben Perry to J. L. Hubbell, October 2 and 3, 1906; R. G. Valentine to J. L. Hubbell, September 10, 1907, November 22, 1907, and January 2, 1908; W. H. Harrison to J. L. Hubbell March 15 and 25, 1907, May 17, and 23, 1907, and February 4 and 17, 1908, all in Indians 1906-1908 Folder, Box 43, HPUAL; F. H. Abbott to J. L. Hubbell, January 6, 1910, Indians 1910 Folder, Box 43, HPUAL; and F. H. Abbott to J. L. Hubbell, November 15, 1913, Indians 1912-1913 Folder, Box 44, HPUAL.

elsewhere as well as in Navajo country.[4]

Following Shoemaker was George Butler, who after several years experience responded to a directive from the Commissioner of Indian Affairs with a long and forward-looking plan for irrigation and stock water development. In it he detailed his own activities for the years just past and laid out a master plan which guided policy for the next quarter-of-a-century. Fundamental in his thinking were the somewhat contradictory concepts that Navajos should be assimilated into American society and that this end would be served by using potential water sources to dictate where and how Indians lived. In addition Butler thought that manipulation of water would be especially useful in restricting Navajos to the reservation. Small projects, a spring here, a well there, and irrigation for a few families, lent themselves to both the natural realities and Butler's strategy. Installation and maintenance, he wrote, were the responsibility of the Indian Service and could be handled only by substantial outlays of money and a large practical staff of devoted white employees. Better than anyone associated with the Navajo administration before him, he saw the relationship between technology and resource development.[5]

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[4]S. E. Shoemaker, "Report to the Commissioner of Indian Affairs," March 10, 1900, Van Valkenburgh Papers, AHS.

[5]George Butler, "Report to Commissioner of Indian Affairs," June 24, 1906, Water Resources Folder, Box 73; and Butler, "Recommendations on Water Development," June 24, 1906, Navajo 1910 Folder, Box 71, Irrigation District 5, BIA, RG 75, NA.

Equally astute and far better known was John Lorenzo Hubbell's good friend Herbert Gregory, who studied the Navajo country intensively over a period of years. In addition to several important papers published by the United States Geological Survey, Gregory wrote a lengthy report for the Indian Service in 1910 which showed his complete command of water conditions on the Navajo Reservation. Couched in layman's language, this document was a handbook for agency personnel and particularly for a class of employee Gregory called "government farmers." As he conceived of them, government farmers would not be scientifically trained but practical men of the soil with large intelligence and deep devotion to the Indian people.

Like Butler, Gregory advocated small projects which, if narrowly defined, may well have excluded the Ganado Reservoir. On the other hand, he regarded Hubbell to be the very prototype of the individual who would serve the Indian well. Indeed Gregory thought Hubbell was the "the greatest single influence" for good on the reservation. By contrast, missionaries were too much concerned with making the Navajos over in the image of their own ideas. The quality of agency people had come a long way since Gregory first visited the reservation but still needed further improvement. In addition to his esteem for Hubbell, Gregory thought that the Ganado Reservoir site, tucked away from the Rio Pueblo Colorado's floods as it was, was a pattern to be emulated, and Hubbell's well, near the junction of the stream and a tributary, a type that others should follow. Withal, Gregory's work undertook to put scientific study, applied

technology, and administrative development to work for the Navajos.[6]

But by all odds the official most closely connected with the Hubbells was the untiring H. F. Robinson. Robinson was in Navajo country by 1904 and assumed official responsibility for water development at Ganado in 1907 when he replaced George Butler as supervising engineer for District 5 of the Indian Irrigation Service. Indeed, it may be said that he became Hubbell's official counterpart as far as the Ganado system went. At both the Washington and the field levels, other officials, including engineers and project managers, came and went, but Robinson was a constant figure overseeing the Ganado Project until his retirement nearly twenty-five years later at about the time John Lorenzo died.

The two men were an effective team. Hubbell had connections and political influence and a profound interest in the project. Robinson was a devoted professional whose career and personal inclinations were closely tied to the project's success. He was on the project site scores of times. He looked to Hubbell for transportation, labor recruitment and a point of influence. When additional funds were needed for construction or in case of the frequent natural disasters, they acted together.

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[6]Herbert E. Gregory, The Navajo Country, United States Geological Survey, Water-Supply Paper 380 (Washington, D.C.: G.P.O., 1916), pp. 110-111; Geology of the Navajo Country: A Reconnaissance of Parts of Arizona, New Mexico, and Utah, United States Geological Survey, Professional Paper 93 (Washington, D.C.: 1917); and "Water Resources of the Navajo-Moki Reseration," June 1910, Water Resources Folder, Box 73, Irrigation District 5, BIA, RG 75, NA.

But in a real way Hubbell handed primary responsibility for Ganado's irrigation system to Robinson in 1912. It could hardly have been in better hands from Hubbell's point of view. For years it was a premier if indeed not the most important Navajo project in Arizona. Taking all things together including the Indian response, it came as near working as any Navajo project in the state. That this was so was in large measure the result of Robinson's untiring effort to make it work.[7]

Plans For Construction

However, the foundation for construction was laid in the years just before Robinson became supervising engineer. Hubbell had initiated work on his own system in 1902 immediately after it became apparent he would be able to homestead his claim. Neighbor Sam Day surveyed his project. Water was diverted from the Pueblo Colorado a few hundred yards below the rock reef where the stream entered the valley and brought to his property two-and-a-half miles beyond. For several years the system operated well, but changes in the character of the Pueblo Colorado and other washes made it extremely difficult to keep water in the ditch. At least as early as 1903 there was discussion of building a government reservoir and buying Hubbell's

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[7]One of the earliest of the thousands of letters Robinson wrote about the Ganado Project was addressed to John Lorenzo on July 24, 1908, Indians 1906-1908 Folder, Box 43, HPUAL. In it he told of his appointment and recalled that he had been an overnight guest in 1904. Thereafter he and many of his employees and their animals were regular beneficiaries of Don Lorenzo's famed hospitality.

ditch and water right. As time drew on and the problems of maintaining the diversion dam took on larger proportions, Hubbell volunteered to build the reservoir himself. This was considered seriously, but in 1907 Robinson entered the scene and discussion moved progressively toward government construction of the dam. In March of 1909 Robinson issued what may be considered the initial report advocating the project along with preliminary drawings.[8]

Backup reports and engineering data were needed, and survey crews were assigned to Ganado during the summer of 1910. Affidavits relative to Hubbells' right to land and water were solicited along with statements from old-timers about the success of his irrigation system and the adequacy of the Rio Pueblo Colorado's water supply. Agent Reuben Perry vouched that he had seen water turned into the Hubbell canal in June of 1903. Others indicated that Hubbell had indeed kept water in it until 1911 when the imminence of the government project together with serious flood damage made the economics of interim repairs seem unwise. A major tie-up had to do with the flow of the Pueblo Colorado. To get indisputable data, a gauging station was installed late in 1910. Measurements were

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[8]J. E. Kell to Apache Abstract Company, June 22, 1965, Water Folder, WPHTP; Sam Day to J. L. Hubbell, May 5, 1903, Day Folder, Box 23, HPUAL; Reuben Perry to Hubbell, December 4, 1903, Indians 1873-1905 Folder, Box 43, HPUAL; also see reports from C. F. Hauke to Secretary of Interior, May 23, 1913, and R. G. Valentine to Secretary of Interior February 5, 1912 and February 2, 1913, General Correspondence Folder, Box 72, Irrigation District 5, BIA, RG 75, NA; and Robinson, "Proposed Reservoir Near Ganado, Arizona," March 1909, Box 18, Irrigation District 5, RG 75, NA.

convincing, but even more dramatic evidence that a reservoir could be filled, as well as a portent of the future, came with floods in 1911 that not only washed out the gauging station but radically altered the streambed.[9]

Work Begins

After Congress had appropriated the money, it took more than a year to get the project underway as plans were redrawn and materials moved to the site. At last construction was initiated in late summer 1913. Work was divided into three major phases: first, a diversion dam at the "rock reef" and a feeder canal around the outcropping that turned the stream from the reservoir site; second, the impounding project itself, including the earth-fill dam and headworks; and third, the delivery system or canal and flumes. Work was done by a mixed force in which a high percent were Indians, many of whom came and lived near the dam site. As indicated previously, Hubbell opened a store at the reservoir near the site of his first trading post back in the mid-1870s. Building materials were "forwarded" by C. N. Cotton of Gallup but freighted by Hubbell. The project's merits for water development quite aside, it was the kind

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[9]J. W. Martin, "Report on Ganado," February 18, 1910; Robinson, "The Ganado Reservoir and Irrigation Project," October 15, 1910; and W. H. Sanders to W. H. Code, October 6, 1910, Ganado Correspondence and Reports Folder 1909-46 and Ganado Folder 1909, Box 18, Irrigation District 5, BIA, RG 75, NA; Robinson to Hubbell, July 23, 1910, F. H. Abbott to Hubbell, January 6, 1910, Indians Folders 1910 and 1911, Box 43; and Robinson to Hubbell January 10, 1912, Indian 1912-13 Folder, Box 44, HPUAL.

of operation any trader would welcome.[10]

Heavy floods at the point of diversion on the Pueblo Colorado in 1911 and 1912 threatened to wash the stream bed off the rock reef that more or less underlay the feasibility of the entire project. As a consequence, a crib dam tied by piles dropped into the solid stone and backed up by a series of jetties upstream was set to divert the water into a "spillway" across the current to the west side where headgates controlled the feeder ditch. (Figures 18-19.) Although plans called for a cut directly through the outcropping into the reservoir, the construction boss ran the feeder ditch around the outcropping's point into the reservoir a few yards above the dam. (Figures 20-21.) Time proved this to be an unfortunate change, but for a year or two it apparently held. A sluice from the ditch back into the streambed was put in place to vent flood waters filled with silt or trash in an effort to keep the reservoir from silting up.[11]

An earth-fill dam of some 2,500 feet in length and 15 feet in height was put in simultaneously by Navajo labor. Most of this work was done with teams pulling slip scrapers, fresnoes and wheeled scrapers. (Figures 22-23.) According to Navajo sources, Hubbell's big teams were used and some earth work was done by hand. This

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[10]H. F. Robinson to J. L. Hubbell, December 4, 1912, Indians 1912-1913 Folder, Box 44, HPUAL.

[11]Data on construction comes from H. F. Robinson correspondence. A good summary is his letter to F. R. Schank, October 13, 1916, General Correspondence Folder, Irrigation District 5, BIA, RG 75, NA.

suggests wagons were used equipped with dirt boxes in which loose floorboards allowed dirt to be dumped. Wagons may well have been loaded by hand although it is also possible overhead drops were used to load by horse power.

To secure the dam, a trench was dug into the soil along the center line of the dam before the earth-fill work was actually begun. (Figures 24-25.) Then a concrete key was poured across its entire 2,500 feet length to lock the dam to the terrain beneath it. Dirt was then scraped from borrow pits in what later became the reservoir to create a dike 25 feet wide at the bottom and 10 feet wide at the top. Anticipated problems included gopher and other rodent damage and erosion to the face of the dam from wave action. To combat the rodents, efforts were made to saturate prime digging areas by running a puddle ditch along the top of the finished dam, which was to be kept full of water. Similarly a ditch was run on the coffer along the downhill toe of the fill. The purpose of both these devices was to dampen the earthen material, making it less attractive to the rodents. It is not clear that either "gopher mote" was acutally installed, but it is certain they did not work effectively. With reference to wave action, specifications called for the front of the dam to be of certain kinds of soil and to be paved with stone. The stonework was actually done but it proved to be insufficient to really protect the fill from wave action. It was also hoped that the fact that prevailing winds struck the downhill side of the dam would reduce wave action appreciably. For years no spillway was deemed necessary. However, a spillway that

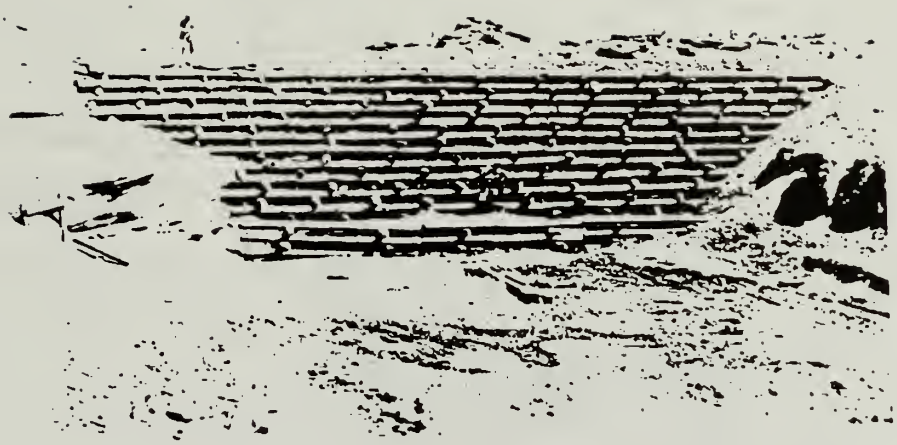

Fig. 18: Close-up View of Crib Diversion Dam at the "Rock Reef" ca. 1913. (DRC.)

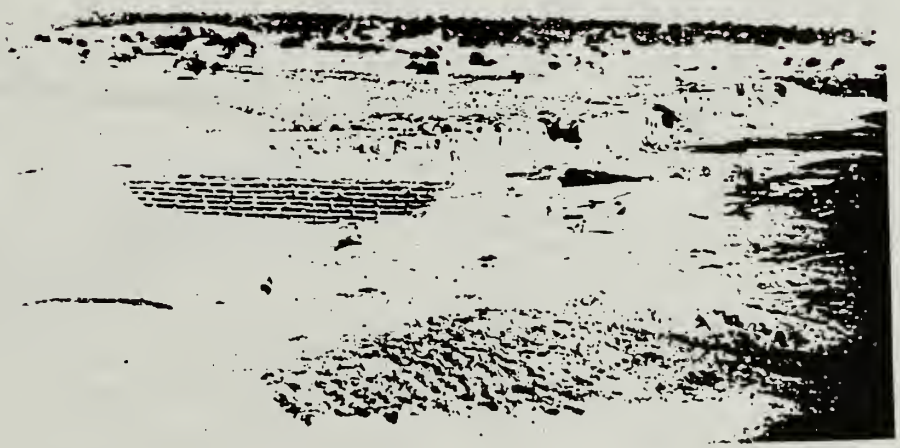

Fig. 19: Crib Diversion Dam and Rio Pueblo Colorado ca. 1913. (DRC.)

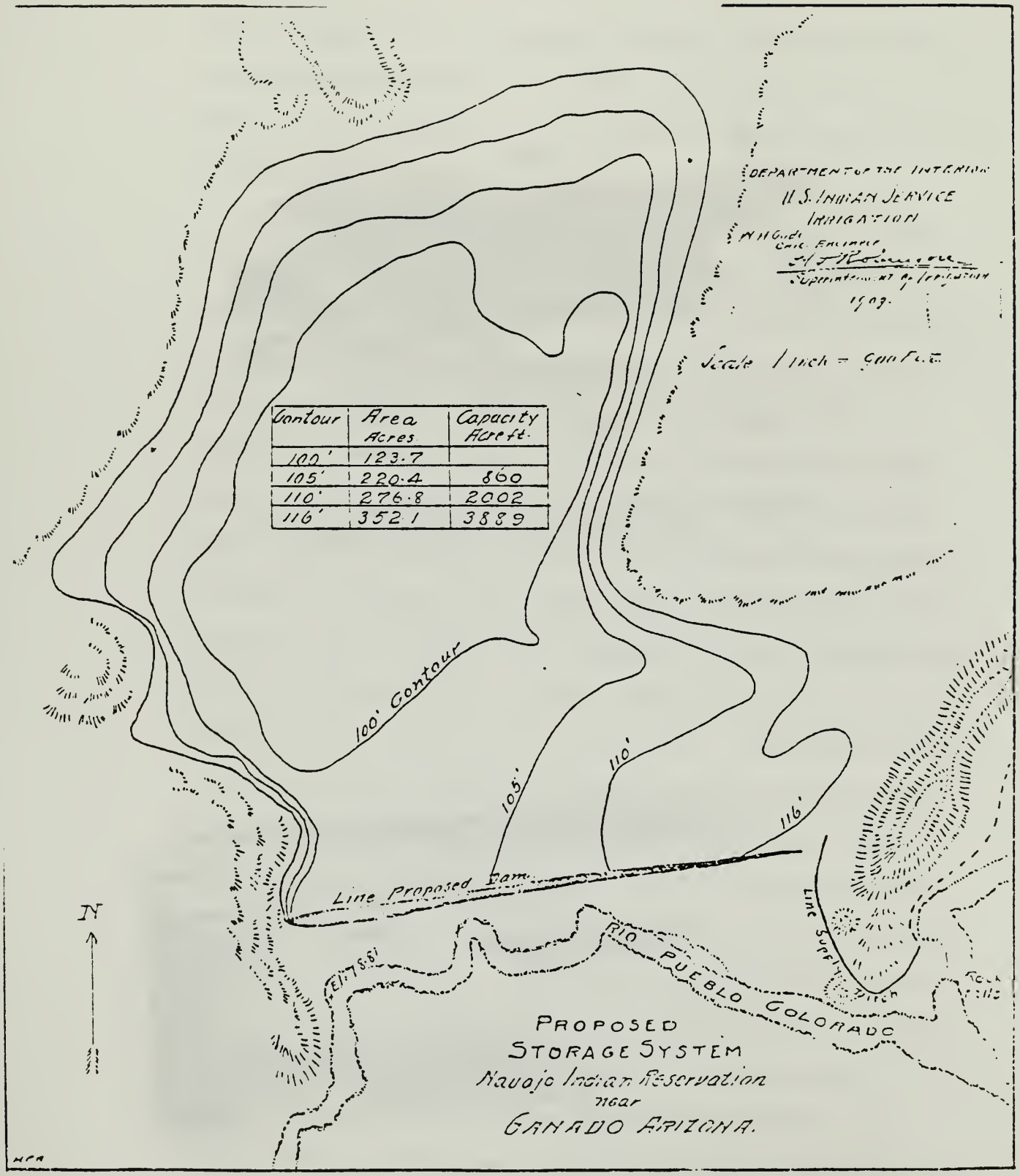

Fig. 20: "Storage System" Plans 1909 Showing Rio Pueblo Colorado and the Proposed Diversion, Feeder Ditch, and Reservoir. (NA.)

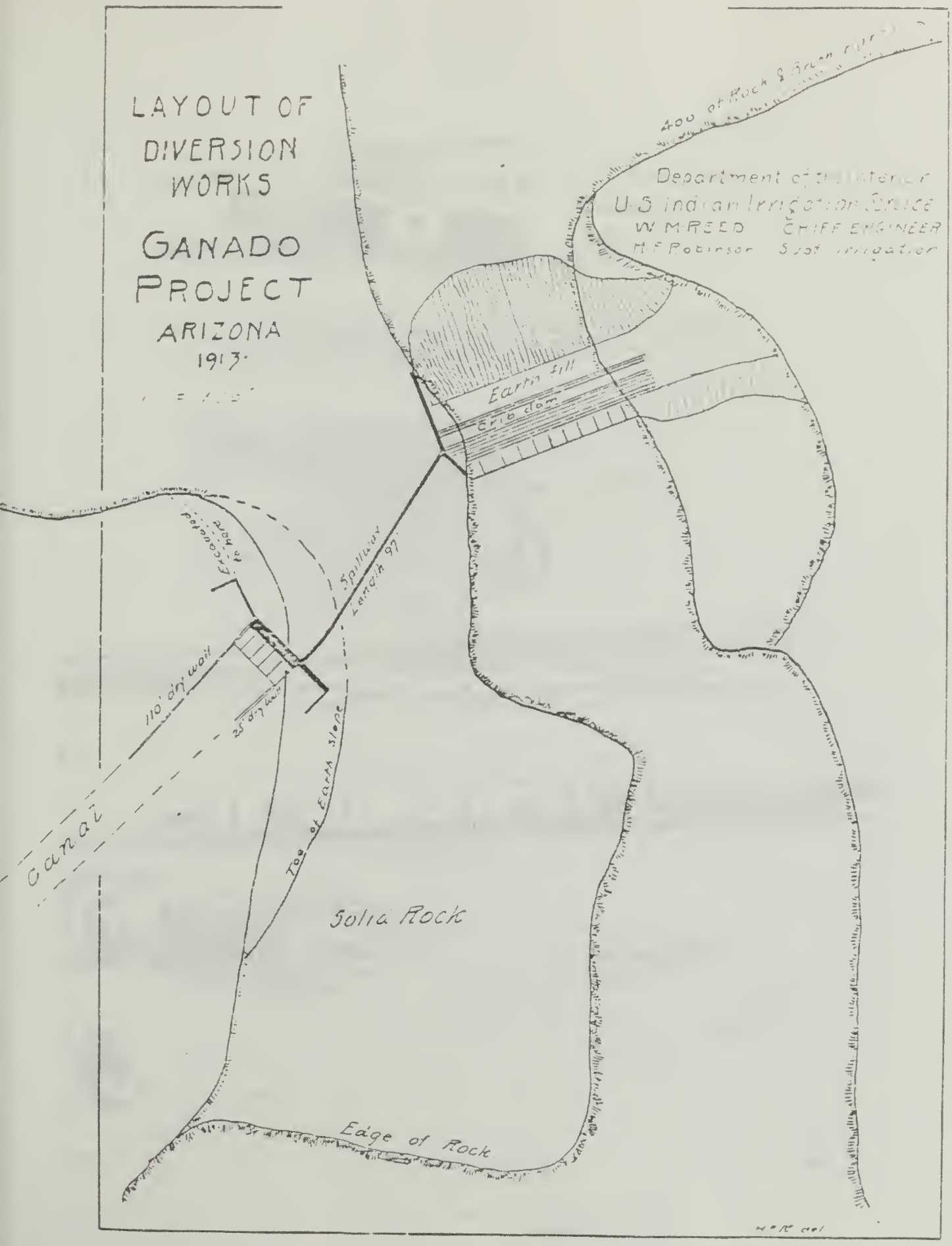

Fig. 21: Layout of Diversion Works & Headgate 1913. (NA.)

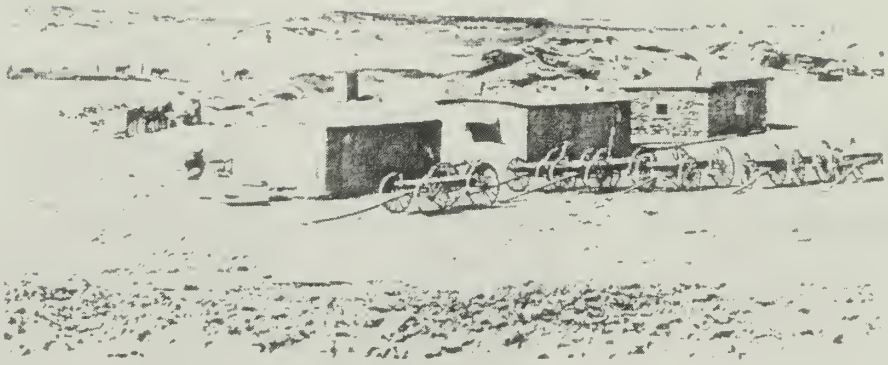

Fig. 22: Construction Area Including Irrigation Service Buildings and the Dam Trading Post in Foreground & Earthworks of the Dam to Far Left. (DRC.)

Fig. 23: Teams at Work on Feeder Canal & Dam ca. 1913. (DRC.)

Fig. 24: Trench for "Keying" the Earthen Fill into Underlying Terrain ca. 1913. (DRC.)

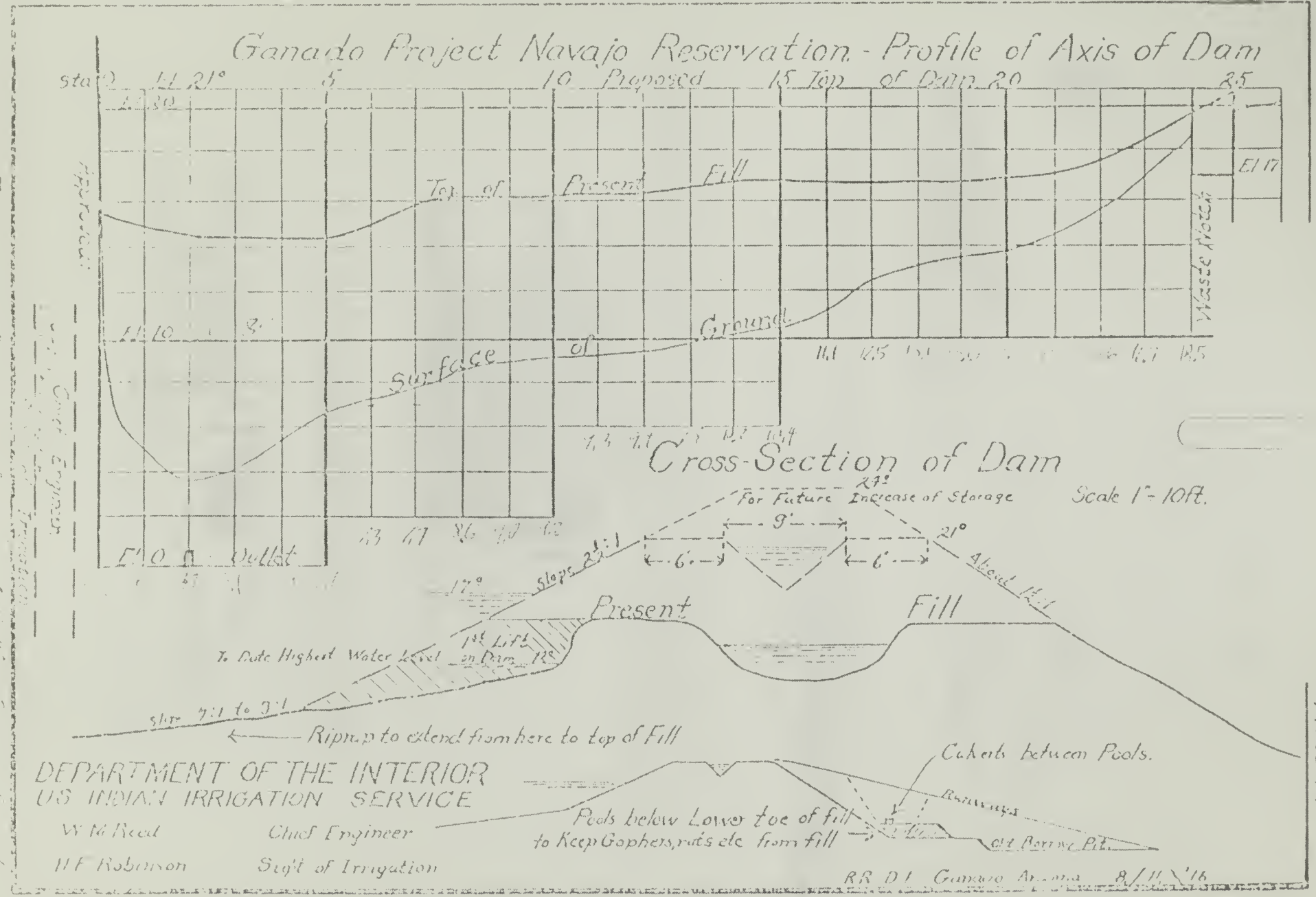

Fig. 25: Plans Showing Increased Storage & Coffer Ditches for Rodent Control 1916. (NA.)

Fig. 26: Ganado Project Canal Under Construction ca. 1914. (DRC.)

Fig. 27: Stone Paved Canal on the Ganado Project ca. 1914. (DRC.)

Fig. 28: Rio Pueblo Colorado During Planning Period ca. 1910. (NA.)

Fig. 29: Ruins of a Hubbell Flume at a Side Arroyo ca. 1910. (NA.)

Fig. 30: Masonry Drop on the South-side Canal Below the Hubbell Farm, Constructed ca. 1920. (1984.)

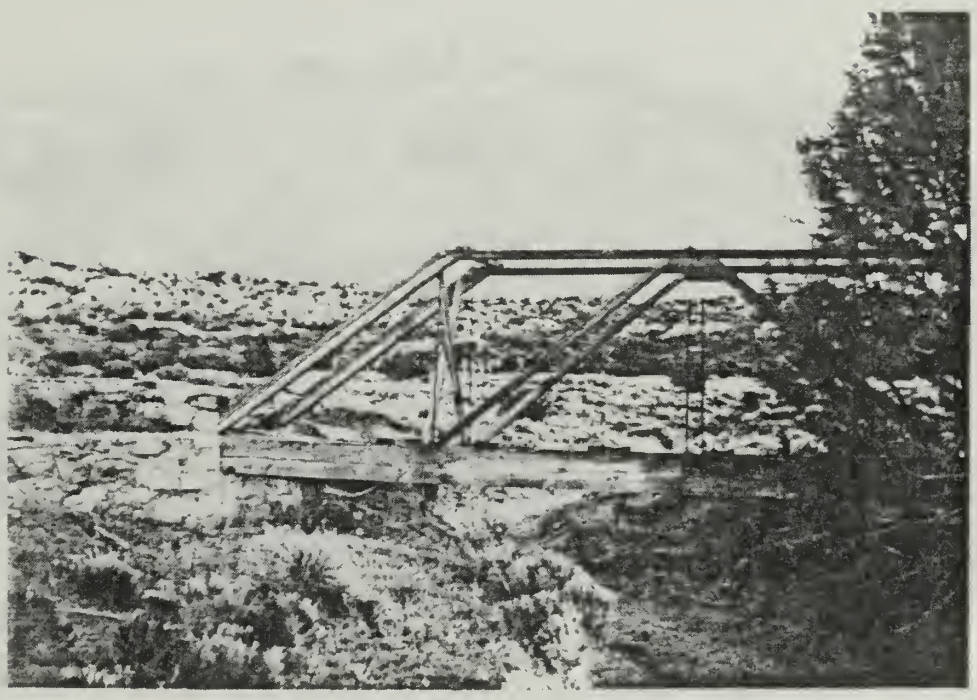

Fig. 31: Ganado Project Flume over Arroyo below Hubbell's Farm, Constructed ca. 1920. (1984.)

Fig. 32: A Large Flume on the North-side Canal, Constructed ca. 1920. (1984.)

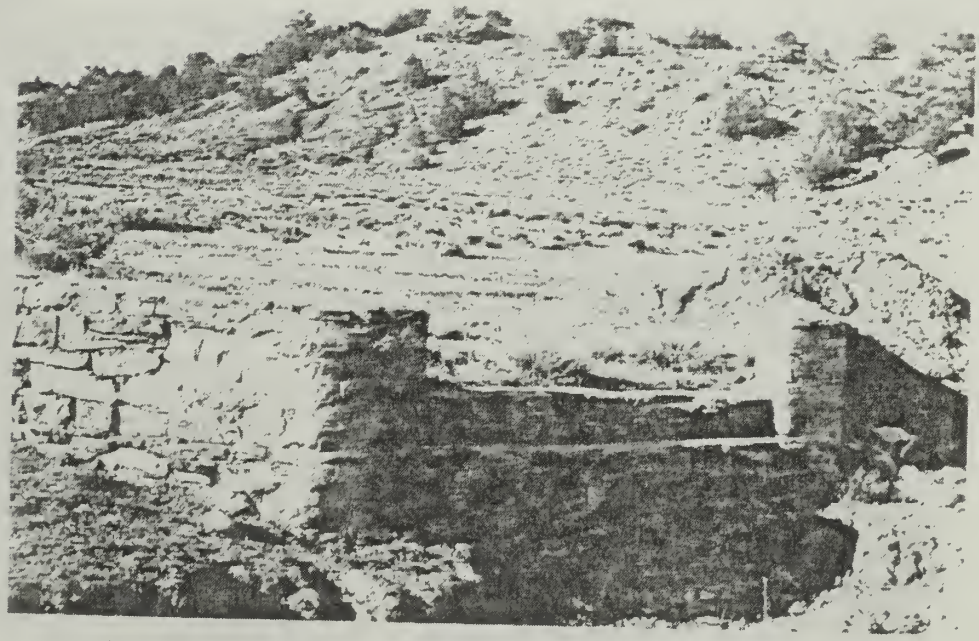

Fig. 33: Drop Controlling a Small Drainage Coming into the North-side Canal, Constructed ca. 1920. (1984.)

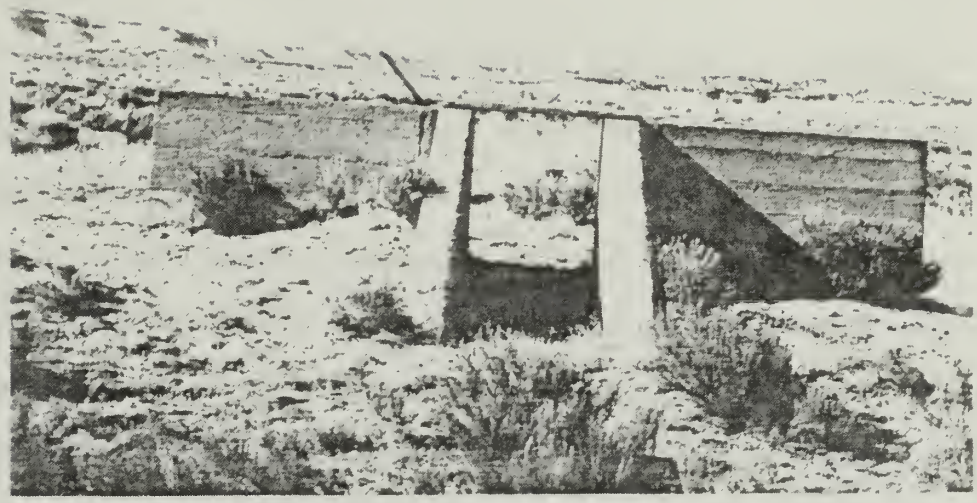

Fig. 34: Downstream View of Indian Civil Conservation Corps Headgate, Constructed ca. 1940. (1984.)

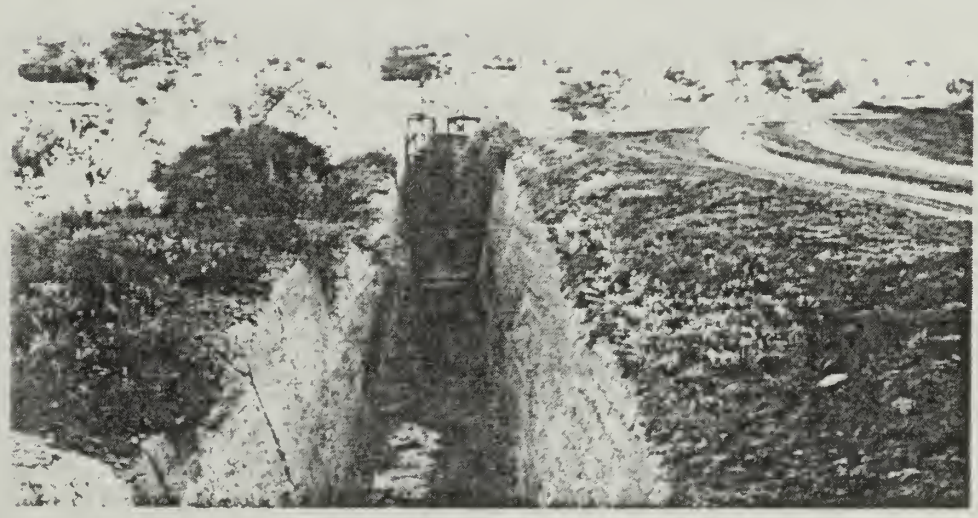

Fig. 35: Upstream View of Indian CCC Syphon Race Under the Rio Pueblo Colorado, Constructed ca. 1940. (1984.)

recent studies has judged to be inadequate was installed in 1935.[12]

The canal came off the west end of the dam and, threading between hills and the wash for a half-mile, was taken over from the north to the south side of the Pueblo Colorado by the project's largest flume. Once on the south side of the arroyo, the canal tied into Hubbell's earlier ditch and was taken across several smaller washes that joined the stream. (Figures 26-27.) In contrast to Hubbell's early delivery system, the flumes used were metal, although the initial trusswork of the government system was native pine.

Footers, piers, dry walls, drops, weirs and spillways were all constructed of masonry (cut stone joined by cement) except where stress dictated the use of concrete. Good building stone was near at hand and the cost of freighting cement in was prohibitive. Consequently, until the late 1930s masonry works were a hallmark of the entire system and clearly tied the government project and irrigation works on Indian farms to the Hubbell headgates discussed

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[12]H. F. Robinson, "Proposed Reservoir Near Ganado," March 1909; J. W. Martin, "Report on Ganado," February 18, 1910; Robinson, "The Ganado Reservoir and Irrigation Project," October 15, 1910; and Rollin Ritter, "Ganado Project: Report of Work Necessary to Complete the Diversion and Storage Units," September 11, 1916, Correspondence and Reports 1909-1946 Folder, Box 18, Irrigation District 5, BIA, RG 75, NA; for specifications and narrative from 1913 construction plans not found elsewhere, see Robinson, "Project Histories, Arizona and New Mexico: Ganado," pp. 29-31 and unpaginated photos, specifications and graphs, Miscellaneous Reports and Correspondence 1908-1935 Folder, Box 3, Irrigation District 5, BIA, RG 75, the Denver Records Center, hereafter cited DRC.

in Chapter IV. Masonry works were used at the dams, in the delivery system itself, and in the cutouts and lateral headgates on the individual farms. Initially the government canal extended below the Hubbell property only a short distance. Few or no headgates were made for Indian farms at that time. No ditch ran to land north of the arroyo during the first construction, although engineers hoped that about 1,000 acres on the north side of the arroyo could ultimatly be brought under the canal.[13]

From the point of view of the Indians, construction represented opportunity and contact with people from all over the reservation. An account that picks up some of the action and excitement of the project was told in 1972 by Navajo Jim James, who as a fifteen year old boy worked with "other Navajos and Mexicans" on the "Ganado Lake dam." First he worked "with pick and shovel," but as "men came from all over the reservation" and "people started working with their teams of horses" he "joined that kind of work." As he recalled, "construction work lasted seven years" during which people "camped near the construction site." After that "they kept doing minor

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[13]H. F. Robinson, "Project Histories, Arizona and New Mexico: Ganado," pp. 19-31 and unpaginated photos, specifications and graphs, Miscellaneous Reports and Correspondence 1908-1935 Folder, Box 3 Irrigation District 5, BIA, RG 75, DRC; W. H. Sanders to W. H. Code, October 6, 1910, and Robinson to W. M. Reed, July 25, 1914 with reference to metal flumes and wooden truss work; Robinson to Reed, February 9, 1917, and C. E. Hickok to Robinson, February 5, 1917 on original canal and plans to extend it, General Correspondence Folder, Irrigation District 5, BIA, RG 75, NA; and Philip Flitman to Robinson, April 3, 1920, which refers to masonry works as being of the "Zuni Type", Navaho 1916-1920 Folder, Box 72, Irrigation District 5, Box 72, BIA, RG 75, NA.

repairs because . . . rainstorms broke the dam a few times." This work was done by "Mr. Hubbell's mules and well fed horses [driven] by either Navajos or Mexican workers." During his pick and shovel days, James was paid "$1.25 a day" from which rate his wages "gradually went up to $4.00" as a teamster.[14]

Complications and Expansion

There is an appearance of timelessness to established irrigation works as there is to natural waterways. But both undergo constant change. While the written record with its tendency to collapse events in upon one another doubtless exaggerated the dynamic quality of the Ganado Irrigation System, it is certain that work was never actually finished. Between repairs, enlargement, and technical improvements, change was, if not under process continuously, badly needed most of the time. In the sense that it was more or less under constant attention, the Ganado Project differed from many smaller Navajo projects of earlier days. Remote projects had been turned over to the agency by the irrigation division. The agency ignored them or left them to Indian users, who did little to maintain them. Indeed the only early projects that were adequately maintained were at Shiprock and Ft. Defiance during periods when agents had a direct personal interest. As time proceeded more

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[14]Jim James Oral History 1972, by Vernon Morgan, WPHTP.

attention was given to upkeep on sizeable projects like Ganado, but Hubbell's connections also facilitated maintenance there.[15]

The first repairs were necessary during the summer of 1914 within months of the initial construction when a flume was taken out by a flash flood. (Figures 28-29.) As supervising engineer H. F. Robinson reported, the new flume was "an entire wreck, there being no salvage even of the metal." When the flume was reinstalled, protective dikes and backditches were put in to avoid a repeat performance. Thereafter, the fight against damage was almost unceasing. A "dam watcher" was appointed in hopes that careful attention would minimize damage to the system. Resident engineers were often assigned to it. Improvements were made and erosion controls constructed.[16]

In the summer of 1916 a series of large floods damaged the entire works. It was decided much of the damage was due to faulty work by the first construction engineer who made many unauthorized changes. As a result, a complete overhaul of the system was undertaken, including improvements on the diversion dam, major alterations on the flume over the Pueblo Colorado, and raising the dam from a maximum height of twelve or fourteen feet to twenty-one feet. The water face at the dam was completely rip-rapped with

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[15]Problems inherent in the early small projects are clearly apparent in the Shoemaker and Butler reports referenced in footnotes 4 and 5 above; see also Robinson to F. C. Brandon, November 23, 1922, Miscellaneous Reports and Correspondence 1908-1935, Box 10, Irrigation District 5, BIA, RG 75, DRC.

[16]H. F. Robinson to W. M. Reed, July 25, 1914, Ganado 1909 Folder, Irrigation District 5, BIA, RG 75, NA.

rocks, and the "puddle ditch in the center of the" dam improved along with the pools along the "lower or downstream toe of the fill" to "discourage all burrowing animals" which by this time had become "a very real menace to the safety of banks." In addition, the canal and the feeder ditch were upgraded. All told the changes cost $21,000. Late in this round of improvements it was concluded to extend the south-side ditch by about two-and-a-half miles to provide water to Indians settling below Hubbell.[17]

In the midst of all this a disaster of another kind struck. On the night of February 27, 1917, ice blew against the "outlet tower" of the headgate, literally ripping out the entire works and toppling it over. Although the dam watcher, Samuel G. Maus, kept a "generous opening around the tower," the ice melted back along the dam, allowing a north wind to blow the entire sheet of ice, which was about a foot thick, in against the dam, wrecking the headgate and letting a full stream of water down the canal. The next morning this stream of water was diverted from the canal and 2"x12" boards were driven into the headgate opening and braced to staunch most of the flow. It was well into 1919 by the time the ice and flood damage repairs were completed, and a total of $78,560 had been spent on the project, which was up nearly $18,000 from the $61,000

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[17]Rollin Ritter, "Report of Work Necessary to Complete the Ganado Project Diversion and Storage Units," September 11, 1916; and correspondence between Robinson and the Chief Engineer's office in Washington, D.C., September 1916 to February 9, 1917 and from C. F. Hickok, Asst. Engineer at Ganado to Robinson February 5, 1917, Correspondence and Reports 1909-1946 Folder, Box 78, BIA, RG 75, NA.

originally set as maximum authorization.[18]

Ditch work was important in the period after 1916. Extensions were made on the south side to a point about three miles below the Hubbell farm. (Figure 30-31.) This required the installation of a number of new flumes and several masonry drops of eight or ten feet. In theory, at least, this brought some fine land along the Rio Pueblo Colorado under water. On the north-side ditch, work got underway during the fall of 1918 on a stretch five miles long. As George M. Post, one of the most competent of the resident construction engineers, explained, it involved nine flumes, one a 110 feet long and one 90 feet long, six "road bridges," three "water bridges," and twenty culverts. Work proceeded briskly during a beautiful fall, and experienced men with good teams completed about 6,000 feet of ditch. Although operations were usually suspended during the winter months when "the ground began to freeze," work continued by hand during a desperately severe winter because "a great deal of rocky ground was encountered where teams could not be used." In addition, Post was influenced to continue work by the many Indians who had to "have employment or their families . . . would starve." With crews on the job all winter, some 25,000 feet of the north-side ditch's 28,730 feet total were completed by

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[18]Sources cited in footnote 17 apply here; as do Clinton E. Hickok to Robinson, February 28, 1917, Robinson to Reed, March 2, 1917, Reed to Robinson, July 29, 1918, Robinson to Reed July 25, 1918 and George M. Post to Robinson August 31, 1918, Correspondence and Reports Folder 1909-1946, Box 78, BIA, RG 75, NA.

spring.[19]

The year 1920 was marked by no unusual storms, yet maintenance continued. Three brush and rock jetties were built above the diversion dam to "deflect" threatening "flood waters" there. Dry walls were laid up in July to stablize an erosion-threatened caisson. A dike 400 feet long and three feet high was built to turn both blow sand and flood water just beyond the big flume across the Pueblo Colorado. On the south side a sagging wooden truss on Flume 5 was replaced with a steel span 48 feet long. Across the stream on the north-side ditch, Flume A was built and a "water bridge" constructed where the ditch crossed a small arroyo. It was all routine work but added up to a busy summer and fall.[20]

After two or three more years of relative quiet, devastating storms came in the summer of 1923. On July 7, a cloudburst of unprecedented fury dumped more than six inches of water squarely on the project in an hour-and-a-half. Three major flumes washed out and miles of ditch were filled with sand. Elsewhere the banks of the arroyo toppled, dumping many rods of ditch with them.

A cloudburst of even greater violence followed the next week. As the construction engineer reported to H. F. Robinson, more than "4 inches" fell "in one hour, accompanied by hail, extending over the entire project." This time they made such preparations as were

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[19]C. E. Hickok to H. F. Robinson, February 5, 1917 and G. M. Post to Robinson, April 9, 1918, Ganado 1909 Folder, Irrigation District 5, BIA, RG 75, NA.

[20]Extract from H. F. Robinson, "Annual Report for Fiscal Year 1921," Water Folder, WPHTP.

possible. Samuel Maus, the ditchwatcher and foreman, opened "all sluice gates on the canal," but "water came down every wash and passed entirely over each and every flume . . . with great damage to the system." Ditches on both sides of the stream were "in terrible shape," and crops everywhere "badly damaged by hail and in many places covered with sand to a depth of six inches."

The weather continued to hammer the project. On August 18, another heavy storm filled Flume 6 with silt causing the water to overflow and "cut out the piers," dropping the entire flume into the stream. (Figure 32-33.) On the 28th and 29th, a continuous storm stacked debris against "Flume No 10 until it was carried out." Beginning on September 17, the system was deluged by yet "another heavy rain for 42 hours."[21] This time no major structure was damaged but many repairs underway had to be redone. Restoration took months and the supervising engineer scurried to line up funds to cover the cost. Remarkably, the basic system held up very well. Both the diversion dam and the earth-fill dam of the reservoir survived. More impressive yet was the fact that repairs were on-going through the entire period, using local Indian labor under the direction of the dam manager and a resident engineer.

The Good Years

Although construction and maintenance work was often in process,

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[21]Ibid.; H. F. Robinson to W. M. Reed, July 11, 1923 and July 23, 1923, Water Folder, WPHTP.

the period after 1923 was the high tide of farming under the Ganado Project. This was true for a number of reasons. The system was in and functioning. While it never approached the 1,700 irrigated acres projected by early plannners, water was put on more than 700 acres of land some years and in 1927 crop values were estimated at an all-time high of $84,510. After 1929 the Depression and drouth hit Ganado farmers hard as they did farmers everywhere in the desert West, but fragmentary production records for the 1930s suggest that the system delivered some water every year. Irrigated land rarely fell below 400 acres. In terms of farm acreages elsewhere it was pitifully little, but during most Depression years the Ganado Project was the most productive project on the entire Arizona portion of the reservation.[22]

Thus the efforts of two committed individuals made the Ganado Project one of the most successful in the entire reservation. Both John Lorenzo Hubbell and H. F. Robinson left the picture in 1930. Their departure symbolized larger changes that, as will presently be described, adversly influenced the project. The nature of the historical record also changed sharply. Where the quarter-century of Robinson's administration was marked by official correspondence detailing the development of the project, the 1930s were

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[22]H. F. Robinson to W. M. Reed, December 17, 1923, Water Folder, WPHTP; also annual project summaries 1917 to 1935, Miscellaneous Reports and Correspondence 1908-1935 Folder, Boxes 1 and 2, Irrigation District 5, BIA, RG 75, DRC.

characterized by summary reports indicating funds budgeted, project costs, and overview information relative to the number of acres farmed, the number of Navajo farmers, and very sketchy production summaries.[23]

Decline

Indicative that the old partnership no longer prevailed was a bitter fight that took place at Ganado in 1934. Floods in 1931 had taken out the diversion works, requiring extensive repairs. Maintenance during years just past had been allocated to both whites and Indians. Consequently, Ganado Navajos were not only hard hit by the Depression but sensitive to their need to get something like a fair share of reservation work projects. In addition, they had been promised work to ease the loss of income experienced when sharp reductions in livestock numbers were imposed. As a result rumors spread quickly that mechanized equipment manned by whites would be used when the BIA announced a project during the summer of 1934 to raise the crest of the dam five feet, put in three syphons, make a silt-catching reservoir a few miles northeast of Ganado, and make other repairs.

Together with Indians Yazzie Holms and David Hubbard, Forrest Parker, a Hubbell son-in-law then at the Trading Post, called a

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[23]In addition to the annual summary reports, the Ganado Project shows up in periodic compilations of irrigation data, for example see Herbert V. Clotts, Assistant Director of Irrigation, to A. L. Wathan, July 25, 1939, pp. 4-5 and 21, BIA, Office of Land Operations, Window Rock.

meeting when word was circulated that the BIA planned to put fifteen outside trucks on the job. Angry protests were filed and project engineers were soon at Ganado. Other meetings were held. The Indians were assured that they had been misled. At least forty Indians would be employed. It was true trucks would be used, but they would be "Navajo" trucks and much of the work would be done by horse power. The Hubbell store at the dam was opened again and the project carried out during 1935 and 1936. The BIA officials involved had been scathing in their denunciation of Forrest Parker and the Navajo ringleaders in the protest, but much of the work was indeed done by truck. Furthermore it turned out that the "Navajo trucks" with hand dumps were quickly rejected for more modern vehicles. However, local Navajos, including David Hubbard's son Arthur, were hired to drive.[24]

Highly promoted irrigation projects were undertaken in the late 1930s at Naschiti, Rock Point and Many Farms. These were avidly supported by Indian Commissioner John Collier and Navajo Superintendent E. R. Fryer and were accompanied by much publicity and fanfare. By contrast Ganado was largely lost in the shuffle. It is true that some efforts were made to get the north-side ditch into functioning condition, and nagging problems were addressed again and again at the diversion dam and where the canal crossed the Pueblo Colorado. The Bureau of Indian Affairs' version of the Civil

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[24]Petitions, minutes and correspondence August 7 to October 19, 1934, Ganado Folder, Box 30, Irrigation District 5, BIA, RG 75, DRC.

Conservation Corps (the CCC-ID) worked on the Ganado Project for a time immediately after 1940. Many enrollees brought teams and much work was apparently done by horses. Tradition holds that at this time a well was drilled and a windmill installed in the large flat two miles west of Ganado, the level lands of which had always been the primary objective of the north-side canal. Enrollees watered their horses here and fed them corn purchased for the Indian Service through the Trading Post. The sale of this corn and the trade done by about thirty of the enrollees with the Trading Post gave the Hubbells a piece of the action, but it was a far cry from the old Hubbell-Robinson relationship of the days before 1930.[25]

Among other things constructed by the CCC-ID on the Ganado Project were concrete headgates, unlike the masonry works that had characterized earlier construction. (Figures 34-35.) Modest in height yet sphinx-like in the way they rise out of the harsh sagebrush landscape, a score or more of these march along in well-dressed columns marking the lines of fields that were never developed. A requiem for a failed vision, they commemorate not only

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[25]E. R. Fryer, "Why the Navajo Indians Need . . . the Many Farms Project 1940;" "Lower Rock Point Project 1939;" and "Development of Northern Naschiti Project," Reports and Related Records, 1891-1946 Folder, Box 17, Irrigation District 5, BIA, RG 75, NA. There are etchings on cement work where the canal approaches the Pueblo Colorado syphon and on some of the abandoned headgates that tie this work to the CCC-ID. Abe Lincoln, a son of Hubbell employee Tully Lincoln, who showed the writer the headgates and the windmill, had always heard that the abandoned headgates and the windmill were connected with a relief project. Also see CCC accounts April 1942, Folder 8, Box 529, HPUAL, and Navajo Agency Invoices 1938 and 1939 for corn to feed CCC-ID enrollees' horses, Navajo Indians Folder, Box 185, HPUAL.

a dead system in whose canals and ditches water no longer runs, but also mark the failure of a scheme to develop the land on which they stand that was first proposed in 1892 and which was the objective that enabled H. F. Robinson to maintain his long and stubborn effort to make the Ganado Project succeed. Although they are at some distance from the Trading Post, these abandoned headgates have an interpretive potential that the Park Service should not ignore. If nothing else, a salvage project should be undertaken that counts, measures, and sketches the confines of the aborted project their presence indicates.

Collapse

Finally in 1954 the BIA shifted $73,700 designated to the Ganado system for upkeep and repairs to the Hogback Project along the San Juan River. Although at the moment it was not considered to be a permanent withdrawal from the Ganado Project, it was the era of the Termination policy which rejected the assimilationist paternalism that had been the philosophical and social underpinning of the Indian Irrigation Division, and neither attention nor funds have ever been restored.[26]

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[26]For studies of change among the Navajo see D. L. Parman, The Navajos and the New Deal (New Haven: Yale University Press, 1976); K. R. Philp, John Collier's Crusade for Indian Reform, 1920-1954 (Tucson: University of Arizona Press, 1977); Peter Iverson, The Navajo Nation (Albuquerque: University of New Mexico Press, 1983); and Richard White, The Roots of Dependency: Subsistence, Environment, and Social Change among the Choctaws, Pawnees, and Navajos (Lincoln: University of Nebraska Press, 1983), pp. 212-314; and for revisionist interpretations of the unpopular Termination

In retrospect it would appear that the 1954 transfer of funds was the symbol of the Ganado Project's decline just as the return of Roman and Dorothy Hubbell to Ganado from Winslow symbolized the declining fortunes of the Hubbell family as traders. Roman and Dorothy and a diminishing number of Indian irrigators continued to carry on increasingly haphazard farming operations. Weeds had beset fields. Soil had deteriorated under long cropping with inadequate fertilization. In addition the weir at the reservoir was accidentally plugged sometime after 1965.

Reports suggest only occasional interest in the Ganado Project during the years that followed. Erosion control demanded some attention where syphons and flumes crossed arroyos. Now and again the dam was remembered by inspectors in reports, but distortion of construction dates and other misinformation suggested just how out of mind the project was. For all practical purposes the system was dead and with it the old Irrigation Division that built it and many of the values on which the project depended.[27]

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policy, see Iverson, "Building Toward Self-Determination: Plains and Southwestern Indians in the 1940s and 1950s," and Philp, "Stride Toward Freedom: The Relocation of Indians to Cities, 1952-1960," Western Historical Quarterly, XVI (April 1985), pp. 163-190.

[27]The "Annual Report: Navajo-Hopi Long Range Rehabilitation Program, Fiscal Year 1954," p. 10, BIA Office of Land Operations, Window Rock indicates that "due to drouth conditions," $73,700 designated to "construct a diversion dam and 3 1/2 miles of canal" on the Ganado Project were diverted to the Hogback Project, bringing its allocation to $540,000. "Ganado Dam Phase I Inspection Report, December 1978," Corps of Engineers; and Bureau of Reclamation Correspondence 1978-1983, Water Folder, WPHTP, include safety studies that indicate the dam was built in 1929 and its crest raised in 1943. These dates are doubtlessly in error.

CHAPTER VI:

NAVAJO FARMERS: A COMMUNITY OF IRRIGATORS

In the large sense, of course, the Ganado Project was meant to provide farming opportunities for Navajos. Although little more than 700 acres were ever cultivated, more than fifty Navajo families farmed under the project at times of maximum utilization.[1] Land holdings were small and income was limited, yet irrigated agriculture was far more important to the economy of these people than it was to Navajos generally. The demands of irrigation also brought different disciplines to their lives and made a farming community at Ganado. As prime movers behind the development of the irrigation system, John Lorenzo Hubbell and H. F. Robinson made significant contributions to this achievement. In this context Hubbell's role as the initial moving force was clear. His farm was a model and a place of applied learning for Indians who observed it

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[1]Reports beginning as early as 1939 showed "53 farm units" with "500 individuals benefited," Herbert V. Clotts to A. L. Wathen, July 25, 1939, BIA, Office of Land Operations, Window Rock. Because maps show about 35 farms under the ditch, one wonders if the "53 units" included some "lots" not under the ditch or for other reason never actually occupied.

and worked on it. As water users, he and his family were drawn into the Ganado farming community. Nevertheless, his precise role in this context is not a matter of record anywhere and is therefore difficult to establish and will be addressed only indirectly here.

By contrast, the role of the Bureau of Indian Affairs in introducing modern irrigation was recorded. This was particularly true for the Irrigation Service during the years Robinson was supervising engineer. While a modest number of Indians gathered to the project and irrigated successfully for a generation, the human challenges of the Ganado Project were quite as imposing as were the natural problems. Whites, not Indians, conceived the project and their values and expectations went into it. Failure to understand the gulf between native agriculture and irrigation projects was as fundamental a problem as was the environment.

Division of Irrigation and Resource Development

As suggested previously, BIA Navajo policy was long guided by the assumption that Navajos were pastoral herdsmen and that it was necessary to restrain them from ranging off the reservation. To deal with the situation the BIA encouraged the buildup of livestock by providing breeding stock and establishing policies restricting the sale of female animals. Boundaries were also enlarged to include areas where concentrations of "off-reservation" Indians were particularly heavy, and efforts were made to use the land resource more efficiently by promoting irrigated farming and better grazing

management.[2]

In the realm of resource management the Irrigation Division was doubtlessly the most important arm of the BIA until at least the late 1920s. Its approach was twofold. It undertook irrigation projects in hope that land could be used more intensively, thus allowing larger numbers of Indians to draw a livlihood from it. It also developed springs, wells, and tanks. The first crude improvement of domestic and stock water sources took place in the late 1880s, but development was systematically applied only after 1905 when George Butler laid the basic plans and Herbert Gregory assessed the reservation's potential.

Indeed it was H. F. Robinson who initiated stock and domestic water development on a large scale after he took over as supervising engineer in 1907. The drill rigs and construction foremen called for by Butler and Gregory were put into the field, and using Navajo labor, the work was aggressively pursued. Efforts were made to take advantage of natural conditions, to locate water to facilitate both grazing and living conditions, and to keep things simple. By 1929 Robinson could report that 304 wells, 331 springs and 146 tanks had been developed since the program's inception. Costs had been

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[2]A typical statement was that of Inspector Joe H. Norris who wrote in 1910 that Navajo tastes did not "run particularly to farming," but that since they had "turned their attention to the range and sheep industry" they should be encouraged by range water development and upgrading of stock. General Correspondence Folder, Box 71, Irrigation District 5, BIA, RG 75, NA.

$759,458 but Robinson was confident that returns in terms of "civilization" had been excellent.[3]

Although water development accelerated even more during the 1930s, the Irrigation Service opened substantial portions of the reservation to grazing during the two decades before. No doubt the land resource was used more efficiently because of it. But land was also used more intensively. As Robinson explained to Arizona Congressman Carl Hayden in 1920, drouth and bad winters in the past had periodically killed hundreds of thousands of animals, thus allowing grazing resources some reprieve while stock numbers increased again. But now with a large percent of the range under use, well drilling in previously unwatered areas barely kept abreast of the increase in stock numbers. According to Robinson "the watered area of the reservation" had been increased "four or five times" and the "flocks and herds of the Indians" fully "200 per cent." With better water supplies, forage became the critical factor in the grazing equation, thus making for longer grazing seasons and putting more grazing pressure on the reservation as a whole. Whether the overgrazing thesis advanced by John Collier and

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[3]See George Butler, "Report to Commissioner of Indian Affairs," June 24, 1906, Water Resources Folder, Box 73, and Butler, "Recommendations on Water Development," June 24, 1906, Navajo 1910 Folder, Box 71, Irrigation District 5, BIA, RG 75, NA; H. E. Gregory, "Water Resources of the Navajo-Moki Reservation," June 1910, Water Resources Folder, Box 73 Irrigation District 5, BIA, RG 75, NA; C. V. Clotts, Memoranda for Land Division June 5, 1929, and March 21, 1930, Water Resources Folder, Box 73, Irrigation District 5, BIA, RG 75, NA; also H. F. Robinson to Carl Hayden, May 12, 1920, Box 18, Irrigation District 5, BIA, RG 75, NA.

the BIA conservationists of the 1930s is accepted or the cyclical erosion ideas of more recent times, there can be no doubt that water development contributed to overstocking the range and to problems of flooding and erosion.[4]

Although Robinson apparently had some grasp of this, he and his pre-Depression contemporaries saw Navajo stock management simplistically. Similarly their understanding of how Indians would react to irrigation projects was limited. To better comprehend the problems faced by the Ganado Indians as well as the project developers, a brief survey of native Navajo farming methods and pre-project Navajo farming in the Ganado area will be useful at this point.

Navajo Farming and Flood Irrigation

Farming was a significant part of Navajo life both economically and culturally from very early times. By the turn-of-the-century decades their agriculture was an outgrowth of the country and well adapted to it. Farms were small and handled on a subsistence basis. Ownership was evidently more a matter of planting or work than it was land claim. Before the advent of livestock, fences were

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[4]W. F. Robinson to Carl Hayden, May 12, 1920, Box 18, Irrigation District 5, BIA, RG 75, NA; and H. F. Robinson to W. M. Reed, July 7, 1917, Navajo 1916-1920 Folder, Box 72, Irrigation District, BIA, RG 75, NA; for a recent discussion of erosion theories see Richard White, The Roots of Dependency: Subsistence, Environment, and Social Change among the Choctaws, Pawnees, and Navajos (Lincoln: University of Nebraska Press, 1983), pp. 228-229 and 312-314.

little needed. Corn, squash and melons were raised and some beans. After whites arrived, peaches were adopted from the Hopis and some little wheat was cultivated. In the Ganado-Cornfields area, wild spinach, wild potatoes and onions and yucca pods were also major food items. Farming risks were high. Dependence on natural moisture was direct, and both failures and movement to different farms were frequent.

Navajo farming exacted less from the land than the machines and routines of irrigated farming. Little or nothing was done in the way of leveling, although clearing of brush as well as weeds was carefully practiced. Rocks were sometimes carried from the land. For cultivation only hand implements were used. Tillage disturbed soil in only a minimal sense, thus contributing little to erosion. Dry farming and two forms of flood-water irrigation were practiced, one in small isolated drainage systems, the other along the alluvial plains of larger washes. Dry farms and small drainages tended to make for small communities. To some degree farming along the water courses brought people together.

Integration of function, especially after livestock were introduced, demanded both a complete understanding of the human and the natural elements of production and an affinity for hard work. Important also was a sense that did not expect too much from farming as was an attachment to place that was more closely associated with locality than to individual plot. Farms were positioned to catch natural flood water. Spring moisture brought plants up. Summer floods irrigated the well-positioned farm rather than washing it

out. Distribution of water was facilitated by diversion checks and ditches which were commonly repaired annually or even after every storm. Diking or bordering to make small catchment enclosures to hold flood water was also practiced occasionally on the level floors of the larger washes.

Inundation coupled with the general precariousness of farming resulted in a situation where soil was rarely worn out. The cutting of water courses after 1900, whether as result of erosion cycles or overgrazing, or, as some Irrigation Service people wondered, because of irrigation projects, complicated flood-water irrigating on both the minibasin and alluvial plain plots. It seems likely that the added problems of erosion contributed to both Indian distress and to the elements of Navajo makeup that inclined them to wait and see where change of any kind was concerned.

All told, the foregoing suggests that Navajos were widely involved in farming and that the BIA confronted deeply entrenched expectations as well as long-established customs and habits when they undertook to settle Navajos on irrigation projects at Ganado and elsewhere.[5]

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[5]In compiling these paragraphs I have depended upon Navajo oral histories in WPHTP; records of the Irrigation Division and upon secondary sources including Cosmos Mindeleff, Navaho Houses, The Bureau of American Ethnology, Seventeenth Annual Report 1895-1896 (Washington, D.C.: G.P.O., 1897), pp. 475-517; Franciscan Fathers, An Ethnologic Dictionary of the Navaho Language (St. Michaels: The Franciscan Fathers, 1910); Gladys A. Reichard, Social Life of the Navajo Indians (New York: Columbia University Press, 1928); Kirk Bryan, "Flood-Water Farming," Geographical Review, 19 (1929), pp. 444-456; J. W. Hoover, "Navajo Nomadism," Geographical Review, 21 (1931), pp. 429-445; W. W. Hill, The Agricultural and Hunting

Navajo Farming at Ganado

Sedentary Indians had featured in both the conquest of Mexico and the settlement of New Mexico. An established Indian community also featured in John Lorenzo Hubbell's location at Ganado. Taken from the Navajo leader Ganado Mucho, or Many Cattle, even the name Ganado implies community. Farming was also an important factor in the evolution of a Navajo community. In the decades after the United States took over the reservation region and particularly after the Navajos returned from Bosque Redondo, Indians farmed at numerous sites including Chinle, Nazlini, Kinlichee, Wide Ruins, Klagetoh and, most important of all for this study, at Ganado and at Cornfields where the Pueblo Colorado opened up into broad alluvial bottoms some six miles below.

There is no way to establish with certainty how extensive native Navajo agriculture was in the Ganado-Cornfields locality. However, from oral histories of Ganado Navajos and nineteenth century accounts of white travelers, it appears that farming there was not heavy in the time before Bosque Redondo. Lt. Joseph C. Ives, for example, wrote of the verdure of the Pueblo Colorado valley at the time of his 1858 exploration but made no reference to cultivation of

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Methods of the Navaho Indians, Yale University Publications in Anthropology 18 (New Haven: Yale University Press, 1938); Clyde Kluckhohn, and Dorothea Leighton, The Navaho (Cambridge: Harvard University Press, 1946); and W. Y. Adams, Shonto: A Study of the Role of the Trader in a Modern Navaho Community, Bulletin of Bureau of American Ethnology 1888 (Washington, D.C.: G.P.O., 1963).

any kind. An early account that did throw some light on the matter of Indian farming was the Navajo reconnaissance of J. G. Walker and O. L. Shepherd in 1859. Making a loop from Ft. Defiance to near Oraibi and back, they observed corn fields at two spots along the Pueblo Colorado, and at neighboring Wide Ruins, and at both the lower and upper ends of Black Creek some fifty or sixty miles distance from Ganado. A few tiny corn patches were also seen elsewhere in Navajo country. Significantly, however, their report concluded that "scarcely 100 acres in all were discovered."[6]

By contrast twentieth century records suggest considerable farming activity. For example, in his 1916 The Navajo Country, Herbert Gregory estimated that no fewer than 20,000 acres of land were cultivated by flood-water irrigation on the Navajo and Hopi reservations in pieces that averaged about three acres in size. This would suggest that there were perhaps 6,500 farms on the two reservations. In addition Gregory provided specific glimpses of Indian farming throughout the Navajo Reservation. Indians at the eastern slope of the Chuska Mountains were "prosperous." They raised "corn, wheat, potatoes and garden truck" and baled "hay for market by pressing it into holes in the ground and tying [it] with yucca or willow withes." On the western slopes of the Chuskas,

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[6]J. C. Ives, Report Upon the Colorado River of the West Explored in 1857 and 1858, 36th Cong., 1 sess., Hse. Exec. Doc. 90 (Washington D.C.: G.P.O., 1861), pp. 128-131; and J. G. Walker and O. L. Shepherd, The Navajo Reconnaissance: A Military Exploration of the Navajo Country in 1859, ed. L. R. Bailey (Los Angeles: Westernlore Press, 1964), p. 64.

which were favored with several perennial streams, Navajos cultivated "gardens" and raised "patches of corn and of wheat." They also fenced "choice meadow lands in which native grass" was "allowed to reach maturity." South of the San Juan in a remote canyon area reached only by "an ancient trail now developed into an execrable wagon road," groups of Indians had "sheep corrals and small patches of corn scattered along the canyon bottoms."

Similarly the alluvial flats north of the San Juan were "dotted with hogans, the homes of Navajos who" combined "stock raising with agriculture." Indians responded to "government schools and hospitals and farms" at Ft. Defiance by establishing a "large number of permanent homes and cultivated fields" along Black Creek Valley "from Red Lake southward to the railroad." Elsewhere Navajos utilized open washes "for agriculture, relying on the seasonal rains for irrigation." Getting closer to Ganado, Gregory reported that "several hundred Indians grouped at 'cornfields,' particularly below Chinle School, along the Tyende, and between Ganado and Sunrise Springs have made permanent homes and carry on successful agriculture." Lamenting that up to "99.5 per cent" of the flood water of the major washes was unutilized, he called for further development of "checks' and the "low earth walls . . . designed to retain surplus water for a few days."[7]

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[7]Herbert F. Gregory, The Navajo Country, United States Geological Survey, Water-Supply Paper 380 (Washington, D.C.: G.P.O., 1916), pp. 28, 29, 31, 32, 33-34 and 103-105.

Flood-water farming flourished at Cornfields during those years. Writing in March of 1910, H. F. Robinson described the area as a "a beautiful bottom land" extending for many miles "along both sides of the stream. . . . Largely under cultivation," much of the land lay "very low" and was "subject to overflow." On "higher lands" Indians "constructed crude ditches," allowing them "to irrigate . . . once or twice a year." In addition to raising "sufficient for their own use," they sold their produce to Hubbell who one season "purchased as high as 150,000" pounds of corn "and sufficient fodder for a large amount of stock." Robinson was convinced that no other "settlement of Navajos" was as "industrious in farming and agriculture as those that live in the vicinity of Ganado." Furthermore, they were "very anxious for a reservoir to be built" and, if surveys and materials could be provided, offered to "build" the dam and ditches themselves "without cost to the government."[8]

Dimension and form can be added to this sketch of Navajo farming around Ganado by looking at oral histories taken by David Brugge and Roberta Tso for the Hubbell Trading Post National Historic Site. These histories date to about 1970 and were given by people who were from seventy to eighty-five years of age whose early lives were connected with Ganado. In general they bear out the conclusions of

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[8]H. F. Robinson, "Proposed Reservoir Near Ganado, Arizona," March 1910, Correspondence and Reports 1909-1946 Folder, Box 18, Irrigation District 5, BIA, RG 75, NA.

scholarly studies, including Herbert Gregory's statement that there were hundreds of farms located in Ganado and Cornfields valleys.

Among the best oral histories is one by Joe Tippecanoe, long-time employee of the Hubbells. Memories of an earlier gathering culture were still strong in his mind, suggesting smaller populations and the precariousness of farming. As Tippecanoe recalled, "they even used to have Navajo spinach." Gathered in the summer for "winter use," it was boiled with meat to make "a great tasty stew." The banana-like pods "that grew on Yucca plants" were also gathered and "preserved for winter use." With natural foods, people of Tippecanoe's youth suffered little illness. "Common colds, TB and Pneumonia" were "never heard of." Even "blindness," which for many years in the early twentieth century was a special plague to Navajos, was unknown.

Describing farming at Ganado and Cornfields, Tippecanoe continued that "there was no wash here . . . just a stream going down the middle of the valley. . . . Fields and farms" extended from the Hubbell ranch to Greasewood [about twenty miles]. "There was no wash, the ground was level. . . . During that time women and children used to always be hoeing in the fields, then when the corn was ripe, everyone will be boiling corn, making Navajo cake and broiled corn in the ground and kneel down bread."

Tippecanoe attributed the good times of that period to the leadership of John Lorenzo Hubbell and his good friend Many Horses, both of whom encouraged farming. Many Horses lived at Cornfields and often rode among the people, getting them out of bed and into

the fields. Although some government reports referred to Indian ditches in the Cornfields area, Tippecanoe was of the opinion that only rain and flood irrigation were used. "It was just level. They just planted it." Corn, pumpkins and melons were raised. The corn was sold to Hubbell who fed it to his teams.[9]

YaNaBah Winker also recalled the good leadership of the time and that people had moved to Ganado from Chinle and elsewhere "because there was hunger—many hardship—people moving over here [because they] were given only half a ration." Among other things she recalled scattered families in Ganado Valley itself, some of whom farmed. The Manygoat Clan, for example, "were living here, taking care of their farms. Even where the dam is, people were living there. Now it is nothing, but water. When I first saw it there were abodes, houses and field . . . cornfield." Hubbell's neighbor Dolth Curley recalled that an earlier name for Cornfields had been something like "among the yellow, maybe among the ripened fields, something to do with corn. . . . People there" lived "very close together . . . clear down to Sunrise [about seven miles]. . . . There was no wash and water just ran over the land when it rained."[10]

Among other oral histories that supplement this picture was that of Jim James, who recalled wearing moccasins and clothing made of "empty flour sacks." Every "meal came from corn." His family's

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9Joe Tippecanoe Oral History 1971, pp. 25-26 and 55-58, WPHTP.
10YaNaBah Winker Oral History 1971, pp. 9, 12-13; and Dolth Curley Oral History 1971, pp. 11-12, WPHTP.

corn field was "small but it was enough for" their needs. "Neighbors helped each other planting" and since there were no plows "they did plow with a man plow called Gish." Crews moved from one farm to another "until they got them all. This was what they were doing, tending to farms besides herding sheep."[11]

Thus native farming was well established in the Ganado area during the the turn-of-the-century years. Its customs and values were a strong influence on the social character as well as the attitudes and habits of the Navajos who helped work the Hubbell homestead and became irrigators on the Ganado Project.

H. F. Robinson and Problems of Irrigated Farms

As noted in an earlier chapter, H. F. Robinson played a key role in constructing the Ganado Project. Perhaps equally significant was his role in facilitating the shift from native agriculture to irrigated farming. Although it was hoped from the first that Hubbell's farming operation would be a model for Indians, it was at least five years after his ditch diverted water from the Pueblo Colorado before it actually carried water to an Indian farmer. Certainly no more than three or four Navajo families utilized it before the government took over in 1912. Even then it was eight years after construction began in 1913 before Indian farmers located on the project in any significant way. When settlement did begin, it apparently took place only because of a determined effort on the

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[11]Jim James Oral History 1972, p. 1, WPHTP.

part of Robinson who sensed just how vulnerable the programs of the Irrigation Division were in the face of mounting congressional pressure for reimbursement of construction costs on projects where Indian farmers had not been allowed to settle.[12]

The slowness with which Navajo farmers took up irrigated land was a long-standing dilemma with deeply rooted problems. Reports that Indian leaders were anxious for irrigation projects notwithstanding, few appear to have asked for help on their own volition. An exception was in Paiute Canyon near the Utah border where in 1917 a mixed group of Navajos and Paiutes requested help to construct a small system. With reasonably dependable water this project worked well.

More often projects were backed by white promoters. It would seem that this category included a number of small projects near Shiprock vigorously pushed by a determined and energetic agent named William T. Shelton. Also with vigorous white support was a small project at Ft. Defiance which under the close scrutiny of Indian agents produced a few hundred tons of hay over the years.[13]

Elsewhere, however, the Irrigation Division turned project after project over to the agency only to see them fall into disuse and

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[12]For Indians utilizing his ditch see W. H. Sanders to W. H. Code, October 6, 1910, Ganado 1909 Folder, Irrigation District 5, BIA, RG 75, NA.

[13]For Paiute Canyon see G. M. Post to Robinson and Robinson to W. M. Reed, June 2 and 3, 1921 and maps; on Ft. Defiance irrigation see Robinson to Reed, November 9, 1921 and accompanying maps; Peter Paquette to Robinson, February 18, 1922, General Correspondence and

decay. Often a show of agricultural activity in the form of flood-water irrigation attracted well-meaning engineers who installed more impressive dams and ditches and drastically altered the farming methods understood by Indians. Typical were projects at Wheatfields, Red Lakes and Carrizo on which the Division made repeated additions or repairs but which for many years went unused. Frequently failure was due to hostile natural conditions. Such a case was at Leupp on the Little Colorado. Years of promotion and planning finally resulted in a project during the World War I years that promised to provide a stablizing resource for a few hard-pressed families on the Navajo Extension where natural conditions were particularly forbidding. With help from a government farmer, Indians produced a bumper crop the first year. The next year, however, floods wiped out the entire enterprise, killing its prospects forever.[14]

Navajo 1922 Folders, Box 72; and Robinson to W. H. Code, December 29, 1910, Navajo 1910 Folder, Box 71, Irrigation District 5, BIA, RG 75, NA. Paquette explained that between the "first seeding of alfalfa" in 1911 and 1921 "1775 tons" of hay had been raised. Valued at Gallup prices of $30 per ton Paquette argued it far offset proposed additions to the irrigation system at Ft. Defiance.

[14]H. F. Robinson memorandum to Commissioner of Indian Affairs, July 18, 1916, Water Resources Navajo-Moqui Folder, Box 73, Irrigation District 5, BIA, RG 75, NA; Robinson to the Acting Chief Engineer, April 1, 1912 explained that "not an acre of ground" had been cultivated at Wheatfields, that a project at Tsa-ha-lee "has been entirely abandoned", and that "to date not an acre of land has been put in cultivation under the immediate" Red Lake Project, Navajo Folder 1912-1915, Box 72, Irrigation Divison 5, BIA, RG 75, NA; and Robinson to special supervisor F. C. Brandon, November 23, 1922 summarized several of these projects, Miscelaneous Reports 1908-1935 Folder, Irrigation District 5, Box 10, BIA, RG 75, DRC; and telling the Leupp story, Robinson to Reed, January 14, 1920 and V. J. Lewy, October 28, 1921, Water Resources Folder, Box 73, Irrigation District 5, BIA, RG 75, NA.

At Tuba City prosperous farms and orchards, watered from a series of dams in nearby Reservoir Canyon and an effective diversion in Moencopi Wash, fell into disuse after 1902. Mormons, who developed the system, were crowded out and the necessary coordination of program between the Irrigation Division, agency personnel and Indians for successful farming was slow to materialize. Projects at Klagetoh, Wide Ruins, Kinlichee and elsewhere throughout the reservation confronted natural and administrative difficulties that often exceeded human resources.[15]

Even the Hogback Project on the San Juan River was slow in developing. Slated to bring 4,000 acres into cultivation, it had cost $241,491 by 1916 when 650 acres were farmed. Yet in the years that followed, report after report explained that Indians were lukewarm about the project either because they lacked interest or because incentives in terms of dependable water and established claims to the land did not exist.[16]

No one was more aware of this dilemma than Robinson nor more threatened by its implications. Like engineers Shoemaker and Butler

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[15]Placing the early Tuba City situation in focus, see, G. S. Fisher to F. E. Leupp, October 31, 1906, Robinson to Code, August 19, 1908, R. Ritter to Robinson, September 30, 1908, and Report of May 4, 1909, Navajo 1910 Folder, Box 71, Irrigation District 5, BIA, RG 75, NA.

[16]George Butler to CIA, "Recommendations on Water Development," June 24, 1906, details early developments on the San Juan including the Hogback ditch, pp. 9-12, Navajo 1910 Folder, Box 71, Irrigation District 5, BIA, RG 75, NA; and for a description of the Hogback Project in 1916, see Cato Sells to E. B. Meritt, July 18, 1916, General Correspondence, Box 72, Irrigation District 5, BIA, RG 75, NA.

before him, he was quick to lay responsibility on agency personnel or upon the BIA generally. Nevertheless, he described the problem and made repeated efforts to get Indian farmers established on the land.

A case study of Ganado will serve not only to throw light on the development of irrigated agriculture among the Hubbells' Indian neighbors but will indicate the dimensions of the problem generally on the Navajo Reservation during the World War I years. The Hubbell farm itself had first claim to water at Ganado. As construction of the reservoir neared completion' other whites also sought to lay claim to prime land and water rights. The Bureau of Indian Affairs quickly developed plans for an Indian school, and "the choicest piece of the land amounting to about 274 acres" just below Hubbell's was withdrawn from Indian use. On some of this land Indians, who Hubbell encouraged to farm, built hogans, but until considerable pressure developed it remained technically off limits for settlement. In 1918 Robinson complained to the chief engineer in Washington that this was "an injustice to the Indians and to the Irrigation Service." In no case should the Indians "be deprived" of access to it. In addition, he pointed out, the Ganado project was constructed with reimbursable funds and to hold the Indians responsible financially for land the Indian Service was preempting was an obvious unjustice. But most pertinent was Robinson's argument that Indians were intimidated by the conflicting impressions they got about the project. On the one hand they were invited to settle. On the other they were met by confusion about

where they could settle or even assured that the best land was not open to them. As a result, Robinson reported, Indians cultivated "less than 40 acres" although the project had "been in shape to deliver water" for more than two years. Robinson's letter was forwarded to the commissioner with a blunt note attached by the chief engineer warning that "the project will be a failure unless steps are taken to get the Indians interested."[17]

In the meantime the Presbyterian Mission launched a campaign in 1914 to formalize their land rights and acquire water rights. With the support of an Indian family that felt it had given its rights to the mission, an effort had been made earlier to get the quarter section just upstream from Hubbell's assigned to the mission. This correspondence was renewed, and after repeated exchanges extending over a period of several years the mission secured use of eighty acres of which forty-five were thought to be irrigable. In addition irrigation water was promised until Indians needed it. As it worked out the mission paid a modest assessment for enough water to irrigate about thirty acres of land under an agreement that it would provide farm training for Navajo students. This arrangement governed the mission's access to water until 1933 when it was allowed to buy a water right at $106 per acre which was to be paid off over a period of time.

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[17]H. F. Robinson to W. M. Reed, November 20, 1918, Ganado 1909 Folder, Irrigation District 5, BIA, RG 75, NA. A summary report for farming on the project in 1918 showed fourteen acres under irrigation by Indians, Miscellaneous Reports and Correspondence 1908-1935, Box 23, Irrigation District 5, DRC.

Like Hubbell's farm where Navajo crews of twenty or more learned the rudiments of white man's farming, the mission farm provided effective training in irrigation and work with machinery and farm animals. Students whose homes were no more than a mile or two away sometimes lived at the mission year-round, learning something of the rigid permanence of location and routine required by irrigation and the white man's production schedule. Probably less apparent to them would have been the environmental costs of cultivation and irrigation. Ultimately young men with experience at the mission became the backbone of the Navajo farming community at Ganado. Yet in the years after 1914 the mission also tended to divert attention as well as land and water from Indian use.[18]

Assigning Land on the Ganado Project

Another fundamental problem had to do with the matter of awarding specific plots of land to Navajos. Under the Dawes Severalty Act of 1887, land was allotted and ultimately deeded to individual Indians on many reservations. There was some talk of this on the Navajo Reservation, and about 1907 a number of

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[18]F. A. Abbott to Hubbell, November 23, 1922, Indians 1912-1930 Folder, Box 44, HPUAL; Robinson to Reed, September 5, 1916, Miscellaneous Reports Folder, Box 10, Irrigation District 5, Box 10, BIA, RG 75, DRC; see also correspondence on the Presbytarian Mission water and land July 20, 1914, July 15, 1914, July 28, 1914, July 20, 1915, and March 27, 1917, Ganado Folder, Irrigation District 5, BIA, RG 75, NA; and Repayment Contract Between Ganado Presbyterian Mission and the United States, September 29, 1933, BIA, Office of Land Operations, Window Rock; for boys on the mission farm see Katherine Quimaiyousie Oral History 1973, pp. 26-27, WPHTP.

allotments were actually made southward from St. Michaels along Black Creek and at least preliminary allotments were designated near Gray Mountain on the Navajo Extension. Reference was occasionally made to planned allotments at Ganado as well, but as it turned out land was "assigned" to Indians with understanding that it would be held only by occupation or use.[19]

Dissatisfied with this, Hubbell wrote Arizona Senator Henry F. Ashurst, Chairman of the Committee on Indian Affairs, late in 1915, "setting forth his views as to the areas in which allotments should be made." Ashurst forwarded this to the office of the Commissioner of Indian Affairs with a supporting note. Assistant Commissioner E. B. Meritt passed the buck, replying in a rather stiff letter that "no definite conclusion has been reached" because the "plats of survey have not yet been furnished this Office" by the General Land Office. For whatever reason, the question of allotment remained unsettled for several years, discouraging thoughts of locating Indians on Ganado land by lease or assignment.[20]

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[19]For Black Creek allotments see Klara B. Kelley, "The Black Creek Valley: Ethnohistoric and Archaelogical Evidence of Navajo Political Economy and Land Use," in R. T. Fehr, L. B. Kelley, L. Popelish, and L. E. Warner, Prehistoric and Historic Occupation of the Black Creek Valley, Navajo Nation, Navajo Nation Papers in Anthropology 7 (Window Rock: Navajo Nation, 1982), pp. 76-83; on allotments in the Grey Mountain area see Bascom Johnson, "Special Findings Concerning Particular Settlements of Non-Reservation Navajos," January 1912, Navajo 1912-1915 Folder, Box 72, Irrigation District 5, BIA, RG 75, NA.

[20]H. F. Ashurst to J. L. Hubbell, February 16, 1916, Ashurst Folder, Box 5, and Meritt to Ashurst, February 16, 1916, Indian 1914-1917 Folder, Box 44, HPUAL.

In 1920 Congress began to press for reimbursement on funds used on Navajo irrigation projects. This brought the fact that very few Navajos were farming under any of the irrigation developments into an even more critical light. Perhaps the most successful system in terms of Indian settlement was the Hogback Project, where some 4,000 acres were now reported to be under water but on which only 1,400 acres had actually been occupied. In part this poor showing was due to the fact that permanent claims could not be established to the land. It also grew from an effort to reserve Hogback land for students returning from schools. Many so called "Wild Indians" had expressed an interest, but they had not been given permits because it was hoped the returning students could be segregated from their uneducated brethren.[21]

G. M. Post, construction engineer at Ganado, wrote that it was "out of the question to expect any" reimbursment from Indians there until "secure title" was given them. In a long and revealing letter, he elaborated that Indians farmed "a number of plots of from one to three acres" by intermittent native methods but that there was "no land on the project which any Indian can call his own." A few had fenced plots and one or two planted "an acre or so of alfalfa," but, realizing they could "only hold a plot by actual occupancy," they were reluctant to make improvements. Many Indians submitted requests for land to Post but he "was compelled to" tell

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[21]H. F. Robinson to CIA, April 8, 1920 and E. C. Gersbach to Robinson, April 1, 1920, General Correspondence 1918-1920 Folder, Box 18, Irrigation District 5, BIA, RG 75, NA.

them that he "had no authority to" grant it. In addition he reported that Indians were informed that if they did improve a plot that the Irrigation Division could not "assure them . . . they they could hold it undisturbed." Not only was this a matter of the BIA's hesitation to allot or assign land but of internal relations among the Navajos. As Post explained, some industrious Indians were "driven off by stronger—and lazier—brutes." One who Post classified in this latter category "fenced three choice plots" which he not only kept others from farming but refused to use himself.[22]

Engineers on other projects submitted similar reports. All agreed that not only was the extent of Indian farming insufficient to warrant any hope for repayment but that benefits from well and spring development were so diffused as to make impossible a just designation of who should pay. Furthermore the actual costs of most of the earlier projects were lost in the chaotic bookkeeping of early years and could never be accurately identified much less justly assessed against individual Indians. Anyway, Robinson concluded, Indians had rarely asked for the projects and would

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[22]G. M. Post to H. F. Robinson, April 1, 1920, General Correspondence 1918-1920, Box 18, Irrigation District 5, BIA, RG 75, NA.

properly object to paying for unused projects that had been forced upon them.[23]

About the same time another issue surfaced that forced the Navajo agencies and the BIA generally to remove the impediments to Navajo settlement on irrigation project lands. During 1920 Robinson learned that the discussions about water rights in the Colorado River that led to the Colorado River Interstate Compact of 1922 were picking up momentum. Sensing immediately that the movement to distribute the waters of the Colorado River to the states through which it ran threatened ill-defined Indian rights and that the threat could be used to jolt Indian service people into action, Robinson made several speeches and wrote numerous letters and reports on the subject. The speed with which Indians were assigned to the land and with which irrigated farms actually evolved suggests that the threat behind Robinson's argument was not lost upon agency people and the Washington officers. It also suggests that the slow progress in settlement was more a failure of BIA policy and administration than it was a problem of Indian apathy.[24]

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[23]E. C. Gershbach to H. F. Robinson, March 3, 1920, and Robinson to Commmissioner of Indian Affairs, April 8, 1920, General Correspondence 1918-1920, Box 18, Irrigation District 5, BIA, RG 75, NA.

[24]H. F. Robinson to W. H. Code, Chief Engineer, February 21, 1909, Robinson to Vernon L. Sullivan, Territorial Engineer, February 18, 1910, and Robinson to Carl Hayden, May 12, 1920, General Correspondence 1918-1921 Folder, Box 18, Irrigation District 5, BIA, RG 75, NA; Robinson to Commissioner, May 5, 1920, Navajo Folder 1921, Box 72, Irrigation District 5, BIA, RG 75, NA.

Indian Settlement on the Ganado Project

Thus prompted, Superintendent Peter Paquette announced he would assign the land at Ganado in January of 1921 and "was besieged with requests from the Indians." Land was distributed in "twenty acre plots" and Indians commenced at once to prepare farms and build fences. To Robinson's immense satisfaction "we were delivering water" by the middle of May to "seventeen users, sixteen . . . under the south side ditch and one under the north side." Several others with north-side land assignments asked for water but it could not be delivered because the "ditch was not in condition." The next year it was reported that twenty-eight permits had been issued and that, including 100 acres at Hubbells and 20 at the mission, 330 acres were actually irrigated. In addition "a large amount of land" was "subdivided into ten acre tracts below the Cornfields Day School."[25]

A December 1922 report from Agent Paquette provides rather dramatic detail of Indian movement onto the project. The effort of twenty-nine Indian families to move onto their land was described. Some were well established with most of their tillable land under cultivation. Others were just getting their assignments. A sizeable minority were female. Many worked to level land, build fences or set up ditch systems. The land assigned differed

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[25]H. F. Robinson, Extract from Annual Report for 1921, and Ft. Defiance Indian Agency to Commissioner, December 5, 1922, Water Folder, WPPTP.

substantially. A few had ten or fifteen acres of level, manageable soil. More had land broken by encroaching arroyo systems. Some struggled with gravel or hillside slopes while others worked to clear cedars and pinon pines. One or two had as little as two acres that could be developed. Only a few failed to make some use of the land assigned them. To Paquette and his BIA colleagues it was a satisfying and promising time.[26]

Forms on the Land

It was also a time of great activity as Indians hurried to improve their farms. As they worked they gave the Ganado farmscape a distincly recognizable character. From surviving buildings it is clear that in many cases Indians did not build hogans on the farm itself. The tendency was to locate houses and corrals above the ditch line or perhaps even at some distance. This, of course, enabled them to integrate livestock programs with their new roles as project farmers. In this they followed well-established Navajo customs instead of the pattern set by Hubbell and the mission, whose operations were both set up ranch-like, with buildings inside the the farm boundaries.

On many Ganado farms hogans are still located above the ditch and beyond the fence from the fields. Prime examples are the five or six rectangular houses and trailers of the "Lincoln camp" which

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[26]Ft. Defiance Agency to Commissioner, December 5, 1922, Water Folder, WPHTP

stand above the terraced fields of this extended family on the point of a hill just southeast of the Trading Post. Other examples include homes and corrals connected with the David Hubbard land, where a large and respected family was raised. Located at the upper end of the north-side canal, these buildings stand at the foot of a sharp bluff above the canal and across the road from the farming land. This held true as well for several other north-side dwellings.

By contrast, at least one farmstead was located below the ditch on the north side and three or four houses were built inside of farm boundaries below the south-side ditch southwest of the Hubbell place. It is not clear whether these homes were built on farms in response to the example of white neighbors or whether dwellings were established before the land project opened up. It seems probable, however, that during the farming era these families either did not run sheep and goats or they had other dwellings or arrangements to help manage them.[27]

Peter Paquette's 1922 letter describing Indian movement onto the land made clear that the Ganado Reservoir was a water project not a land project. This had significant impact on the forms agriculture at Ganado took. Water was delivered by the government. On the other hand water users were obliged to improve their own land. In contrast to New Deal projects where the water system was not only

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[27]Abe Lincoln Conversation June 1984.

installed but the land "subjugated," as New Dealers aptly called it, the Ganado assignees were required to level their own land, build their own laterals and headgates, and border or furrow their fields according to their own preferences and abilities. Photographs from the New Deal projects show heavy land-leveling equipment and far-flung land subjugation patterned in part from earlier projects at Parker and elsewhere on the Colorado River.[28]

In addition a wide variety of background influences came to bear on the tillage patterns that emerged on the Ganado Project. Fundamental was the fact that without anticipation of heavy equipment, land assignments followed the contours of the land in their exterior lines. In addition plots were small. Although one source reported that Indians were given twenty acres each, most pieces were apparently smaller and almost all were broken up by the terrain, some of them badly. Nevertheless, lots were generally divided into rectangular pieces and maps and aerial photographs show that straight lines and the cardinal directions made an impact upon the cultivation methods of Ganado Navajos just as they did white farmers of the era. Further complicating the visual patterns of Ganado's irrigated lands was the background of project farmers who were guided by previous experience in Indian farming. Yet most of them were influenced by whiteman's practices including the Hubbells

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[28]See "Lower Rock Point Project, October 1939;" "Many Farms Project, March 1940;" and "Northern Naschiti Project, 1940;" Reports and Related Records, 1891-1946, Box 18, Irrigation District 5, BIA, RG 75, NA.

whom they had observed preparing land for irrigation. Many either farmed for the Hubbells or the mission or worked with earth-moving equipment during construction of the irrigation system.[29] Others brought experience on sugar beet farms in Kansas and Colorado and a few had farmed in southern Arizona. In addition to graduates of the mission's on-the-job-learning program, a few had likely had gardening and farming experience at government schools both on the reservation and off.

In the work of development, all the project's Navajo farmers were undoubtedly helped by BIA farmers and engineers. Nevertheless, work would have without exception been done by man and horse power and often by unskilled people. Equipment included some plows, a few wagons and slip scrapers, and perhaps wheeled scrapers and floats or land levels. One account from the years before assignments were made reported that a son of Ganado Mucho cleared land by carrying rocks from it in a blanket. Herbert Gregory mentioned the desirability of "graders," but there is no evidence that such equipment was available to Ganado's Navajo farmers in 1921.[30]

As a result land was poorly leveled. Irrigation was at best complicated and difficult. Water got away and cut new channels. In trying to bring their unleveled little pieces under control, Indians tried new expedients with the result that in time Ganado fields were broken into literally hundreds of small plots with water running

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[29]T'Ahasbaa' Slivers Oral History by Roberta Tso, WPHTP.
[30]Gregory, The Navajo Country, p. 105.

and team." Thereafter, for a few years it appears wages for maintenance were factored into project costs.[32]

From about 1921 a succession of "project foremen" were appointed. Samuel G. Maus, a portly, affable man of practical experience, was a good early example. He lived at the dam, tending it as well as distributing streams of water and keeping ditches free of Russian thistles and other trash. During the winters he often ramrodded Indian crews building ditches or making repairs. In addition he advised and worked with the Indians on their farms, instructing them in use of equipment, supplying seeds, helping them deal with grasshoppers and other insects, and generally playing much the role of county agents in neighboring white communities. In this last-named role Maus, promoted fairs and the other activities of the Ganado Valley Growers' Association and submitted annual reports.[33]

These reports show that the middle and later 1920s were a period of progress and success for Indian farmers. Acreage continued to increase until by 1930 some 700 acres were under cultivation. The best year in terms of production was 1927 when a harvest valued at $84,512 was reported. By this time perhaps thirty-five families were on the project. In 1931 when thirty-six Indian families farmed 494 acres, land cultivated by Indians averaged 14 acres on which more than $30,000 worth of hay, corn, garden truck, melons, oats and

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[32]Annual Reports Ganado Project, Miscellaneous Reports and Correspondence 1908-1035, Box 23, Irrigation District 5, BIA, RG 75, DRC.

[33]Ibid.

every direction. This was especially true of the Indian farms, but both the Hubbells and the mission also improvised as they had trouble with their irrigation systems and some of their fields were also broken into numerous pieces. Seen in aerial photographs, the Ganado farmscape is in marked contrast to either the four-square layout of early section-line farms or the pivot sprinkler circles of recent methods. It was a struggle to cope with bad conditions, with limited finance, inadequate machinery, and cultural differences. "Subjugation" was beyond their capacity.[31] As a result, land forms in the Ganado Project showed clearly the imprint of the environment and circumstances in which they were developed.

The Ganado Water Users

Ganado's Indian water users brought water to their land over a period of years. In 1917 only 14 acres were farmed by Indians while Hubbell and the mission farmed 81 acres between them. By 1922, 203 acres were irrigated by Navajos and 147 by whites. The following year Indians farmed 330 acres, reporting that they had raised corn, wheat, melons and beans. In addition to making improvements on their own land, Indians cleaned the ditches and carried out all routine maintenance on the project, donating "all labor both hand

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[31]Maps available included BIA Aerial Maps for Ganado, Arizona, 1970 and Navajo Tribe Topographical Planning Map for Ganado, June 1961. These were provided by the Navajo Tribal Land Office, Window Rock. Backed up by written records, photographs and on-site examination, these give some sense for land assignment, field layout and farm relationships.

potatoes were raised. Indians donated about $800 in labor each year to project maintenance. In addition the Trading Post and mission paid Indians about $650 as their share in upkeep. Regular monthly meetings were held with the Indian farmers where they discussed "irrigation, cultivation, crop production methods, and other subjects pertaining to the development of the project." In addition to the project foreman Neil Campbell, who was paid $1880 per year, a ditch rider was employed by 1931 at an annual cost of $800.[34]

There was much interruption in all this. In some part this was due to the many washouts and other failures of the system. That the impact of floods and erosion was not more devastating was probably due to the fact that the same rainy seasons that knocked out the system also provided moisture to keep crops growing. Inevitably, however, Indians left the farms for a variety of reasons. In 1934, for example, the project foreman wrote that "the men have been working away from home." It was dry, and worse, crops were in "poor condition due to lack of attention."[35]

The Ganado Project and Indian Farming Since 1945

Ironically, as time progressed evidence about the Ganado Project diminished almost as if the records themselves sank into the sand like a desert stream. This fading from recorded visibility is especially true for the project farmers who by this time appeared

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[34]Ibid.
[35]Ibid.

only in the half-light of statistics and bureaucratic promotion. Yet in 1938 the project was reported to have cost about $200,000 since its inception. It irrigated 707 acres, 53 families lived on it, and no fewer than 500 people were said to benefit from it. In addition the BIA requested $78,000 to "subjugate", fence, and place windbreaks around the 1,000 acre tract at the end of the north-side ditch. This development was planned for completion by 1945 but war efforts diverted attention and nothing happened. Nevertheless, Ganado farmers produced the largest crops of any Arizona Navajo project year after year. In 1938 and 1943, for example, their crops accounted for about $25,000, exceeding production at Moencopi Wash, the next competitor, by about $6,000 in 1938 and nearly doubling production of Lower Rock Point Navajos, the next largest producers in 1943. Yet on close examination even these records are suspect on many counts. It is as though the project lived on in a deepening twilight until 1954 when authorized funds for its further development were diverted entirely.[36]

It is difficult to assess the Ganado Project's Indian history. In the summers of 1983 and 1984 bindweeds and brush choked the fields both under the ditch and south in the broad expanses of Cornfields' blow-sand-hummocked bottoms. The reservoir was defunct as it had been for nearly twenty years. Long unused masonry

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[36]Navajo Reservation Irrigation Project Histories, 1938; and Irrigation Project Reports, 1942-1954, especially "Navajo Irrigation Data: Long Range Program, January 1944;" BIA, Office of Land Operations, Window Rock.

headgates and eroding field terraces still marked the farmscape. To all appearances the project was dead.

But there were scores of Navajo farms under cultivation in the Ganado area. Most of them were tiny dry or flood farm undertakings. For the most part fences surrounded them. Modern tractors turned the soil in dry clods. One or two of the plots were under the Ganado ditch, but they, like scattered spots in the sagebrush and cedar, awaited rain or, in some cases, desert runoff known only to intimates of the land. More than agricultural enterprise, they appeared to be part of a cultural routine, a hopeful expression of the Navajos' capacity to plant without undue expectation of yield.

In addition to customary planting there was an air of hope. In 1984 Eva Showa and other members of the Lincoln family turned packed, dry soil for the first time in more than two decades in the field north of the holding pond where the Hubbell farm extended beyond the homestead bounds onto Indian land. It mattered little that the ground broke in great clods or that she had to ask a passing white how to sow alfalfa seed or even that the prospect of moisture was remote. The planting was a vindication. Also there was hopeful talk at the Chapter House of redoing the dam, this time with a wall sixty or seventy feet high, a barrier that would span a canyon and hold enough to finally get water to Cornfields. Somehow, as though talk would make fact, the backhoes were out cutting trenches twenty inches wide and three feet deep in the bottom of the long dusty canal, connecting farms to dam again. Although the

reservoir held only a shallow sheet of water and the weir coming from it was still plugged as it had been for years, there was optimism about the future.

The question arises, how much was changed? Was the whole process after all just part of a Navajo cycle—a cycle that saw the desert and in it life, but ultimately expected only what it gave? This was apparently the pattern in the days after Bosque Redondo when the fields at Cornfields prospered. It seemed apparent in the summers of 1983 and 1984. The irrigation project was long dead, but, with customs and habits only half remembered, native farms abounded.

It seemed, too, that the Navajo farm cycle really explained irrigation at Ganado between the time of its introduction in 1903 and its failure in the 1950s and 1960s. The spirit that stirred there when the backhoes trenched the canal in 1984 was also reflected in the early applications for land, in the reluctance to embrace too quickly, in the move onto the land and in manifestations of pride during the decades on the irrigated farms. It was apparent as Indians planted and waited for rain and flood water and as they leveled farms and waited on the white man's system, all the while continuing to live as they had always lived.

Certainly the Hubbells, H. F. Robinson and some of the best of the others of their generation recognized Indian spirit for what it was. Yet they were men of their time. Assimilation, whether by force or benevolent effort, guided their Indian policy and ultimately each of them had his own needs as well. Hubbell turned

the fight over to Robinson and the Irrigation Division in 1912. Robinson carried on until 1930. In the years that followed as land and the system wore out and as America moved progressively away from assimilationist values, his successors gradually eased their way out of it. The Ganado Project remains a dead dream but one that rouses interest among Ganado's Navajos to this day. It is also part of the Hubbell farm's past and an understanding of it is necessary to the National Park Service's interpretive programs at the Hubbell Trading Post.

PART TWO: THE HUBBELL FARM AND RELATED ENTERPRISES

CHAPTER VII:

BEYOND THE FARM: OTHER LAND HOLDINGS

Over the years John Lorenzo Hubbell and his family owned several other farm and grazing properties. These pieces of land did not loom large in the family affairs. Little was recorded about them and the role they played. Indeed acreages are only dimly apparent, and time of acquisition is unknown in most cases, although some questions could be cleared up by search in the appropriate county records. While it seems possible that land was acquired as a by-product of the trading business itself, no specific evidence was found establishing that Hubbells took land on bad debts or otherwise as part of trade.

Land And The Hubbell Enterprises

In addition to the Ganado farm, there were seven Hubbell land properties. These places were located in five counties in two states and spanned the family affairs through two generations from 1885 until well into the 1940s. They ranged in size from as little as 40 acres to over 13,000 acres of leased land. On at least four of the places the Hubbells made more than a pretense of farming at one time or another and talked of it on a fifth. One place, the largest, had only a grazing potential and in its most visible period

was part of Lorenzo, Jr.'s livestock trading enterprises. These additional pieces of land were most apparent in the Hubbell record as collateral for loans and as a reflection of the struggles family members had after 1915 to maintain their way of life.

Different in many respects from most northern Arizona farm families, the burden of debt under which the Hubbells labored nevertheless gave them a point in common with other farmers for whom mortgages and the battle to meet payments were a way of life. Like many of their farming contemporaries their debt was related in part to water development and the costs of farm making. Like other land owners they suffered reverses when anticipated revenues failed to materialize. On the other hand, the Hubbells' farm indebtedness was inextricably interwoven with debts incurred in business and politics. One result was that they dealt with business firms and local sources in making their loans and paid far higher rates of interest than did the many farmers who borrowed from the Federal Land Bank.

Chronologically, the first piece of land for which title in John Lorenzo Hubbell's name can actually be established was a quarter section purchased from Romulo Tafollo who consummated the deal with his "X" on August 15, 1885. The land was located in sections 20 and 29 of township 10 north range 25 east in Apache County. Hubbell paid $1,000 in cash and 1,000 "head of white improved ewes," which in light of the 750 "Utah cows" the Mormons paid Solomon Barth for his St. Johns' land claims five years earlier was a substantial

sum.[1] At this time Hubbell still called St. Johns his primary place of residence, and the purchase price covered "tenements, improvements and apurtenances" as well as land. When or how he disposed of the place is unknown.

Interests At Pajarito

In the tradition of the family, a much more important property was land connected with the Hubbell estate at Pajarito near Albuquerque in Bernalillo County. It was listed in one source as a "1/6 interest in tract 2 as recorded in" the county "Clerk's office."[2] No evidence of what role this land played in John Lorenzo's life prior to 1900 was located, but in 1905 financial summaries he evaluated the "Pajarito property" at $11,000. By contrast the Ganado "farm land and improvements" were listed at only $6,000 in the same summary. However, the Pajarito property probably included a house, for Mrs. Hubbell was living much of the time in Albuquerque during those years.[3] As the family's interests shifted increasingly to Arizona, the Pajarito property played a less significant role. A home was no longer maintained there after her death in 1913 and the land was probably never part of the family's active economic program.

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[1]Filed August 18, 1885, Apache County Deed Book #2, pp. 415-417, Apache County Recorder's Office; and Property and Mortgages Folder 2, Box 529, HPUAL.

[2]List of Hubbell property, dated October 17, 1930, Property and Mortgages Folder 2, Box 529, HPUAL.

[3]Ganado Ledgerbook 1902-1907, Box 375, HPUAL.

In the years following John Lorenzo's death in 1930 the Pajarito land was ignored even more as the Depression complicated the already perplexing problems of his tangled estate. Finally, in 1937, H. W. Atkins, a hard-nosed Gallup lawyer who for years handled the Hubbells' legal business, wrote a Bernalillo County abstract company with reference to the validity of the property's title and questions about overdue taxes. Atkins explained that the place consisted of "approximately ninety acres" of unimproved land. It was in "the neighborhood of the Frank Hubbell Ranch" and like it was "formerly a part of . . . Pajarito Land Grant."[4] Later the same year Atkins informed Lorenzo, Jr. that there were "a lot of defects" in the title which could "only be cured by a suit." Unfortunately taxes had not been paid for three years and amounted to a substantial sum of money. Nevertheless, Atkins advised Lorenzo, Jr. to hang on to the Pajarito place but to do "something . . . toward putting" it "in cultivation, otherwise it is going to continue to be a substantial burden." As pressure from creditors intensified the next year, Atkins changed his position, now advising Lorenzo, Jr. to sell the property to help satisfy interest payments.[5]

No information about the Pajarito land was found in the Hubbell tax papers and financial summaries for the years after 1940 but it was certainly disposed of. At least two possibilities exist as to

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[4]March 23, 1937, H. W. Atkins Folder, Box 5, HPUAL.
[5]H. W. Atkins to Lorenzo Hubbell, Jr., June 30, 1937, Box 5, HPUAL.

what may have happened. First it may have been foreclosed on by Navajo livestockman Henry Chee Dodge, who held the major part of the Hubbell mortgage, or it may have been taken over by Bernalillo County for delinquent taxes. More likely, given the Hubbell tendency to hang on to what they had, was the possibility that Frank Hubbell or other relatives bought it or assumed control otherwise.

McKinley County Land

The chronology and utilization of other Hubbell land in New Mexico is also clouded. However, two pieces near Zuni and several plots at Gallup were in John Lorenzo's possession by 1920 when Dorothy Hubbell arrived at Ganado to teach school or soon enough thereafter that she associated them with the family in telling her oral history of the 1920s.

A 160 acre piece at Pinyon Springs was part of a trading post operation there and was called the "bean ranch" as well as Pinyon Springs trading post. At various times it was operated by Ed Vander Wagen and Anson Jones. The former was apparently considered to be primarily a trader and the latter a farmer as was evidenced by Dorothy Hubbell's references to his plowing the Ganado farm at times. The term "bean ranch" suggests that they raised pinto beans there for a sufficient period to establish the place's relationship with bean production in the family vernacular. A few miles north along the road between Zuni and Gallup, Hubbells also owned the 640 acre Vander Wagen Ranch. John Lorenzo's deed to it was filed in 1927. However, in 1937 there were unpaid taxes that were "over ten

years old," suggesting the Vander Wagen place may have been in the family before 1927. Together with the "bean ranch" it provided a base for Hubbell grazing operations that extended into the surrounding public domain at least until the establishment of the Grazing Service and federal land-buying programs in the mid-1930s placed severe restrictions on grazing in the Zuni-Gallup area.[6]

Rounding out the Hubbell property in McKinley County were eighteen lots in Gallup. Thirteen of these were business property and five were residential. Included were commercial buildings, a freight yard and a house. A home was maintained in Gallup until 1942 and mail contracts and tours operated from there, making it certain that some of the Gallup property stayed in the family until that time.[7]

The late thirties were extremely hard times for the family, and Navajo ranchman-financeer Henry Chee Dodge kept constant pressure on them to pay interest on their debt to him. During this period the two McKinley County ranches were optioned to the "the Government,"

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[6]Dorothy Hubbell Oral History 1969, pp. 3, 9, 43, WPHTP; and H. W. Atkins to Treasurer of McKinley County, June 1, 1937, Atkins Folder, Box 5, HPUAL. In the years after 1935 the federal government made a major effort to buy New Mexican land and to turn it over to the Pueblo and Navajo Indians. See D. H. Dinwoodie, "Indians, Hispanos, and Land Reform: A New Deal Struggle in New Mexico," Western Historical Quarterly XVII (to be published in July 1986).

[7]See Atkins correspondence to Lorenzo Hubbell, Jr., March to July 1937, Atkins Folder, Box 5, HPUAL; mortgage data in Property and Mortgages Folder, Box 529, HPUAL; and Dorothy Hubbell Oral History 1969, pp. 3, 9, 43-44, WPHTP.

for which a George E. Currier, Regional Project Supervisor, of Amarillo, Texas was agent. Appraisers found "the buildings and other improvements on both places" to be "in a bad state of repair. Sheet iron roofing, floors and partitions" had been stolen and general evidence of disuse suggested no one had occupied either place for several years, although it is possible that one or both places may have been farmed at times and they were certainly used for grazing sheep. In view of what members of the family had sometimes estimated the value of these two places to be, the government appraisals came in distressingly low at $2,240 for the Vander Wagen Ranch and $3,180 for the Pinyon Springs place. However, the stated policy of Depression land acquisition programs was to buy land at $2 or $3 per acre, by which standards the government offer looked a little better.

As it worked out, "the government" ran out of funds on the Zuni buying project, and the Hubbell options fell through when Lorenzo, Jr. hesitated to consummate the deal while money was still available. However, Chee Dodge continued to press for payment and a more or less continuing effort was made to sell the McKinley County property. With the advent of World War II, land markets picked up and in the spring of 1942 a prospective buyer was found. This sale was apparently consummated, as Dorothy Hubbell indicated that the property near Zuni was sold about the time she and her husband left Gallup in 1942.[8]

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[8]Atkins correspondence January 5, 1935 to June 16, 1942, Atkins Folder, Box 5; Property Summaries Folder, Box 529; and Indian

The Fruit Ranches

The Hubbells also owned two farms at Farmington, New Mexico in San Juan County. Although there was much interaction between the Farmington fruit farms and the Hubbell trading posts and mail contracts, surprisingly little firm data was generated about the places themselves. They were sometimes referred to as the "upper" and "lower" places. One was called the Hefflin place or the "school section". The other was the Hall place. Dorothy Hubbell indicated that "one was 80 acres and the other 120 acres." Water assessment notices from the Farmington Independent Ditch Company added further information. Payment notices for "106 shares [of water] on the T. B. Hall place" or smaller farm and for fifty shares "on the School Section" suggested there was more developed farm ground on the smaller of the two places. Other sources indicated the Hefflin place encompassed an entire section of land but included only 30 acres of irrigated land and had originally been state school land. Moreover, a 1930 inventory included the notation "Lease School" suggesting the "school section" land may have been leased from the state rather than owned. An undated appraisal substantiated much of this information and in addition indicated that the Independent Irrigation Ditch crossed the Hefflin place. Furthermore, it had no well or windmill. It did have a brick and frame house "about

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Folder 1936-37, Box 45, HPUAL. The government option described above was almost certainly connected with the reforms described by Dinwoodie, "Indians, Hispanos and Land Reform."

24'x24'" valued at $800. It was enclosed with a "3 wire" fence, and was located four miles from the Farmington railroad station. With improvements it was appraised at $3,250.[9]

According to another document the T. B. Hall place, consisting of forty acres, was purchased in 1928 for $4,000. Half was paid at the time of purchase. The remainder drew interest at "rate of 8%" until June 10, 1930. Hall was to pay all taxes and ditch assessments that had accrued "to the year 1928" and Hubbell all that accrued thereafter.[10]

A relative, Andy Romero, farmed one or both of the Farmington places for many years. A man named Garcia also worked one of them for a time. He left under sufficiently adverse circumstances in 1942 that Roman Hubbell first directed his lawyer to instigate action against him and then changed his mind. Garcia replaced a man named Baca who also left under pressure. In January 1939 Baca wrote

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[9]H. W. Atkins to Forrest Parker, April 6, 1942, Atkins Folder, Box 5, HPUAL; Dorothy Hubbell Oral History 1969, p. 43, WPHTP; Notice of Assessment Farmington Folder, Box 185, and Folder 6, Box 445, HPUAL.

[10]Dorothy Hubbell Oral History 1969, p. 43, says "Mr. Hubbell" bought the Farmington farms "when he was in Gallup during the 1930's." Since she rarely referred to her husband, Roman, as Mr. Hubbell and always spoke of John Lorenzo as Mr. Hubbell, and he died in 1930, I take it she meant the 1920's in this case. Yet Ganado 1930-1934 Folder, Box 496, HPUAL, has checks amounting to $3,456.12 covering "costs of Farmington farm" plus a $44.23 item for tax totalling $3,500.35 for 1930, also a bill of sale from T. B. Hall to J. L. Hubbell, September 1929, Folder 6, Box 445, HPUAL. For suggestion that J. L. Hubbell had interest in a Farmington farm as early as 1914, see Johnson letters July 9, 1914 and July 7, 1914, Farmington Farm Folder, Box 245, HPUAL.

Lorenzo, Jr. complaining bitterly that both ranches had been turned over to Garcia, who "can't even attend the one he already has." Apparently Romero drove the mail and farmed part-time with Garcia. Even so they "lost 400 boxes of apples which froze in the orchards." By contrast, Baca assured Lorenzo he "would keep the ranch in good shape" because he had "the means with which to do it--many muchachos," apparently a large family of sons.[11]

Personnel difficulties notwithstanding, the Farmington orchards were actively farmed during the 1930s. The usual itinerary of horticultural work was carried on. In addition to cultivating and irrigating, the orchards were pruned and sprayed. Some seasons, at least, pickers and shed employees were hired. Shipping boxes in lots up to 300 were purchased both locally and in Albuquerque.[12] Fruit from the Farmington ranches was used regualarly at the Hubbell trading posts. Indeed over the years thousands of boxes of apples were shipped to Oraibi, Keams Canyon and Ganado. Once there they sold well, but income from them was apparently realized in some rather unconventional ways. For example, the story was sometimes told that the Hubbells shipped apples to Ganado by parcel post to collect on postage fees and increase the business of the Ganado Post Office mistresship which was perennially in danger of being reduced in salary because of the limited postal business carried on. As the

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[11]Baca to Lorenzo Hubbell, Baca Folder, Box 6, HPUAL.

[12]Many scattered references appear in the Hubbell papers to the fruit farms. For several undated letters from the 1930s from Andy Romero see Folders 1, 2, and 4, Box 123, HPUAL; also see H. W. Atkins to Lorenzo Hubbell April 6, 1942 for a discussion of orchard operation, Atkins Folder, Box 5, HPUAL.

story went, the apples were "dumped in the Wash" once they arrived at Ganado.[13]

Beginning in June of 1939, attorney H. W. Atkins, began to link references to an unnamed prospective buyer with warnings that Chee Dodge, with whom he conferred frequently, was determined to have something paid on the Hubbell debt. The anonymous buyer, Atkins informed them, might take one of the Farmington places if the price were right and if the crop could be thrown in. In July, Atkins himself examined one of the farms and found it to be "very well run down but . . . a good place." Then, tipping his hand as to who the unidentified buyer was, he wrote that Dodge might be pursuaded to take it over and renegotiate the "mortgage on the Ganado property," reducing the interest from 8 to 6 percent. Although Dodge was "very much excited" that the Hubbells had "not paid him his interest," they still held onto the property. Another buyer approached Atkins in 1940, but the Hubbells continued to farm the Farmington land until 1942 when it was probably sold or lost.[14]

Leased Land And Other Interests

Over the years the family had a variety of other interests in land. At times they were offered land that they did not buy, and on occasion tried unsuccessfully to line up other places in irrigation

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[13]John Lorenzo's daughter, Barbara Goodman, was postmistress for many years. Clifton Ferrar Oral History 1970, by David M. Brugge, p. 1; and Gene Haldeman Oral History November 1972 by David M. Brugge, p. 5, WPHTP.

[14]Atkins letters June 12, 1939 to June 16, 1942, Atkins Folder, Box 5, HPUAL.

developments that ultimately failed. An example of the first sort occurred in 1902 when Babbitt Brothers offered a "ranch and Post North of Winslow". Pricing their trading stock at "$500 to $600 and the 160 acres of deeded land at $500.00," Babbitts assurred John Lorenzo that it was "a fine grass country & plenty of water." Indicating they would "take it all out in blankets this Fall," they urged him to be in contact by return mail. There is no evidence that the Hubbells responded favorably to the proposition, but the offer of both the post and the land suggest that they were interested in landed propositions as well as trading opportunities.[15]

In the winter of 1914 while the Ganado Reservoir was under construction and prospects still seemed good to convey water from it to the Cornfields area, John Lorenzo wrote the Commissioner of Indian Affairs explaining a deal he was trying to work out with the Santa Fe Railroad to purchase a section of land "located at the Cornfield district nine miles below Ganado." He was convinced that by winter watering "dry process farming" would raise good crops of hay for which the demand "in our country . . . is very great." Indians had demonstrated "in their primitive way" that dry farming would succeed if supplemented by off-season watering, and Hubbell's own surveys showed there were no "Indian farms upon" the land. The railroad company was anxious, he wrote, to have the blessing of the Indian Bureau as he was himself, because, as he put it, he did "not

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[15]Babbitt Bros. Folder, Box 6, HPUAL.

desire to go contrary to any policy that you may desire to pursue in that locality." In a passage that revealed much about Hubbell's entire approach to farming and water development, he concluded that the "experience of forty years trading with the Navajo Indians" placed him "in position to benefit from whatever prosperity is theirs." As it turned out in the long run, hope that Ganado Irrigation Project water could be used to irrigate Cornfields' land even in the winter was unrealistic. In the short term it appears that either the Indian Commissioner discouraged the proposition or Hubbell himself became preoccupied with his senatorial campaign and other affairs, for no further reference is found to the matter.[16]

Completing the Hubbell land package was a large block of land leased from the Aztec Land and Cattle Company of Albuquerque. Amounting to 13,843 acres (nearly 22 sections), it was located along present highway A377 between Holbrook and Heber about 100 miles south of Ganado in Township 16 North, Range 18 East, suggesting that it had originally been railroad grant land. During the early 1930s it was leased in Lorenzo, Jr.'s name, for 4 cents per acre. As the Depression deepened, T. W. Cabeen, Vice President of the Aztec Land and Cattle Company, extended the lease period from one year to two and made the cost of the second year contingent on the success of

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[16]J. L. Hubbell to Commissioner of Indian Affairs, April 4, 1914, Irrigation System at Ganado Folder, WPHTP.

local users in getting taxes down.[17] Lorenzo was often in arrears on payment of his lease, but Cabeen had little alternative but to work with him as other leasees were also hard pressed and few or none of them were in position to add the land to their holdings. The Hubbells probably lost the Aztec lease later in the 1930s, perhaps as the result of a land exchange the Aztec Company and its affiliate the New Mexico and Arizona Land Company "made with the United States about this time." Or perhaps it was lost or sold as Roman and Dorothy Hubbell adjusted their enterprises during the 1940s and early 1950s.[18]

One can only conclude that this land was part of the Hubbell family's extensive trade in sheep and cattle. As grazing demands made by Indian livestock had become greater, the problem of handling an ongoing trade in Indian sheep and cattle complicated herd management for traders as they put trail herds together and managed runts and other hold-over stock. The Hubbell lease from the Aztec Land and Cattle Company may well have been in effect from early times. It is certain, however, that in the years after 1915 leased

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[17]T. W. Cabeen to Lorenzo Hubbell, April 9, 1931, September 28, 1931, April 8, 1932, April 22, 1933 and April 12, 1935, Aztec Land and Cattle Company Folder, HPUAL; also letters of Robert H. Carlock, President of the Aztec Land and Cattle Company, to C. S. Peterson January 18, 1985 and February 6, 1985. In the latter letter Carlock explains that this property "is now included in the ranch owned by Doy Reidhead."

[18]Dorothy Hubbell Oral History 1969; Friday Kinlichinee Oral History 1970 by John Sylvester and David M. Brugge, makes a passing reference that the "land was leased" to Roman. "It almost expired, and the other son, the brother of Roman . . . renewed it," p. 21, WPHTP; and Carlock to Peterson, January 18, 1985.

grazing land that Hubbells could control would have been highly useful as were the ranches in McKinley County and the Ganado farm itself.

In summary, the Hubbells acquired various pieces of land and applied them to their business. These were widely scattered and acquired over a long period of time under unrelated circumstances. They did not make an efficient economic unit either in location or how they could be used. They were both a burden to the trading business and a useful source of collateral. The Pajarito land's influence was cultural more than economic, binding the family to their New Mexican relatives and customs. Also distant, the western New Mexico land lent itself more effectively to the family business. This was especially true of the Gallup property, but the ranches near Zuni and the orchards at Farmington were all useful in their way.

In the interaction between land and trade, the Hubbells ran an outfit that was peculiar in its particulars more than in its general character. They operated on the Indian reservation and in a remote and desert region but their interests reached beyond the narrow confines of both trading and the Ganado area. While their landholdings were not large, they were among the strongest evidences of the extent of these interests. In the reach and variety of these interests they shared in widespread western economic traditions. Big cattle and sheep operations throughout the Southwest and Central Rockies had stores and trading posts, some dozens of them. For example, Frank Bond and Son of northern New Mexico ran twenty-four

stores as well as 50,000 sheep and vast land holdings. Although basically ranchers, the Barth family had stores that at one time extended from Springerville in northeastern Arizona to Williams in northwestern Arizona. The giant Deseret Land and Livestock Company in Utah also combined mercantile business with land holdings and sheep operations that extended from the Nevada border well into Wyoming. Many such operations were products of frontier influences but some carried on to the mid-twentieth century and beyond to recent times. Of this sort was Redd Ranches whose Navajo sheep buying activities of the 1940s will be discussed in connection with the Hubbells' livestock trade in Chapter VIII. As late as 1960 Redd Ranches operation still included a country store, an automobile agency, a tractor and implements agency and a trucking firm. Its ranch store still does a flourishing business.[19]

It is in this context that the Hubbell interest in lands beyond Ganado should be regarded. Indian trading was at the heart of their interest but like other frontier outfits they mixed commerce and land operations. They were not particularly successful in their landed business but certainly they were in the mainstream of western development as they acquired land and struggled to retain it as part of their affairs. To understand the function of their land

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[19]Dinwoodie, "Indians, Hispanos, and Land Reform;" Isaac Barth Oral History April 1972 by Frank McNitt, WPHTP; Deseret Livestock Company; for Redd Ranches store see Oscar Jameson Oral History 1974, by Gregory Maynard, Brigham Young University Library, especially pp. 55-58.

properties and particularly the role of the Ganado farm, the next chapter will survey their trade in livestock and show something of its routines, its potential for profit and loss, and how the Hubbells undertook to make land facilitate the livestock trade.

CHAPTER VIII:

LIVESTOCK AND THE HUBBELL FARM

Trade in livestock was an important element in the business of the Hubbells and other Navajo traders. Although store management, freighting and mail contracts, and promotion of the rug and silvercraft industries loomed large in their lives, the Hubbells were also stockmen and the Ganado place a livestock operation. It is therefore worthwhile to look at their livestock trade and consider it in relationship to their interests in land and farming.

No one has described the role of Navajo traders as stockmen in detail. It is widely acknowledged that from early times they bought and sold Navajo sheep and goats and their wool and mohair. Just what the sheep trade meant in terms of outfit, costs, income, personnel, and land use, however, has not been carefully analyzed. Such an analysis cannot be attempted here. The purpose of the pages that follow will be to get some sense of how important livestock trade was in the Hubbell operation and to clarify how the Ganado farm and land neighboring it facilitated their trade in sheep and cattle.

Early Livestock Interests

John Lorenzo Hubbell was involved in sheep from the earliest years of his settlement at St. Johns and Ganado. Many of his St.

Johns associates invested heavily in sheep, including his brother Frank, the Baca family, and the Barths. John Lorenzo considered himself to be a sheepman in the unrest that existed between sheep operators and cattlemen in northern Arizona during the 1880s. That he actually owned sheep and dealt in them was illustrated by an 1885 transaction while he was Apache County sheriff and living at St. Johns. In payment for a quarter section of land one Romulo Tafollo gave Hubbell a receipt for "One Thousand (1000) head of white improved ewes, paid and delivered."[1] All but a few subsequent references to John Lorenzo and livestock suggested that he bought and sold rather than raised or ran animals in a ranching operation, yet at times the distinction was so narrow as to be almost nonexistent.

It should be remembered that in the years prior to the 1880 extension of the reservation Hubbell's place was on the public domain and that some of his white neighbors ran livestock as well as traded with Indians. For some it proved to be a deadly business. As indicated elsewhere in this study, both Richard Wetherill and Lot Smith met untimely deaths at the hands of Navajos in confrontations over livestock.[2] Nearer at hand and more successful in his Indian

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[1]Filed August 18, 1885, Apache County Deed Book #2, pp. 415-417, Apache County Recorder's Office; and Property and Mortgages Folder 2, Box 529, HPUAL.

[2]See C. S. Peterson, "'A Mighty Man Was Brother Lot'. . .," Western Historical Quarterly I, (October 1971), pp. 393-414; and Frank McNitt, Richard Wetherill: Anasazi, re. ed. (Albuquerque: University of New Mexico, 1966), pp. 5-7 and 269-281.

relations was Thomas Keam, who in addition to other interests hoped to establish a "Cattle Ranche." However, little is known about his ranching operations. A little more was recorded about George Williams whose "trading ranch" at Kinlichee, a few miles upstream from Ganado, was visited by military diarist John Gregory Bourke in 1881.[3] Williams moved increasingly into cattle ranching and toward trouble with the Navajos and friction with the Indian office. Writing Galen Eastman, then agent at Ft. Defiance, that the boundary change of 1880 did not "include my premises," Williams refused to relinquish his claim. Two years later Indians complained "that one large herd of cattle had been pastured upon their land on the western part of the Reservation." The agent found that the problem was complicated not only by boundary questions but also by whether the cattle belonged to Williams or to a "Navajo squaw man" whose Indian wife legitimized their being there. Friction continued, and in June of 1883 Williams wrote complaining that 15,000 head of sheep and horses were watering at his reservoir and that he was ready to fight. "I shall make a final stand," he threatened, "let the consequences be what they may: Positively they shall not water there."[4]

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[3]Frank McNitt, The Indian Traders (Norman: University of Oklahoma Press, 1962), p. 186; John Gregory Bourke, The Snake Dance of the Moquis of Arizona . . . Journey from Santa Fe . . . to the Villages of the Moqui . . ., rprt. (Chicago: Rio Grande Press, 1962), pp. 67-78.

[4]Correspondence from January 5, 1880 to June 9, 1883, copied from File Mark E, New Mexico Superintendency, L 4073, BIA, RG 75, NA, evidently by David Brugge, copy now in Indians 1873-1905 Folder, Box 43, HPUAL.

Hubbell was uneasy during this period but was only indirectly concerned in Williams' conflict over grazing rights. Indeed, at least one aging Indian in the 1970s recalled that Hubbell favored Indian grazing claims and that he was reputed to have taken strong action in support of at least one. As Sam Taliman told it, "Nakai Sani . . . was involved somehow" in a killing incident over livestock "when the railroad was being built." Near Wide Ruins (about twenty miles south of Ganado and off the reservation even after the Extension of 1880), a rancher who objected to Indians running their sheep "around his property" killed a deaf Navajo herder who strayed onto his place. According to Taliman, Hubbell and "a lot of Navajo Leaders went after the . . . rancher to kill him." No more was seen of the rancher and "the word went around that" that they succeeded in their task.[5]

Whether Hubbell went this far in backing the Indians or not, he was attracted to the Ganado area by the presence of Navajo livestock as well as by ranching prospects for himself. The water at Ganado Lake and in the Rio Pueblo Colorado was a key to the Navajo stock industry at Ganado, particularly in the days before spring and well development. Hubbell's stores near the lake and by the stream reflected an early trading strategy based partly on livestock. The periodic reopening of the dam store in later years coincided with reservoir projects, but Arthur Hubbard, whose father ran the store for several years about 1930, thought the Hubbells reopened it then

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[5]Sam Taliman Oral History n.d., WPHTP.)

to reclaim sheep and wool business which developing grazing patterns threw towards a competing trading post a few miles southeast at Cross Canyon.[6] Similarly trading posts were opened by the Hubbells at Oraibi, Keams Canyon, Pinon, Cedar Spring, Black Mountain and other points to take advantage of opportunities in the livestock trade.[7]

The Sheep Trade: Early Phase

Although there can be no doubt of the fundamental importance of sheep in the Navajo trade, it is difficult at this distance to know

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[6]On the role of farming at Cornfields in Hubbell's developing business see H. F. Robinson to J. H. Code, Chief Engineer, March 1909, Indians 1909 Folder, Box 43, HPUAL; and Arthur Hubbard Conversation August, 1984.

[7]A list of Hubbell trading posts and people who staffed them prepared by Clint Colby, the University of Arizona archivist who indexed the Hubbell Papers, shows they owned stores at Keams Canyon as early as 1902 and at Oraibi in 1897 where first a relative Antonio Ortega and later John Lorenzo's brother Charles were stationed, see Hubbell Business Interests File, WPHTP. Early studies suggest that in the years after the Long Walk Navajos developed as farmers more slowly than they did as herdsmen which would tend to support the assumption that then as later they found the importation of "outside goods" necessary. See for example Cosmos Mindeleff, Navaho Houses, Bureau of American Ethnology, Seventeenth Annual Report 1895-1896 (Washington, D.C.: G.P.O., 1896), p. 481. A Navajo account describing the Hopi trade is in the Tully Lincoln Oral History in which Eva Showa participated. Lincoln commented that Hopis came "only by donkey then. They used to herd their donkeys this way carrying ground cornmeal, dried peaches, and that's what they used to do a long time ago." Showa added: "My mother told me . . . the Hopis used to come and bring their whole pack of dried peaches and cornmeal on donkey back. On whole train of donkeys, they used to bring them down here from the village and then trade their stuff down here for mutton. . . . My father said they used to do the same thing." Tully Lincoln Oral History September 1970, p. 51, WPHTP.

what the sheep and goat trade of a hundred years ago actually amounted to. Then, as later, the Navajos raised large numbers of animals. However, for many years in the nineteen century the primary market was for wool and pelts not sheep. In addition to the poor quality of Navajo stock, the national taste for lamb was only partially developed, cattlemen resisted the sheep industry, and cooperative relations with railroads, markets and packers had not yet evolved. Jacob Barth of St. Johns explained that his father ran cattle as well as sheep because "in the early days they couldn"t sell anything but wool." As he put it, there was simply no market for "lambs or wethers."[8] Navajo sales also were limted to wool and hides for many years. Bearing this out, the agent at Ft. Defiance reported to the Commissioner of Indian Affairs in 1883 that Navajo herdspeople clipped 800,000 pounds of wool that year. By contrast he made no reference whatever to sheep sold. It may be argued that the terrible winter of 1882-1883 predisposed Indians to hold on to their stock that year. Many "lost every sheep they had." One saved only thirteen out of a flock of 1,000. "Losses of

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[8]Jacob Barth Oral History 1972 by Frank McNitt, WPHTP. Although markets for Navajo lambs were slow in developing the Mexican War contributed significantly to the sheep industry nationally because mutton became an important part of the conquering army's commissary. By 1860 the first "mutton" breeds had been established and by the 1883 feeding to meet the fat lamb market had been introduced in Michigan and Ohio. After the collapse of the great "cattle bonanza" in the late 1880s the range sheep industry spread quickly throughout the West and was progressively integrated into the lamb and mutton market in the turn-of-the-century-decades. See Edward U. Wentworth, America's Sheep Trails: History, Personalities (Ames: Iowa State College Press, 1948), pp. 80, 106-109, 120-125, 151-155, 208, 215, 261-275, and 577-585.

two, three, and five hundred were frequent." Fleeces were neither as long nor as fine as usual and averaged no "more than a pound apiece." However, agents reported no sale of sheep to the Commissioner of Indian Affairs in the years that followed until 1886. Then the report was a mistake. A livestock census listed 800,000 sheep and 300,000 goats under the heading "stock sold." However, the text of Agent S. S. Patterson's report clearly stated that those figures represented the total count of livestock, not sales. Sales of 1,050,000 pounds of wool were reported along with 240,000 sheep pelts and 80,000 goat pelts. Even the slaughtering of 280,000 sheep and goats for "necessary subsistence" was reported but no specific mention of sheep sold or traded appeared. The winter of 1886-1887 was severe again and thousands of animals died. In addition to diminished herds and local consumption, a factor working against sheep sales was the fact that wealth was counted in livestock. Thus in the same fashion Indians kept their ponies, they may have been insufficiently introduced to the ways of white commerce to trade their sheep aggressively. Similarly it is possible that traders had not learned to manipulate sheep-buying as a second payday in the credit system that was evolving.[9]

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[9]See reports of the Navajo Agency in Annual Report of the Commissioner of Indian Affairs 1883 (Washington, D.C.: G.P.O., 1883), pp. 177-181; Report of Commissioner 1884, pp. 177-181; Report of Commissioner 1885, pp. 379-281; Report of Commissioner 1886, pp. 420-422; Report of Commissioner 1887, pp. 253-260; Report of Commissioner 1888, pp. 189-197; and Report of Commissioner 1889, pp. 255-261.

Finally in 1890 the sale of Navajo sheep was entered for the first time as an item in the annual reports of agents to the commissioner. For years previously, sheep numbers were pegged at 700,000 or above, and wool sales reported at up to 1,300,000 pounds. By contrast to these large figures, 1890's report listed a mere 12,000 head under sheep sold. Thus sheep were a weak element in the market and their sale represented a new trend.[10]

Hubbell bought sheep in limited numbers during 1889 and perhaps before. Clearly he traded for "wool and pelts" earlier. For example, between July 3 and October 31 in 1886 he loaded out eleven wagons of wool and pelts. In all he shipped 12,408 pounds of white wool and 7,771 pounds of black wool and 104 bales of sheep and goat hides weighing about 100 pounds each.[11] An 1889 ledgerbook recorded the purchase of a modest number of sheep and goats but actual traffic in sheep and goats was apparently a small portion of John Lorenzo's trade at that time.[12] In the years that followed, random and hastily entered items appeared, indicating that Indian ponies and cattle were taken in trade and resold. It seems certain, as well, that livestock were herded on the reservation adjacent to the Trading Post while herds were being collected.[13]

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[10]Report of Agent C. E. Vandiver to Commissioner of Indian Affairs, Report of Commissioner 1890, pp. 161-162; and Report of Commissioner for subsequent years.

[11]Ledgerbook 1886, Box 328, HPUAL

[12]Ledgerbook 1889, Box 328, HPUAL.

[13]See daybooks, journals and accounts for the 1890s in Boxes 328-332, HPUAL.

In the first years of the new century the sheep and goat trade increased sharply as animal populations continued to grow. Among other evidences supporting this are oral histories. For example ninety-six-year-old LaCheenie Blacksheep, who "wouldn't know how the world would be without sheep," related around 1970 that "back then there was lot of grass, vegetation and the earth was alive." They had "many horses, cattle and sheep. We of Blacksheep clan had about 1,600 head of livestock and my father's clan had about the same amount."[14] Other Ganado old-timers recounted that their families owned "1000 sheep and 1000 horses," or "1400 sheep," or that they sold "40-45 bags of wool to Nakai Sani," or that they herded "sheep," "horses," and "cattle" for him.[15]

During this period sheep husbandry was actively promoted among the Navajos by the Indian agencies as a means of security. An interesting example of the direct involvement of Reuben Perry, agent at Ft. Defiance in the years around 1905, was recalled by Joe Tippecanoe. Riding from Cornfields to Ganado with Tippecanoe and Hubbell one evening, Perry asked the latter: "Does this man have any sheep?" Hubbell replied in the negative and explained that Tippecanoe was a full-time employee of the Trading Post. Perry then

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[14]LaCheenie Blacksheep Oral History by Roberta Tso and David Brugge, p. 27, WPHTP.

[15]Good oral histories on Navajo livestock in WPHTP include those by Yazzie Holms, Frank Tsosie, LaCheenie Blacksheep, Tully Lincoln (who recalled that during the period of reduction Navajos "walked in meat" because of the great number of animals they had to slaughter, p. 44), Sam Taliman, Chee Singer, Buck Chambers and Dolth Curley.

told "old man Hubbell . . . you yourself . . . must buy some sheep . . . and give it to him, because he is working for you so he can have some livestock to fall back later on in life." About a year later Hubbell let Tippecanoe and his relatives pick about "20 head of sheep," and "a couple of years after that" Hubbell grubstaked him to "sacks of sugar, flour, coffee and something like that." Taking pack donkeys, Tippecanoe went "way down to Nazlini" and traded the goods for "74 head and brought it back here." Thereafter his family ran sheep from a camp just off the Hubbell homestead, ultimately building a herd of 500.[16]

Another evidence of the substantial livestock population after the turn of the century was a 1915 census. This was conducted under the direction of Agent Peter Paquette whose interest in irrigation was referred to in Chapter VI. This census enumerated some 159,265 sheep and goats in the "Ganado District" as contrasted to 140,212 for the neighboring "Agency District." A recent study of the Paquette census showed 543 families in the district, 231 of whom owned sheep with the largest owner having 2,000 head. In the "Agency District" 280 families of a total of 445 owned sheep with the largest single owner having 4,000 head. With smaller "St. Michael's District" included with the "Agency District", the Black Creek Valley area had slightly more than 207,000 head of animals or 50,000 more than the Ganado District. Nevertheless, the Hubbell

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[16]Joe Tippecanoe Oral History 1971, pp. 76-77, WPHTP, [this was also numbered pp. 15-16].

Trading Post almost certainly had better access to the Ganado livestock market than any single post did to the Black Creek Valley market.[17]

Hubbell's Sheep Trade After 1900

Trade in sheep and goats was clearly a major part of the Hubbell enterprise in the years after 1900. Regulations governing this aspect of trade were announced about 1904 but were indifferently applied. Hubbell dickered with Indian agents seeking to influence the kind of stock that could be purchased. He worked particularly to encourage marketing of wethers as yearlings rather than as two-year-olds as spelled out in the regulations. Sheep were taken on debts throughout the summers, although then as later it made sense to focus the sheep trade in the fall after maximum size and flesh were achieved. Agents often accommodated Indian traders. A good example was "Moqui" Agent Horton Miller's confidential instruction to John Lorenzo Hubbell in October of 1909 to have "his man at Oraibi" arrange to graze his sheep that winter "where no

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[17]The Paquette Manuscript Census for 1915 is in File 64386-14-034, RG 75, NA; microfilm copies exist, one of which is at the Brigham Young University Library; also useful are Robert S. McPherson, "Ricos and Pobres: Wealth Distribution on the Navajo Reservation in 1915," New Mexico Historical Review, 60 (October 1985), pp. 412-423; and Klara B. Kelley, "The Black Creek Valley: Ethnohistoric and Archaeological Evidence of Navajo Political Economy and Land Use," in R. T. Fehr, K. B. Kelley, L. Popelish, and K. E. Warner, Prehistoric and Historic Occupation of the Black Creek Valley, Navajo Nation, Navajo Nation Papers in Anthropology #7 (Window Rock: Navajo Nation, 1982), pp. 83-91.

complaint will be made for we have no authority to permit a white man to graze sheep . . . on the reservation."

By 1914 more explicit regulations were in place and agents demanded that buyers observe them. For example, Leo Crane, agent at the "Moqui Agency" at Keams Canyon, worked vigorously to limit buying to licensed traders and to specified classes of stock. In addition all buying was concentrated in September and October and traders were required to have their animals inspected and to hold them on the reservation no more than thirty days after purchase. However, stock driveways were apparently not specified at that time. The Hubbells were offended with Crane's efforts to close off loopholes in the administration of the regulations they enjoyed earlier and a brisk controversy ensued. Ultimately, however, Crane came to look on Lorenzo, Jr. especially as his friend and as an upright and fair advocate of the Indians.[18]

In the World War I era and the 1920s Hubbells were very active in the sheep and goat trade. Herds were purchased at the various Hubbell posts and collected into larger drives at Ganado. Hubbells resold sheep to markets wherever they found them, including to local contacts and friends. In 1909, for example, John Lorenzo supplied his old St. Johns friend Isaac Barth with upwards of 15,000 head of

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[18]H. H. Miller to J. L. Hubbell, October 8, 1909, Indians 1909 Folder, Box 43, HPUAL; Moqui Indian Reservation Livestock Regulations, Sheep File, WPHTP; Leo Crane to Indian Traders June 10, 1914 and September 21, 1914, and J. L. Hubbell to P. Paquette, August 1909, BIA 1880-1932 Folder, WPHTP; and Leo Crane correspondence, Indian 1914-1917 Folder, Box 44, HPUAL.

sheep. At least 6,000 head of these changed hands under terms of a contract drawn up between the two men. In addition a herd of "a little over four thousand head" passed through Ganado from Lorenzo, Jr.'s Keams Canyon operation, which appear to have not been part of the Barth deal. The following years John Lorenzo sold sheep to a Wichita feeder named W. A. Rogers. Other years herds were fed in New Mexico, Colorado and the Salt River Valley in Arizona. Sheepmen including Frank Hubbell sometimes ordered as many as 2,000 head of young goats to feed their herders. In this trade, goat wethers were preferred, but she-stock was also acceptable as long as the animals were young. Goats brought less than sheep but were traded at least as early as 1889, and Hubbell let it be known that he could supply almost unlimited numbers. In a 1912 letter urging Hubbell to get moving on an order for 2,000 goats, C. N. Cotton noted, "you have always talked to me as though you could get them by the million."[19]

Conducting the Trade

Buying seasons began as individual Indians brought sheep to trade during the summers. They were weighed and accounts credited

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[19]Dorothy Hubbell Oral History 1969 provides good summary information, pp. 2 and 51 to 56, WPHTP; this is reiterated and to some degree supplemented by her Oral History 1979, pp. 73-81 and 142-148; other oral interviews at WPHTP are also useful. Isaac Barth correspondence for 1909, Trading Post Folder and Sheep Folder, WPHTP; J. L. Hubbell to L. Hubbell, October 30, 1909, Frank Hubbell to J. L. Hubbell, July 31, 1908 and July 1, 1914 and other correspondence in Sheep Folder, WPHTP; and Cotton 1912 Folder, Box 20, HPUAL.

at prices that ran as low as two cents per pound. As the season advanced, silver dollars in lots up to $1,000 were sent to the local store managers to meet the noncredit demands of buying. As fall came on and lambs fattened, representatives worked the Indian camps, making collections, inventorying livestock and lining up good animals. The Ganado store maintained contact with Lorenzo, Jr., who in turn kept close touch with managers at the western stores. C. N. Cotton, Babbitt Bros. and other wholesalers as well as Frank Hubbell in New Mexico were contacted frequently to monitor strength of the various markets. In the eyes of Lorenzo, Jr. and C. N. Cotton, both John Lorenzo and Roman paid more for sheep than was necessary, but competition and concern for the good will of the Indians kept pressure on all of them to price competitively. For many years Roman was active in debt collection and buying in the Ganado neighborhood. In the western stores, managers took to the Indian camps aggressively in the later part of the season, and Lorenzo, Jr. often arranged the affairs of this busy time to get to each of the stores for a three or four day climax of buying. Sheep were frequently weighed at the Indian camps. To accomplish this Indian women trussed the animals' legs or picked them up in slings to weigh them on balance scales. Others stuffed sheep bottom first in wash tubs two at a time and weighed them on platform scales. At Ganado and probably at other posts, large scales were installed allowing for weighing in lots of twenty or more.[20]

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[20]Oral histories including those by Dorothy Hubbell and LaCharles Eckel are useful in this context, as is especially the

Herds were accumulated at each post to accommodate the various classes of animals. Standard categories included aged and broken-mouth ewes, wethers of advanced age, yearling wethers and lambs and, when needed, various goat categories. Also common were runt herds for lambs weighing less than a minimum weight (45 pounds was sometimes mentioned). The Hubbells also segregated black sheep which were less popular with buyers. It was thus common to build four or five separate lots as the animals came in. Indian herders held them in the vicinity of the various posts, and, as shipping dates in November approached, trailed them from post to post with the numbers building as they went. Efforts were made to have people trail the sheep who knew them and with whose habits the individual herds were acquainted. Dogs were not used. The trip from Ganado to the railroad loading pens at Chambers or Gallup took four or five days. By the rule of thumb suggested here it might well have taken two weeks to go from Oraibi to Gallup, or longer if a layover at Ganado was involved. Much of the country through which they trailed was checkerboarded with railroad grant lands. Occasionally the Hubbells leased pastures from the railroad or subsidiary companies, but Arizona custom as well as circumstances on the reservation allowed flexible trailing arrangements until well into the 1920s.[21] (Figures 36-37.)

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correspondence of Lorenzo Hubbell during the World War I years and 1920s; see Folder 3, Box 122, Folders 1-3, Box 123 and Fletcher Corrigan Folder, Box 128, HPUAL; and Preston "Pep" Redd Oral History 1973 by Karl Young, Charles Redd Center, Brigham Young University, pp. 3-4.

[21]The oral interviews and Lorenzo Hubbell correspondence that apply in fn. 20 are also the source for this information.

Fig. 36: Navajo Flock Watering Near the Hubbell Farm, Dipping Vat is to Left Out of View ca. 1915. (HTP PP-20.)

Fig. 37: Sheep & Goats in the Hubbell Corral ca. 1915. (HTP RP-63.)

Dipping plants featured in the Hubbell livestock strategy as well as in their trade of consumers' goods. Sheep scab and other diseases constituted a serious problem, and government regulations made it mandatory to dip sheep and goats both as a matter of animal husbandry and in preparation for taking sheep off the reservation to market. Plants existed at both Ganado and Keams Canyons from very early in this century. From at least 1908, the Ganado dipping plant was just across the arroyo on what actually proved to be Hubbell property. Much later, in the mid-1920s a dipping plant was also constructed near the trading post Lorenzo, Jr. ran at Pinon. In the early years the construction of dipping plants was a boon as hauling the cement, lumber, pipe and boilers used in construction provided opportunity for freighting contracts. Supplying the operation also contributed to freighting opportunities. More important was the way the plant tended to focus the sheep industry and human traffic. Not only did the dipping plant bring sheep into the region and to the very door of the Trading Post, but it was good for trade generally as people became accustomed to visiting Ganado. In time, as the Lee Trading Post and the Round Top Store opened, the trading dynamics of the Ganado dipping plant changed. Chemical discharges which polluted the stream and dust stirred up by the constant movement of flocks made the vat's location near the Trading Post more a bother than an asset. Consequently a new plant was built about halfway between the mission and the Ganado reservoir. But the dipping plants continued to give form and character to the sheep trade.

Indeed, so closely related to the sheep trade and general prosperity of the Trading Post were dipping programs that the Hubbells sometimes underwrote dipping fees for their patrons. This was an effort to lend elements of predictability to the risky business of contracting to deliver specific numbers of sheep that met specified standards and then having to compete with other traders for sheep to fill the contracts. An undated letter from Lorenzo, Jr. provided a good example of how this worked. Instructing one of his buyers to tell the Indians to "wait until the lambs are a little larger" to dip them, he explained "that by waiting, for a little while, they will get more money." Then he continued that to forestall the competition he was "going to pay the dipping fee for all the Indians that want me to." Indians were to pay him later. Lorenzo concluded he was "doing this" so the Indians would "get more money" for their sheep and it would not be necessary to "sell sheep now to[o] cheap just to pay the dipping fee." Indians may well have profited but Lorenzo, Jr. also got the trade of anyone who participated.[22]

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[22]There is evidence that the Ganado dipping plant had at least three locations. Joe Tippecanoe Oral History 1971, p. 24, threw light on the first when he discussed John Lorenzo's first store "by the dam, close to the present wash, where they used to have the first sheep dipping place. Now it's like a deep canyon." Other evidence suggests a dip was in somewhat shaky operation at Ganado in 1906 and that one was installed at Keams Canyon in 1908 and at Pinon in the 1920s, see Supt. R. Perry to J. L. Hubbell, October 2, 1906, Supt. W. H. Harrison to Hubbell, March 25, 1907, and February 4, 1908 on the Ganado plant and H. H. Miller to Hubbell, March 1, 1908 on construction of the Keams Canyon plant, Indian 1906-1908 Folder, Box 43, HPUAL; and for the Pinon Plant see E. H. Miller to Lorenzo

Sheep Trade and Ranching

In a business with many risks it was inevitable that sheep and goats were sometimes held over. Few direct accounts suggest that John Lorenzo was a sheep man in any conventional sense. Yet he and his sons appear to have held herds in the neighborhood of their ranch at Vander Wagen near Zuni and possibly on the tract leased from the Aztec Land and Cattle Company southwest of Holbrook. An oral interview of Gallup old-timer Clifton Farrar suggested that Hubbell "had thousands of sheep . . . all over the country . . . here, there, and everywhere. Wherever they'd get grazing. Yeah, he had a lot of sheep, had the sheepherders." Some of Hubbell's sheep, Farrar thought, were run on leased land and then, referring to the essential relationships of Navajo trading, he continued that John Lorenzo entered into some kind of "Navajo share, he'd feed him, take care of him, [and make a] sharecropping deal on his sheep too." Farrar finished by indicating that Hubbell ran sheep south of Gallup on the public domain where he asked homesteaders if they were "homesteading out here [or] just building shacks for my sheepherders? 'cause you can't make it.'"[23]

An occasional documentary source also indicated that Hubbells ran sheep as well as traded in them. A good example was a chattel

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Hubbell, September 1 and September 27, 1924, Indian 1924 Folder, Box 44, HPUAL; on moving the Ganado plant from near the Hubbell Trading Post to a site above the mission see Katherine Quimaiyousie Oral History 1973, pp. 33-34, WPHTP.

[23]Clifton Farrar Oral History 1970 by David Brugge, pp. 14 and 20-21, WPHTP.

mortgage drawn up on September 6, 1920 between John Lorenzo and Hatcher & Snyder, a Denver partnership. Its terms secured $46,000 owed by Hubbell with 9,000 head of unshorn lambs, most of which were known as the "'Dodge' and 'Zuni' 1919 crop" then pastured in McKinley County near Zuni. This was clearly part of a major debt load that obligated Hubbell to the Navajo leader and rancher Chee Dodge in addition to Hatcher & Snyder. The McKinley County location, the September 1920 date, and the "1919 crop" designation suggest that Hubbell handled large herds of sheep on the public domain for at least three months that fall and that he may well have held them since the fall before. In either event it indicated a sheep operation that extended beyond buying and selling to grazing and care consistent with ranching practices in the area.[24]

Hubbell Cattle Enterprises

Cattle and horses were much less important in the Navajo trade. Yet the Hubbells traded in both and at times may have actually run a considerable number of cattle on the reservation. Ganado was named for the Indian leader Ganado Mucho, who in turn was named because of cattle he raised in the area. An Indian oral history taken about 1970 substantiated the relative importance of cattle, indicating that in John Lorenzo's first years at Ganado "there weren't any sheep, but a few had cattle around here."[25] The Paquette Census

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[24]Chattel Mortgage, J. L. Hubbell to Hatcher & Snyder, Mortgages Folder, Box 529, HPUAL.

[25]Joe Tippecanoe Oral History 1972, p. 24.

of 1915 also showed that Navajos of the Ganado and Chinle districts owned a substantial number of cattle. In addition Navajos and Hopis ran some cattle in districts farther west. For example, Ganado farmer David Hubbard lived for several years at Leupp after 1912 where he owned a few head of cattle.[26] The Hubbells bought and sold some of this stock, trailing it for resale as far west as Flagstaff and as far east as Gallup. Babbitt Bros. particularly bought cattle from the Hubbells during the early years of the century. John Lorenzo also often bid on the Moqui Agency and Indian school contracts for beef. These were small orders, usually involving as little as five thousand pounds of beef, but they were a regular item in his trade.[27] In addition some beef was butchered at Ganado to supply the family and workers as well as to sell over the counter.

Moreover, Ganado Indians credited Hubbell with substantial cattle operations. Several aging men recalled that they herded cattle for John Lorenzo or mentioned trailing them to market. For example Buck Chambers, who lived at the mission for years, related that his brother herded Hubbell cattle and that "there were quite a few men herding cattle along with him. There were two big corrals across the wash from the Hubbells where they put the cattle at

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[26]Katherine Quimaiyousie Oral History 1973, pp. 6 and 50, WPHTP.

[27]Babbitt Bros. to J. L. Hubbell, September 4, 1911, August 26, 1912 and July 10, 1915, Babbitt Bros. Folder 1902-1918, Box 6, HPUAL; and for example, Beef Contract of May 4, 1904 Moqui schools, Indians: Navajo Folder, Box 187, HPUAL.

night." According to Chambers, Hubbell bought cattle throughout the summer and "sold them in the fall at [the railroad stop of] Chambers; shipped them off by rail after they got up to 300 or 400 head."[28] Ned Slivers began herding cattle for "Mr. Lorenzo Hubbell" when he was thirteen years old. The Hubbells, Slivers said, bought cattle "from the Black Mountain area as well as Ganado." After a time Slivers became a permanent employee with the cattle operation, driving the chuck wagon on drives to Chambers where they were shipped.[29] Frank Tsosie thought John Lorenzo actually ran about 1,000 head of cattle between Ganado and Chinle. Later "he gathered all the cattle, sold them all, drove to the railroad." While Tsosie likely did not mean that the Hubbells had a ranching operation and may well have overestimated the actual count, his sense that cattle were important for a time was accurate. As far as the Ganado operation was concerned, cattle buying diminished sharply after 1930. Nevertheless, the burned stubs of the cattle corral's upright posts may still be found in a half-circle truncated by excavation for the sewage plant west of the Trading Post, and the photos of a mature Roman Hubbell working cattle in a stockade corral hark back to this era.[30]

As extensive as this early cattle operation was at Ganado, cattle were even more important in Lorenzo, Jr.'s enterprises after

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[28]Buck Chambers Oral History n.d. by Roberta Tso, p. 12, WPHTP.
[29]Ned Slivers Oral History n.d. by Roberta Tso, p. 1, WPHTP.
[30]Frank Tsosie Oral History 1971, handwritten by David Brugge, WPHTP; and photo HTP-PM-152, HTP.

he moved to Oraibi about 1920. He often bought as many as 400 to 700 head during the fall buying season. Strict regulations governed the trade. Competition was intense as other well-established buyers worked that part of the reservation. Once purchased, animals were accounted for individually by category, brand, color and other identification, and inspection by an agency official was required. Lorenzo, Jr. worked to upgrade Indian stock, distributing bulls for the agency and otherwise promoting improved animals. Dipping was necessary to take cattle off the reservation or to move them from one district to another within it. By 1930 driveways over which cattle could be driven to market had been designated and agents applied a good deal of pressure to get buyers to utilize them. On occasion cattle owned by Lorenzo wintered on the reservation, in which case a grazing fee was applied more to offset costs and discourage too much abuse than as a penalty. As he did in the case of sheep, Lorenzo undertook to organize and direct buying at the various stores. The hectic pace of the fall buying season was accentuated even more by the distances and conditions of the cattle trade.[31]

Livestock After 1930

The livestock trade in the 1930s was a taxing business and one that may have contributed to the untimely passing of Lorenzo, Jr. in

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[31]Information on Lorenzo, Jr.'s cattle operation is scattered in various Hubbell sources. See especially Undated Folders, Boxes 122, 123 and 128 and Indian Folders 1918 to 1935, Box 44, HPUAL.

1942. It is difficult to know the detail of its problems and its satisfactions but for the Hubbells its challenges were many. Dorothy Hubbell, who carried on a much reduced livestock trade during the family's last years at the Trading Post, recalled the livestock trade of the 1930s as a hair-whitening gamble in which estimating numbers, competition, pricing, weather conditions, disease, failing markets and snafus along the way created great tensions.

The years immediately after the old gentleman's death in 1930 were a time in which his sons sought to step up the tempo of the livestock trade. In part this was a response to the heavy debt under which they found themselves and in part a response to the policy of livestock reduction which was applied on the Navajo Reservation. It was also an initiative of their own and an effort to set their affairs in order as they took over from John Lorenzo.

In 1931 and 1932 the younger Hubbells undertook to establish a commission firm through which they contracted for lambs throughout the northern parts of Arizona and New Mexico as well as on the reservations. Indicating that the area they proposed to operate in had 500,000 lambs of which they could get from 20,000 to 100,000, depending on how energetically they pursued the trade, they made contacts in Kansas and Missouri for feeding the stock. But their plans collapsed in the face of the tightening grip of the Depression and the aftermath of disasters encountered by Roman in the early

winter of 1931.[32]

As he often did, Roman worked the reservation heavily the late summer and fall of that year, traveling from hogan to hogan, collecting debts and dickering for lambs. He bought at least 10,000 head which his wife Dorothy later indicated made a big buying year, and he may have purchased many more. He lived in Gallup at the time and worked the Crystal, New Mexico area as well as Ganado in his buying. Herds accumulated by Lorenzo, Jr. were also part of the outfit with which Roman headed for the railroad. Feed conditions were far from ideal that fall. As commission firms stalled in the face of collapsing markets, he was forced to hold herds that were suffering a rapid loss of weight on scant pickings near Ganado and on the trail to Houck and Gallup. To further complicate things a freezing storm struck early in November.

It was a bitter time. As many as fifty sheep died each day. Only their pelts could be salvaged. Prospects of lifting the mortgage gave way to deepened debt. When the storm finally lifted, Roman found himself facing a tough winter with thousands of sheep for which he had neither markets nor range. These he held in various places including "on the reservation in the vicinity of the

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[32]Before the 1931 lamb buying season began, the Hubbell brothers had also undertaken to organize "a live stock loan company through the Federal Farm Board." The idea had widespread support among the Navajos but apparently did not materialize, see applications to the Commissioner April 10, April 24, June 3 and June 9, 1931, BIA 1880-1932 Folder, WPHTP; and proposal by Roman Hubbell outlining the commission firm, and clipping from The Kansas City Times, December 15, 1932, Folder 5, Box 445, HPUAL.

lakes between Ganado and Chin Lee." Recognizing his dilemma, the Indian agency ignored the fact that he kept his stock there long after his permit expired but finally ordered him off on March 30, 1932. Dorothy Hubbell remembered it as a terrible time, one in which "we lost our shirt." Although the period of sheep reduction was approaching and some of the great years of buying lay just ahead for Lorenzo, Jr., the "bad winter of 1931-1932" took something out of Roman whose initiatives thereafter lay more in the direction of the tour business and wholesaling than in the livestock trade.[33]

Buyers with more resources and better luck made the connection between Navajo sheep and the Midwest succeed. Among them were Charlie Redd and his young relative Preston "Pep" Redd of southeastern Utah's San Juan County, whose operation faced problems and opportunities similar to those confronted by the Hubbells. Beginning in 1940 the Redds bought from 10,000 to 30,000 Navajo lambs each season from traders located in a wide band extending northeast from Leupp, Gray Mountain or some other point in the south across the reservation to Mexican Hat on the San Juan. From there they often leased pasture or ran for a few days somewhere on Charlie's extensive holdings before trailing on to Thompson, Utah on

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[33]See Dorothy Hubbell Oral History 1969, pp. 50-52; Dorothy Hubbell Oral History 1979, pp. 73-76 and 142. In this interview Mrs. Hubbell said they sometimes bought 25,000 sheep; in the 1969 interview at a similar point she indicated the figure was 10,000 head, see p. 76 and p. 52 respectively; and Supt. John G. Hunter to Roman Hubbell, March 30, 1932, Indian Folder 1932-1933, Box 44, HPUAL.

the Denver and Rio Grande Railroad in a 350-mile drive that was far longer than anything ever undertaken by the Hubbells.

Although it was a time of drought, conditions on the reservation favored the Redds. They bought relatively early, weighing each lamb on spring scales hanging from cedar trees the first year. Thereafter they weighed them on "these flatbottom scales" by stuffing them two at a time, hind ends first, into a "No. 2 washtub" which was then set on the scales. In 1941 they bought every sheep the traders had to sell, taking ewes to get the lambs, at Gray Mountain, Cameron, Tuba City, Red Lake, Inscription House, Cow Springs, Kayenta, Monument Valley and Mexican Hat. As they approached the San Juan River they had three herds of 2,200 lambs and about 1,800 ewes. These were strung out one behind the other a day apart. Redds' trail crews could well have been similar to those employed by the Hubbells. Pep, who did the buying and trailing, recalled that they had "three Navahoes and one burro with each herd." The herders limited their gear to a blanket, a frying pan and a little water. Pep brought them groceries each day but their wants were simple.

As need required, Pep hired other Indians to weigh sheep or help make crossings. It was a blistering dry August day when the first bunch approached the San Juan River at Mexican Hat. In an attempt to control his thirsty sheep, Redd hired all the Indians at the trading post and formed them in a thin "V" along the approach to the bridge; however, the sheep broke through, plunging blindly off a two-stage cliff into the stream. Miraculously only two were lost.

Later, on the south slope of southeastern Utah's Blue Mountains, the entire herd sickened and some died on a leased oak scrub pasture. There the Redds built a brush corral, "lifted" the 1,800 ewes "over the fence" and sold them at a fifty cent per head profit, a real "bonanza" as Pep put it.[34]

In the years that followed the Redds continued to buy Navajo lambs which they wintered on Kansas fields or fed in lots there and in California's Imperial Valley. As it was for Lorenzo, Jr. during the 1920s and 1930s, the Navajo livestock trade was a frenzied gamble. To make it succeed they bought, sold and bought again, speculated on markets, ran on unfenced fields, shifted from fields to feed lots, and lost heavily when their sheep became diseased and died. As transients, they often met local hostility or suffered reverses when they failed to understand regional feed markets and weather conditions. Finally, they returned from Kansas with a modest profit. As the Hubbells could have told them, it took hardy people.

The Farm and Livestock

Although it extended to many parts of the reservation, the Hubbells' livestock enterprise was clearly centered at Ganado. The farm contributed to this in numerous ways. Both draft animals and cattle were herded in its immediate vicinity, helping to make freighting and stock-buying enterprises possible. Sheep, too,

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[34]Preston "Pep" Redd Oral History 1973, pp. 2-12, BYU.

grazed near the homestead while herds were accumulated and shipping dates approached. For decades the Hubbells ran their stock on the reservation both as a necessary licensed function of trading and as customary usage. The practice was long accepted by Indians as part of an existing situation, if not indeed, as entirely proper.[35]

The Hubbells integrated their farm and their sheep-buying enterprise in more direct ways as well. In the first place they designed their corral to facilitate the sheep trade. They subdivided it into six or seven small pens where they held sheep as they came in. In early times they both watered and grazed sheep outside the farm, but in the last years they built watering and feeding facilities in the corrals and held them there as shipping dates approached. They also built a loading chute as delivery and shipment by truck became important. Pens were connected by alleys and gates which led in turn to the loading chute as well as to the lane and the fields, thus facilitating stock managment. A well was apparently drilled at the south of the corral by the 1930s.

After World War II the farm was particularly important to the sheep trade which was pursued much less vigorously than previously. As they had in the past, managers of the Trading Post took sheep as payment on credit but they made few buying trips to Navajo camps and otherwise did less to court sheep business. Numbers bought annually fell to 2,000 head and perhaps fewer. Many of these where held at the farm. While this number was far from the 10,000 head of the big

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[35]Arthur Hubbard Conversation, August 1983.

years, it nevetheless resulted in an intensive use of the farm that was rarely if ever credited to farm income in the Hubbell accounts.[36]

In addition to raising much of the hay that was fed, the farm was heavily pastured. This was particularly important during the fall when almost all of the sheep trade took place. Some growth followed the last cutting of hay almost every year and the ditches, fencerows and field roads were overgrown with grass, alfalfa, and weeds. On dry years a second or third crop of alfalfa (depending on how long water lasted) was left for pasture because growth was spotty and insufficient to merit harvesting otherwise. To take advantage of this feed, the Hubbells drove sheep from the pens to the fields for grazing, alternating them by pens, weight, seller or other categories.

A related aspect of fall grazing on alfalfa fields was bloat. Always a problem for sheep and cattle pastured on fall alfalfa, bloat inflicted especially heavy losses on wet years when immature alfalfa stands were lush, palatable and dangerous. Although they had plenty of help and probably kept close watch on sheep in the fields, the Hubbells doubtlessly suffered some bloat loss.

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[36]Information for this section is drawn from Dorothy Hubbell Oral Histories for both 1969 and 1979; from personal observation and from Benjamin Levy and Charles Pope, "Historic Structures Report: Part II, Two-Story Barn," National Park Service Office of Archeology and Historic Preservation, n.p. and n.d; and A. Berle Clemensen, "Historic Furnishings Study Barn and Blacksmith Shop," National Park Service, Historic Preservation Division, Denver, n. d, copies in WPHTP.

Sheep were acquired in lots of from one or two to bunches of twenty-five and up. They were counted in and weighed by the store manager and penned according to size, age, class and sometimes owner. Hubbells apparently held substantial numbers of sheep on the farm each fall as they awaited buyers or shipment dates. They fed and pastured runts for longer periods to gain weight and occasionally held other bunches over for special purposes. Even more rarely they wintered small numbers of sheep on the fields. Useful for winter pasture was brush which grew on the western parts of the big field and the east fields which were not farmed for a period of years after 1950. The Hubbells may also have turned animals on their fields in the spring on the assumption, which was widely held in northern Arizona of that period, that alfalfa fields held back by spring grazing grew better once dependable warm weather arrived than did early-starting fields stunted by successive frosts.[37]

In summary, the Hubbells were livestock people who used their farm to the best advantage of their trading interests. Livestock contributed substantially to their livelihood and occupied much of their time and attention over a period of eighty years. During this

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[37]On-site examinations and oral histories were useful in developing this section, particularly, Dorothy Hubbell Oral History 1969; Dorothy Hubbell Oral History 1979; LaCharles Eckel Oral History 1979; Friday Kinlichinee Oral History 1970; Tully Lincoln Oral History n. d.; and Joe Tippecanoe Oral History 1971; see also color photographs by Wayne Davis in Jo Jeffers, "Hubbell Trading Post National Historic Site" Arizona Highways, XLIII (September 1967), pp. 2-13 and 37.

time they participated in three distinct kinds of operation. The first was something of an open-range equivalent during which they traded with Indians with relatively few restrictions as to how they handled the stock they acquired. The second era began about the time the farm was established or shortly after the turn of the century. Regulations became increasingly strict. The farm was a base of operation and in times of stress made limited contributions to their livestock trade. The third era was one of decreased trade volume in which the Hubbells used farm pasture as a substitute to the reservation grazing of earlier times. Of the three periods, the last saw the closest integration between farm and sheep trade as fall pasture, feeding, and trucking were substituted for herding and trailing on Indian lands.

At no time were the Hubbells ranchers in the conventional sense. Although they bought and sold stock, they were not even ranchers in the sense that John Lorenzo's good friend Fred Harvey was. Known for the Harvey House restaurants, Harvey, like other absentee or gentleman ranchers in the Flint Hills of Kansas, bought, grazed, and sold sheep and cattle on grassland farms to make a profit from both a gain in weight and the seasonal turnover in prices.[38] Although the Hubbells sought to get sheep to market in better shape than when they traded for them, the real point of profit was in the exchange of consumers' goods and manipulation of

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[38]T. S. Isern, "Farmers, Ranchers, and Stockmen of the Flint Hills," Western Historical Quarterly, XVI (July 1985), p. 257.

credit not in feeding and growing. As traders they provided a service and hopefully took advantage of short-term price advances on sheep as well as profited from the sale of consumers' goods that the sheep trade made possible. In the respect that they provided services for a fee, the Hubbells had much in common with commission firms and auctions and even with city stockyards and the big wool buyers of Boston that flourished in their era. Yet they were clearly at the periphery of the great commercial network that handled America's livestock and animal products rather than in its main currents. Because of this they operated as stockmen in many respects. They worked directly with stock themselves. They knew good animals and they knew bad animals. They ran animals on the public domain and were subject to such customs and regulations as pertained to it as well as to the BIA regulations that governed traders during the various periods of their long trade in Navajo livestock. All in all, the Hubbell interest in sheep and cattle was representative of a little known but significant element of the livestock frontier.

The Ganado farm provided a base from which they functioned as stockmen. Like farms in stock country elsewhere it provided security and control otherwise not possible, especially during the later period when the Hubbell trade was small and when trucking, restrictive regulations, and changing times altered the Navajo sheep trade. In this sense their experience was a prototype of the larger livestock frontier. Other frontier outfits were forced to retreat from the bonanza days of unrestricted grazing on the public domain

to fenced hay producing ranches and ultimately to feedlot operations. Similarly, the Hubbells ran with few restrictions to begin with, then as regulations encompassed them they operated with the farm base as a support, and in their final buying years utilized the farm as a pasture to provide flexibility lacked by traders who had no farm land. Their's was by no means a conventional ranching operation but, bolstered by the farm, it certainly belonged in the realm of agribusiness. In that sense their ranching operation was not only part of the American frontier but a harbinger of recent times in which the business connections of farming and ranching are clear.

CHAPTER IX:

FREIGHTING AND THE HUBBELL FARM

The Hubbell farm was quite as important to other elements of the family's trading interests as it was to the livestock trade. This was especially so with respect to transportation between the Hubbell trading posts and the various railheads and other points of supply. Always crucial to John Lorenzo Hubbell's Ganado business, travel and transportation became even more important after 1900 as his trading interests extended into more remote parts of the reservation and as mail contracts and stage runs were added to the demands of his expanding business. Simultaneously, growing Navajo herds depleted natural feed supplies that had contributed to the success of earlier freighting operations, making other sources of feed necessary. In this context, farming became an increasingly attractive prospect. Although not all Navajo traders found it necessary to involve themselves in either freighting or farming, some did. John Lorenzo Hubbell was among these. The chapter that follows will undertake to describe his conveyance enterprises and show how his farm facilitated this branch of his business.

Freighting in the Ganado Area

Like customs inherent in land, freighting was embedded in the

tradition from which John Lorenzo Hubbell came.[1] Annual pack caravans had connected the northern province with New Spain in Spanish days. Beginning in 1821, the Santa Fe trade had become a "prairie commerce" that drew Americans west. Goods were first packed, then, as the trail opened, freighted, and, until well after 1850, sold out of wagons as traders progressed southward along the Rio Grande and into the western deserts in their search for markets. To a significant degree this wheelborne commerce was limited by trails.[2] Equally important was availability of water and grass or farms to produce forage and grain for draft animals. In its initial stages, freighting was also closely related to government expeditions, installations and projects. Major factors in this were, first, Indian hostilities and, later, Indian agencies. As General E. O. C. Ord said in 1870: "Hostilities" in Arizona were "kept up with a view of protecting the inhabitants,

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[1]Useful accounts of the Santa Fe Trade include Josiah Gregg, Commerce of the Prairies, ed. Max L. Moorhead (Norman: University of Oklahoma Press, 1954); R. L. Duffus, The Santa Fe Trail (New York: Longsmans, Green and Co., 1930); and M. L. Moorehead, New Mexico's Royal Road: Trade and Travel on the Chihuahua Trail (Norman: University of Oklahoma Press, 1958).

[2]General treatments of frontier freighting and express carrying include Oscar O. Winther, Express and Stagecoach Days in California (Palo Alto: Stanford University Press, 1936); Winther, The Old Oregon Country: A History of Frontier Trade, Transportation, and Travel (Palo Alto: Stanford University Press, 1950); and Winther, The Transportation Frontier: Trans-Mississippi West, 1865-1890 (New York: Holt, Rinehart and Winston, 1964), pp. 25-58; R. W. Settle and M. L. Settle, Empire on Wheels (Palo Alto, Stanford University Press, 1949); H. P. Walker, The Wagonmasters: High Plains Freighting from the Earliest Days of the Santa Fe Trail to 1880 (Norman: University of Oklahoma Press, 1966); and W. T. Jackson, Wagon Roads West (New Haven: Yale University Press, 1965).

most of whom" were "supported by the hostilities."[3] Santa Fe and Albuquerque, with established populations and farming communities along the Rio Grande, were jumping-off places for freighting in the Southwest and centers for much of the business that sustained it.[4]

In few places was freighting more necessary than in northeastern Arizona and northwestern New Mexico. Crucial factors in this situation were Indian populations and such administrative points as Ft. Defiance, Ft. Wingate, Ft. Apache and the various Indian agencies and schools. As Indians were introduced to consumers' goods and trade, trading posts were also supported by freighting. In time the same was true for dipping vats, missions, and hospitals.

Several freight routes converged on the Navajo region. From Cortez and Durango in Colorado came one road to Farmington and Shiprock. From Albuquerque, routes tied to Ft. Apache, Ft. Wingate and other points, including the famed Chaco Canyon prehistoric sites. To the northwest Tuba City was a remote way station on the old Mormon Wagon Road, which was both an artery of migration and a Mormon effort to make Navajo country something of a trading

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[3]Quoted in Howard R. Lamar, The Far Southwest 1846-1912: A Territorial History (New Haven: Yale University Press, 1966), p. 432.

[4]For how this related to northern Arizona, see Thomas E. Farish, History of Arizona, 8 (San Francisco: Filmer Bros. Electrotype Co., 1915-1918), vol. 6, pp. 274-307; and James H. McClintock, Arizona: Prehistoric, Aboriginal, Pioneer, Modern, 3 (Chicago: S. J. Clarke Publishing Co., 1916), vol. 1, pp. 270-312.

hinterland to Utah. After the construction of the Santa Fe Railroad (originally the Atlantic and Pacific line), Gallup, Holbrook, Winslow, and Flagstaff all became railheads which served Indian country subregions. And to the south, Holbrook and St. Johns became shipment points for Ft. Apache and, to a lesser degree, the Tonto Basin.[5] Both chronology and distance featured in the relative importance of farming in the freighting strategy that applied to this region. With the completion of the railroad, hay from New York state could be and was put down in Gallup or Holbrook with no great inconvenience. As time passed, growing Navajo herds further complicated the difficulties of depending on natural forage.[6] And, of course, miles were a further complicating factor as hauling feed for draft animals reduced payloads.

Farms, Feed and Freight

Early northern Arizonans who responded to this situation by mixing trade, freighting, mail contracts and farming included the

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[5]A sense for freighting activities along these respective routes may be had from E. D. MacDonald and J. B. Arrington, The San Juan Basin: My Kingdom Was a County (Denver: Green Mountain Press, 1970), pp. 113-120; Joseph Schmedding, Cowboy and Indian Trader (Caldwell: Caxton Printers, 1951), pp. 74-102; C. S. Peterson, Take Up Your Mission: Mormon Colonizing Along the Little Colorado 1870-1900 (Tucson: University of Arizona Press, 1973), pp. 140-146; and James H. McClintock, Mormon Settlement in Arizona: A Record of Peaceful Conquest of the Desert (Phoenix: Manufacturing Stationers Inc., 1921).

[6]For recent studies of Navajo population growth, overgrazing and social change, see Richard White, The Roots of Dependency: Subsistence, Environment, and Social Change among the Choctaws, Pawnees, and Navajos (Lincoln: University of Nebraska, 1983), pp.

Tuba City Mormons, the Barth brothers at St. Johns, Henry Springer and W. R. Milligan at Springerville, Henry Huning and C. E. Cooley in the Showlow-Pinetop area and Sam Day, Sr., and others at St. Michaels.[7] The Hubbell farm, which in relationship to the landed interests of pioneers like these did not come into being until relatively late, was the outgrowth of a well-tried if not always successful business strategy. Indeed, the regional pattern is worth considering as background to Hubbell's own approach to his farm.

Mormon settlement at Tuba City grew out of Brigham Young's vision of an independent Mormon commonwealth which moved into the Moenkopi area in 1873 by means of a time-proven farm village mode of expansion and a vaguely realized commercial strategy. Young was strong in his support for the Utah Southern Railroad and, although the end of the track was still 250 miles north, had his eye on the Indian trade.[8] At Tuba City, Mormons quickly focused on the wool

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212-314; and K. B. Kelley, "The Black Creek Valley: Ethnohistoric and Archaeological Evidence of Navajo Political Economy and Land Use," in R. T. Fehr, L. B. Kelley, L. Popelish, and L. E. Warner, Prehistoric and Historic Occupation of the Black Creek Valley, Navajo Nation, Navajo Nation Papers in Anthropology 7 (Window Rock: Navajo Nation, 1982), pp. 55-140.

[7]See Peterson, Mormon Colonizing, pp. 24-17; McClintock, Mormon Settlement in Arizona, pp. 177-187; D. K. Udall and P. U. Nelson, Arizona Pioneer Mormon, David King Udall, His Story and His Family (Tucson: Arizona Silhouettes, 1959), pp. 161-193; C. L. and M. R. Wilhelm, A History of The St. Johns Arizona Stake (Orem, Utah: Historical Publications, 1982), pp.20-39; Allene Barth, "Solomon Barth, 1842-1928," typescript at Apache County Historical Society, St. Johns; and Frank McNitt, The Indian Traders (Norman: University of Oklahoma Press, 1962), pp. 247-252.

[8]For Mormon approach to Tuba City, see McClintock, Mormon Settlement of Arizona, pp. 59-161; Peterson, "The Hopis and the Mormons 1858-1873," Utah Historical Quarterly, 39 (Spring 1971), pp.

trade, built a woolen factory and established successful farms. When Young's reach fell short of his vision and Salt Lake City's commercial thrust foundered on the canyons of the Colorado River, many of the Tuba City Mormons combined freighting with farming in an uneasy truce with traders and the Indian service until 1902. Interestingly, they were ejected from their Tuba City farms that year at precisely the same time Congress segregated Hubbell's land from the Navajo Reservation so he could gain title to it.[9] In the interim they not only raised much of the forage that made commercial and administrative subjugation of the deepest recesses of northern Arizona's deserts possible, but their ox teams and horses drew much of its freight. Without freighting to provide off-season work, their hold upon the area would doubtlessly have been loosened much earlier.

Vying with the Tuba City Mormons for priority of approach were contractors and freighters who made meadows along the Little Colorado, sites for farms, ranches, and Spanish-American towns. Among the first of these were the Barths at St. Johns. Solomon

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179-193; and Peterson, Mormon Colonizing, pp. 22, 38-90 and 198-200; on Mormon railroading, see L. J. Arrington, Great Basin Kingdom: An Economic History of the Latter-day Saints, 1830-1900 (Cambridge: Harvard University Press, 1958), pp. 257-292.

[9]Pressure to get the Mormons out of Tuba City began as early as the 1880s and built until they were removed. In part this was the product of pressure from the Indian Service and Protestant groups and in part it was the result of friction between neighbors which reached its high point in Lot Smith's 1892 killing by a Navajo over a dispute about livestock. See Peterson, "'A Mighty Man Was Brother Lot'. . . ," Western Historical Quarterly, I (October 1970), pp. 393-414.

Barth arrived in Arizona in the 1860s, first packing goods to mines along the Colorado River by burro train and by the early 1870s supplying Ft. Apache. Recognizing that his pay load was reduced by feed and other delivery costs, Barth was among the first to farm at St. Johns. There he cut meadow hay, built dams and irrigation ditches, and planted wheat, bringing his source of supply much nearer his market.[10] Almost simultaneously similar enterprises were undertaken at Springerville by Henry Springer, W. R. Milligan and others. In a few years C. E. Cooley located first at Showlow and later at Cooley nearer Ft. Apache. Henry Huning succeeded Cooley at Showlow to become a trading and ranching power. Over the years he dealt with the Indians, contracted with the army, made and broke men like D. K. Udall of St. Johns, enclosed thousands of acres of public domain within his fences, and finally, when the Forest Service began to clip his wings, sold out to the Mormons.[11]

Large military detachments came and went at Ft. Apache. In addition to cavalry mounts, up to forty wagons with draft animals were maintained. Grazing was possible at times. Otherwise forage and grain had to be purchased. In addition to feed delivered at the post, forage stations were maintained along its approaches, providing economic opportunity for settlers. At Snowflake and Taylor, village farmers competed vigorously for forage station

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[10]Allene Barth, "Solomon Barth, 1843-1928."

[11]Udall and Nelson, Arizona Pioneer Mormon, David K. Udall, pp. 163-165; Farish, History of Arizona, vol. 6, pp. 274-280; McClintock, Arizona, vol. 2, pp. 553-54; and O. D. Flake, Life of William Jordan Flake: Pioneer-Colonizer (n.p.: n.d.), pp. 144-145.

contracts. Among those who won them were John Ramsey of Snowflake and Norman A. Brimhall, whose house stood near the road in Taylor. After getting a contract, Brimhall built "three bunk cabins, . . . a cook cabin" and "a long shed with stalls for horses and mules" adjacent to his house. The stop was always for one night only and "as many as fifty animals" were fed hay raised by Brimhall and his neighbors. Animals were led across the road to an irrigation ditch for watering.[12]

With a line of farm settlements along the ninety-mile road from Holbrook to Ft. Apache, the Mormons carried much of the post's freight. In part they worked through the Arizona Cooperative Mercantile Institution, a Holbrook-based wholesale outlet which had local stores at St. Johns, Woodruff, Snowflake, Taylor and Showlow. Initially ACMI ownership was broadly based with many Mormon farmers owning stock in it. Its trade included a heavy traffic in wool and army contracts. Farmers along the road provided a ready work force. All of this made the ACMI very competitive in its freight bids and also made farming, freighting and merchandising complimentary elements of the Mormon economic strategy.[13]

On the Ft. Apache run, A. & B. Schuster's of Holbrook was probably the chief contracting competitor to the ACMI, although Hubbells (on Holbrook or Winslow hauls to Keams Canyon), Babbitts,

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[12]See James R. Jennings, The Freight Rolled (San Antonio: Naylor Co., 1969), p. 81.

[13]Peterson, Mormon Colonizing, pp. 136-175.

and lesser Mormon businesses like Flake Brothers and Willis Brothers won some contracts and subcontracted many others. A few Spanish Americans at Holbrook worked the Ft. Apache road but the farm-based Mormons predominated.

This was true for a number of reasons. First they raised hay themselves and sometimes bid directly, carrying their own produce to market. They also sold their hay to the ACMI which often hired the grower himself to deliver it to Ft. Apache or elsewhere. Mormons had good animals; first oxen and then, increasingly after 1890, horses. They were stable and committed to the country. In addition families were large, farms small, and incomes modest and none too secure. The work force of their freighting operation included teen-age boys, off-season farmers, young people trying to make a stake, and, when the ACMI overreached itself on contract deadlines, the pious directors of that organization which was increasingly controlled by the church hierarchy.[14] Almost every freighter had a "home farm" somewhere along the line where hay and grain, fresh animals and a good night's sleep were available. He had brothers, in-laws, and friends with whom work, supplies and animals were swapped. In short, with occasional independent stores as well as a church-endorsed co-op, the turn-of-the-century Mormon community

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[14]Joseph Fish, The Life and Times of Joseph Fish, Mormon Pioneer, ed. J. H. Krenkel (Danville, Ill.: Interstate Printers and Publishers, Inc., 1970), pp. 346-360; and "John Bushman Diaries, 1871-1923," vol. 2, pp. 12-13, typescript at Brigham Young University Library.

competed very favorably, indeed, in the Ft. Apache freight business.

Of critical importance here is the essential relationship of farms to successful freighting operations in the northern Arizona of the Hubbell farm's developmental era. The point can be driven home best by a reference showing that without farms to compliment their operations individual frieghters sometimes did not make it. James R. Jennings, who was part of a successful farm-owning freight family, recalled the "sad and tragic" plight of one Hank Clawson. "A sturdy pioneer and an honest man," Clawson had five children "to support and no farm on which to grow feed for his horses." Jennings was especially impressed that "with work socks at six cents per pair, he went without" winter after winter, sloshing "through the mud and ice, his shoes wet and his feet chilled." After years of pinching, "he quit freighting and moved to Farmington, New Mexico."[15] As the success of A & B Schuster's demonstrated, making farming part of freighting was not essential, but it had obvious advantages for dealing with distances and rounding out seasonal labor patterns that were as relevant to John Lorenzo Hubbell as anyone.

Little Colorado Mormons were much less strategically located to compete for freighting into Navajo country. It is true that with their co-churchmen at Ramah, New Mexico they helped supply Ft. Wingate and, to a lesser degree, Ft. Defiance. Mormon freighters

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[15]Jennings, The Freight Rolled, p. 61.

were also a force to be reckoned with in the Farmington area, where Joe Schmedding knew them during his days as a freighter for the Hyde Expedition and from where the Foutzes won the Ganado Mission's freight bids in Hubbell's literal backyard in the 1920s and early 1930s.[16] In addition a few Mormons pushed out from farm bases into the most remote corners of the reservation. Thomas Parker, for example, hauled regularly with an eight-horse team from Gallup "through the Sinagee to Round Rock until the weather got bad in December," and then wintered "on the San Juan."[17] Similarly Joe Lee, who had a farm at Tuba City, freighted at Shiprock during agent William T. Shelton's early days. He also hauled for C. N. Cotton at Gallup and for John Lorenzo Hubbell at Ganado during the 1890s.[18]

The country west of Ft. Defiance and north of Holbrook and Winslow was a much tougher prospect than the Ft. Apache run as far as freighting was concerned. Its natural conditions invited few Anglo farmers. More and more of it was placed within the reservation by boundary extensions, but few towns were established to provide an infrastructure of support. Hubbell, who had a good site at Ganado, worked to overcome these liabilities.

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[16]Not only were the Mormon villages compatible with freighting, but polygamy and the need to locate in different homes made stops along the way doubly convenient for some. Schmedding, Cowboy and Indian Trader (Caldwell: Caxton Printing, 1951), pp. 186-190. Elmer Foutz had the freight contract for the Presbyterian Mission in 1928-1930 and employed his younger brother Cecil, Vivian Youngblood and Robert Hall as drivers. Robert Hall Conversation August 1983, Snowflake.

[17]McNitt, The Indian Traders, pp. 249-250.

[18]Joe Lee and Gladwell Richardson, "My Wonderful Country," Frontier Times, 48 (February-March 1974), p. 29.

Bull Team Days

In the earliest years there was little distinction between trading and freighting. As indicated above, goods were often sold or traded right from the pack or the wagon. From this it was but a short step to the tents from which some of the Hubbells conducted their Navajo trade. In the 1870s when Hubbell entered the Navajo commerce on his own, the very process of trade demanded that wool, rugs, pine nuts and other produce taken in exchange for imported goods be hauled out. At first John Lorenzo's connection for moving this produce was apparently with St. Johns.

Much of his freight during the St. Johns years was moved by ox team. Solomon Barth's first freighting contracts were carried by pack burro.[19] Later Barth used upwards of 500 oxen and Hubbell's own father ran a large string of them. Heir to this tradition, John Lorenzo used oxen until at least 1890. Indians recalled him freighting by ox to St. Johns or sending his teams on to Kayenta or other remote reservation sites. "Bull teams" were regularly counted in and loaded out in his early books as well as in Cotton's accounts during the period the place operated under the Cotton name.[20] But the advent of stage lines and then railroads quickened tempos generally, and by the 1880s oxen became less important and by 1900 were virtually phased out entirely by horses.

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[19]McClintock, Mormon Settlement in Arizona, p. 177.

[20]As an example, see numerous entries to "Bull Teams" received and "Bull Teams" loaded and a few to "Mule Team," Ledgerbook 1886-1887, Box 328, HPUAL.

There is little way of knowing what this meant specifically for the Hubbell operation, yet certain general ideas may safely be conjectured. Oxen were slow. Two miles an hour was a good speed.[21] With twelve to fifteen miles per day, a trip to or from Gallup took five days under good conditions, much more in bad. St. Johns was an additional three or four days each way. There is little evidence as to what feed problems were involved. However, it is known that Indians were raising corn at Cornfields and Wide Ruins and within a few years both corn and fodder were items in Hubbell's trade.[22] Nevertheless, grass likely provided the mainstay forage for oxen, which, with their four stomachs and ruminating ways, apparently picked for feed a little better than equine draft animals. Grass which grew after the July and August rains, together with dry weather, pleasant days, and the impending cold and snow of winter, doubtless made fall an important time for bull team freighters as it was later for horse and mule outfits.[23] On the other hand, most of the wool was clipped in the spring.[24] High winds and poor feed nothwithstanding, it was necessary to haul it

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[21]Jennings, The Freight Rolled, p. 82.

[22]H. F. Robinson, "Proposed Reservoir Near Ganado," March 1909, Indians 1909 Folder, Box 18, Irrigation District 5, BIA, RG 75, NA.

[23]Among others Dorothy Hubbell Conversation August 1984 commented on the advantages of the fall months for freighting.

[24]As the twentieth century advanced, wool was shipped only in the spring. Earlier Navajos probably sheared at other times of the year as well. For evidence that whites sometimes sheared in the fall see Joseph Fish's October 1892 reference to busy times in the ACMI store at Holbrook "as the sheepmen had commenced to come in with their fall clip," The Life and Times of Joseph Fish, p. 361.

then. Dry years, at least, it was absolutely necessary to provide some feed during the spring and early summer wool haul.

Although it was from a disillusioned and angry man, the 1883 report of Navajo Agent D. M. Riordan from Ft. Defiance provided a feeling for the problems of supplying feed that freighters had to contend with in bad years. Arriving in the midst of a long, cold winter, Riordan found "there was not an ounce of provisions of any kind" and that there was no horse at the agency "that could walk 2 miles without falling down from sheer . . . hunger. . . . Rather than see them die of starvation," he ultimately bought feed for the agency's animals at his "own expense" although it infuriated him.[25] A vision of emaciated oxen almost propped under their yokes is easy to conjure up, and for years like 1882 it is a picture that is almost certainly accurate for reservation freighting, including Hubbell's.

Dependence on the wayside for provender probably multiplied both freight roads and camping places. Options, however, were limited by grass and access to water or the costs of hauling water to dry camps. At Ganado, oxen were often herded but grazed in competition to Indian flocks and horses. Indian flocks ran on customary grazing grounds, and it seems possible that prior to the 1880 extension of the reservation Hubbell and the traders who preceded him at Ganado established customary grazing rights which the Indians continued to respect after the extension. Information fixing this point has not

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[25]The Annual Report of the Commissioner of Indian Affairs 1882 (Washington, D.C.: G.P.O., 1882), p. 178.

been found, although at least one Indian respondent chucklingly recalled that in his boyhood (the World War I years) Hubbell still maintained customary grazing rights "to about six sections" southeast of Ganado.[26]

Among the advantages of oxen was the simplicity of their equipment. Yokes and chains comprised the hook-up. Throughout the West, ox yokes were made on site. Cottonwood was often used, and, in Hubbell's own region, pinon pine.[27] Wagons were used in tandem hookups as they were with horses and mules. Buckskin or goathide whips were braided in lengths up to twelve or fifteen feet for multiple hook-ups and shorter for single yokes.[28] Well-trained oxen are said to have come on call. One man recalled that he would "go out with a yoke over one . . . shoulder and the bow in one hand," calling "Come under, Brock," then "put the yoke on him, fasten the bow, and raising up the other end of the yoke" call "Buck, come under here."[29] In Utah, whipstocks were sometimes made of cedar about six feet tall and "pointed on one end as a prod for the purpose of poking the oxen."[30]

Like horses and mules, oxen had to be shod, but half-moon shoes to accommodate cloven hooves were necessary. Although many of them

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[26]Arthur Hubbard Conversation August 25, 1983.

[27]In central and southern Utah where pinon pine was as common as it is in the Ganado area, it was said to have been the choice of local yoke makers. For example, see "Memoir of Joseph H. Jewkes," p. 3. Typesrcipt in writer's possession.

[28]Ibid., p. 3.

[29]Ibid.

[30]Ibid.

were docile, oxen were not easily shod and large wooden hoists were commonly built to facilitate the process. One pioneer whose family had twelve yokes of oxen explained that a "6 feet square" pen constructed of "about 10 inch square lumber . . . with a beam overhead for hoisting" made a "fine outfit" for shoeing oxen. "A wide belt extended under the animal's belly and a windlass was used to lift him" so he could not kick. One foot at a time was placed on a block, remnants (if any) of the old shoe removed, and a new one tacked on.[31]

Although in neighboring areas freighters rarely hired professional smiths to do such mundane jobs as shoeing, the blacksmith was an important personage at Hubbell's during the horse freight era and he probably played an important role in bull team days as well. A bull hoist would also have been a great convenience at the Ganado Trading Post in ox freight days. However, no evidence has been found that one existed, and it is possible that shoeing was done only at the Gallup or St. Johns end of the haul.[32]

Only occasional ox teams were seen on northern Arizona's freight roads after 1900. On the Holbrook to Ft. Apache road, one particular ox team was considered "a sight to see" and a number of descriptions were recorded. The bull whacker, "old man [Sylvester] McCoy, was himself colorful" as were his six "motley colored" oxen whose "wide horns undulating in the sun seemed to span the width of

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[31]Ibid.
[32]Jennings, The Freight Rolled, p. 69.

the road." Tall and lean, McCoy's oxen were reputed to stand higher than horses. McCoy drove more slowly than did horse or mule outfits, took longer breaks and "made camp earlier in the evening." During good weather, other oufits left him in their dust and he traveled alone. In winter "when horse teams were stuck in the mud" and McCoy "passed them all," he still traveled alone. On muddy roads McCoy "jumped up and down along the chain between the oxen, shouting names, curses and expletives" as the oxen pulled together. "The wheels moved, ever so slowly, but moved and soon would be on solid ground."[33] Finally McCoy started a store at Pinetop and sold his oxen to Willis's store in Snowflake where they were fattened and butchered, delighting the local boys who found their inflated bladders to be much superior to the bladders of younger steers for use as footballs.[34]

Hubbell's Freight District and Patrons

Like McCoy, Hubbell gave up oxen as draft animals entirely by 1900. This doubtless reflected not only the growing popularity of horses and mules but the growing demands of Hubbell's business and

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[33]Ibid., pp. 82-83.

[34]As noted above, "Bull Teams" appear to have outnumbered mule teams in the 1886-1887 ledgerbooks. In the first annual summary accounts located (for the years after 1902) Hubbell lists "6 large mules, 6 small mules and 6 horses" but no oxen. Similarly the earliest tax reciepts which are for the first years of this century list only horses and mules. See Ganado Ledgerbook 1902-1907, pp. 1, 79, 225 and 346, Box 346, HPUAL; and Apache County Ass.-Treas. 1902-1939 Folder, Box 128, HPUAL.

the advantages that more rapid transit gave him. In the decades around the turn of the century, Hubbell's operation evolved quickly. In addition to finishing the new trading post and home and developing the farm and irrigation system, Hubbell and his sons expanded their freighting interests north and west into even more remote parts of the reservation.[35] In part this grew from contracts they carried for the Indian service and other traders, but it was probably mostly a reflection of the new trading posts they opened themselves or had interests in. All told, they were connected with about twenty-five posts at one time or other. No effort will be made here to pinpoint their operations, but in the first quarter of this century they were certainly involved in six or eight trading posts, including the mother store at Ganado, the Ganado dam store, and, in something of a quarter-circle extending north and west, posts at Nazlini, Chinle, Keams Canyon, Oraibi, Black Mountain, and, dropping a little southwest, one at Cornfields.[36]

For animal-drawn freight, the distances involved were not remarkable but were still imposing. From Gallup to Ganado was approximately sixty miles over rugged country including the Defiance Plateau. To the dam store and Cornfields distances were easy, about three and seven miles respectively. Nazlini lay fifteen miles north

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[35]McNitt, The Indian Traders, pp. 213-224.

[36]See Dorothy Hubbell Oral History 1979, pp. 158-159, WPHTP; and summary list of trading posts, Dorothy Hubbell Oral History 1969, pp. 40-43, WPHTP.

of Ganado through rolling hills and down one imposing drop. Chinle was perhaps seventeen miles beyond, over easy hills but across several important washes that were difficult and dangerous during flood time. Keams Canyon was thirty miles west and Oraibi about another thirty. Approximate distances to Black Mountain and Pinon from Ganado were respectively thirty-four and fifty-four miles.[37]

The Keams Canyon, Oraibi, Pinon, and Black Mountain end of this operation fell more in Lorenzo, Jr.'s control than in the old gentleman's and also lay more in the freighting range of Holbrook and Winslow. Lorenzo, Jr. began to develop Winslow connections quickly after his 1902 move to Keams Canyon. Within a few years he kept his own teams and freighted to and from Winslow as well as maintained ties with Ganado.[38]

Until 1930 Babbitt Bros. played much the same wholesaling role for Lorenzo, Jr. at Winslow as C. N. Cotton did for John Lorenzo in Gallup. Thereafter Hubbells acquired their own Winslow wholesale house as the entire thrust of their business swung west. Correspondence from the years after World War I showed Babbitts handling wool and hides for Lorenzo, Jr. and loading out his teams with flour and other merchandise.[39]

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[37]These distances have been calculated from Arizona highway maps.

[38]John Lorenzo sometimes referred to his son's teams and his own need to use them. See J. L. Hubbell to Lorenzo Hubbell, April 6, 1912, Farm Folder, WPHTP.

[39]Letters to Lorenzo Hubbell March 10 to May 22, 1918, Babbitt Bros. 1902-1919 Folder, Box 6, HPUAL.

Part of this time Lorenzo, Jr. was at Keams Canyon and part at Oraibi. Typical was 1919 when eight teams hauled for him during the spring and summer. At least four of these can be identified by the first names of their drivers. Significantly they all had Anglo names. Some or all could have been Indians but the predominance of Hispanic teamsters at Ganado clearly did not extend as far west as Oraibi.[40] In addition to other freight, each returning wagon was loaded with eight or ten bales of hay, suggesting that the six-horse teams were consuming this amount in the 150 mile round trip. Reckoning the bales at 100 pounds each and wagonloads (with trail wagon) at 6,000 pounds, hay constituted some 13 percent of the load, reflecting a cost factor that became increasingly onerous as the distance from the feed source extended.[41]

While the Babbitt letters suggest that much of Lorenzo, Jr.'s business went by way of Winslow, there was still much freighting between Ganado, Keams Canyon and Oraibi. Connections with other outlying posts were even more important. This was especially apparent in the early years but continued at least until Lorenzo, Jr.'s death in 1942. Wool and hides were shipped into Ganado. Sheep were trailed in. Trade goods were ordered out and supply transactions were regular, particularly with the stores at Keams Canyon, Nazlini and Cornfields.[42]

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[40]Ibid.
[41]Ibid.
[42]Katherine Quimaiyousie Oral History 1973, p. 18, WPHTP tells of Joe Tippecanoe delivering supplies to the dam store.

As Indian service programs became more important, Hubbells won more government contracts. In part this was hauling hay and grain and delivering wagons and other Indian-issue implements to outlying agencies. Unassembled wagons, for example, could be loaded two to a rig or four per team. More often they were assembled for the Hubbell Trading Post by a Gallup blacksmith for $2.50 and the Indian or other buying party was left to pick up his own wagon.[43] Lumber, often from the "government" or "agency" sawmill northwest of Ft. Defiance but occasionally from railroad cars in Gallup, made up frequent and big shipments. Concrete by the hundreds of tons for government projects brought premium rates and sometimes tied up every freight rig available in Gallup. Sheet metal roofing and supplies for schools were also hauled regularly.

Probably most important in the government drayage, however, was business generated by water development and dipping plants. Well rigs were sometimes moved. Concrete, ironworks, pipe, lumber, and other supplies were hauled onto the reservation in increasing amounts as Hubbell worked his close acquaintance with agents and construction engineers to good advantage. With survey crews and engineers traveling widely across the reservation, his place became a livery service by 1910. Saddle horses, light rigs and freight

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[43]Jennings, The Freight Rolled, p. 76; C. N. Cotton to J. L. Hubbell, June 23, 1909, and Cotton to Roman Hubbell, December 6, 1912, Box 20, HPUAL.

outfits were hired by the day as well as under contract.[44]

Trade Goods as Freight

The backbone of Hubbell's freighting was trade goods to meet the needs of his own stores and neighboring outfits and Indian production. Trade goods came in year round, to some degree, but especially in the autumn when grass was more abundant, the weather good, and the need pressing to stock against winter. Regular items included flour, coffee, farm and wagon accessories, apples, potatoes, and, surprisingly enough, watermelons and turkeys.

On occasion nuisance items showed up such as "Bierkamper's [a Presbyterian missionary] 4 rams" and fancy hunting dogs crated in hopelessly awkward boxes and requiring close attention over the three or four-day haul. The story is told that "two fine pedigree dogs" which were being shipped from Ft. Apache were eaten by an Apache teamster who lost his mules and, after hunting for them for days, ran out of food and "found it necessary to eat the dogs."[45] Suggestive of the big table Hubbell kept at his own home were "three dozen hotel plates" loaded on a Hubbell wagon by Cotton in 1908.[46]

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[44]For example, see H. F. Robinson to J. L. Hubbell, June 27, 1912, August 26, 1912 and October 2, 1912, in which team and driver rentals are paid, Indian 1912-13 Folder Box 44; also Robinson to Roman Hubbell, April 21, 1911 and August 2, 1912, ordering "rigs and teams," Box 71, HPUAL.

[45]C. N. Cotton to J. L. Hubbell, April 15, 1912, Box 20, HPUAL; and Jennings, The Freight Rolled, p. 65.

[46]C. N. Cotton to J. L. Hubbell, December 24, 1908, Box 20, HPUAL.

Perhaps the most repeated items freighted to Ganado by Hubbell's teams, however, were feedstuffs—hay and grain. As one letter described it, both wholesalers and retailers were "scrambling to buy hay." Whether it was local, California, southern Arizona, Kansas prairie or "alfalfa from the river" [the Rio Grande], hay made up the great bulk of Gallup to Ganado freight between 1900 and 1920.[47]

The main item shipped from Ganado to Gallup was wool. Amounts varied from year to year, but in good years such as 1909 and 1912 Hubbell shipped around 100,000 pounds.[48] In preparation wool was checked for sand and rocks and weighed before sacking at Ganado. Seven-foot wool bags were filled to between 200 and 225 pounds, and loads varied from 8 to 15 bags depending on wagon size. A 100,000 pound shipment would thus have required around 450 bags and perhaps 45 wagons. Because loads were relatively light, wool was sometimes hauled by Navajos whose teams were small.[49] (Figures 38-39.) For example, in 1902 Cotton reported that twenty-three "Indian Teams" had checked in. With loads varying from 1,840 to 3,455 pounds, their total load was 58,445 pounds of wool or an average of 2,541 pounds.[50]

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[47]A good feel for this may be had from C. N. Cotton to J. L. Hubbell correspondence between 1902 and 1914, Boxes 19 and 20, HPUAL.

[48]C. N. Cotton to Bearrup Bros., Albuquerque, June 1, 1909, June 5, 1909 and to J. L. Hubbell, June 24, 1901, Box 20, HPUAL; and Hubbell to Cotton, April 6, 1912, Irrigation System at Ganado Folder, WPHTP.

[49]C. N. Cotton to H. L. Hubbell, July 7, 1902, Box 19, HPUAL.

[50]C. N. Cotton to H. L. Hubbell, July 21, 1902, Box 19, HPUAL.

Hides and pelts made up another important element in the Gallup-bound haul. These were tied originally with one strap and later with two or more and subject to difficulties such as spoilage or maggots if baled green. Pine nuts amounting to 50,000 pounds and more on good years were occasionally an important back-load item for wagons that hauled the winter trade goods to distant trading posts during the fall.[51] Rounding out regular back-haul items in the two decades after 1900 were blankets, pawn items, Indian labor crews bound for work on the Santa Fe Railroad or in the beet fields of Kansas or cotton fields in southern Arizona, or even wood for Gallup stoves.[52]

Employees

Freighting required a surprisingly large outfit. Hubbell got the manpower necessary from at least three sources. Basic were regularly employed teamsters. Usually numbered at four or five, these were ordinarily Hispanics but often included Indian employees like Joe Tippecanoe and some whites like Joe Lee, who, as we have seen, freighted for Hubbell in the 1890s. In addition, a large number of Spanish-American freighters lived in Gallup and could be hired piecemeal or contracted with for special jobs. Subject to being hired by other outfits and sensitive to costs involved in putting their horses and outfits over the roads on bad weather

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[51]C. N. Cotton to Roman Hubbell, April 26, 1912, Box 20, HPUAL.
[52]C. N. Cotton letters, Box 20; and Babbitt Bros. letters, Box 6, HPUAL.

hauls, these were sometimes not available to Hubbell, although, with his own Hispanic connections and Cotton's representation locally, they probably gave him good service.[53]

A few Indians worked their own teams for Hubbell on a regular basis and many others on special occasions. This practice was encouraged by the Indian agents and provided a work opportunity to pay debts. Moreover, the press to meet contract deadlines and weather conditions as well as Hubbell's interest in making a large trade community dependent upon him doubtless also had much to do with hiring Indian freighters. At times as many as fifteen or twenty Indian outfits were on the road with Hubbell freight.[54] No description of Navajo freighters has been found, but one eyewitness recalled that when Apache freighters "took over the hauling" to Ft. Apache "entire families went along, many on saddle horses driving loose stock."[55]

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[53]As an example of the role of Hispanic freighters, see bills of lading for a hay shipment in 1914 which show Manuel Bustamente, Jose Tais, Francisco Candelaria, Tim Bustamente, Raefael Gonzales, Juan Laeazario, Antonio Gomez, Adon Gonzales, J. Garcia, A. Romero, Ant. Gomez, and Jesus Marquis hauling for Hubbell. Of this list A. Romero may have been a relative and Jesus Marquis' name appears often as a freighter along with six or eight others in the Cotton correspondence, but the others showed up only this once; Folder 3, Box 245, HPUAL. Cotton also referred to difficulty getting Hispanic freighters in Gallup because of bad weather and high-paying government jobs, Cotton to Hubbell, March 28, 1913, April 1, 1913 and December 15, 1913, Box 20, HPUAL. By contrast to the dominance of Spanish-American surnames among Hubbell's freighters, ledgerbooks during the Cotton era at the store show a predominance of Anglo names, see Ledgerbook 1886, for example, where freighters entered included John Mason, Harry Evans, George Stansel, and Louis Parker on repeated trips during the late summer; Box 328, HPUAL.

[54]For reference to Indians freighting for Hubbell, see Cotton to Hubbell, July 21, 1902 and April 17, 1913, Boxes 19 and 20, HPUAL.

[55]Jennings, The Freight Rolled, p. 44.

Hubbell got along well with people who freighted for him. As indicated in Chapter X, this was in part because some of the Spanish-American freighters were related to the family and came under the umbrella of the extended Hubbell household. His long experience on the reservation also prepared him to deal with Indian workers. Yet he had trouble with drinking among his employees and with occasional theft. Cotton wrote him repeatedly about certain losses. Sometimes it was hay, sometimes tobacco, and sometimes rugs. There is no question Cotton took it seriously, but evidence that Hubbell did anything about it is lacking.[56] Forceful measures taken by John Lorenzo to discourage occasional Indian misconduct, however, suggest he did not take it without objection.

Indian-trader Joe Schmedding related that traders confronted some loss of goods and that they adjusted it in their reckoning with teamsters with little consideration for the teamster's side of the story. Each load was checked against invoices and bills of lading. "Almost invariably there was some small shortage." If the freighter had been loaded out with 100 sacks of flour, it was not uncommon for him to show up with only 92, the others having been "left at his hogan, where he camped one night." Drivers frequently failed to explain that they had "opened a case of canned tomatoes, taken out several of them, and then renailed the box after carefully stuffing hay into the space." Schmedding concluded that the "readiness with which" Indians "accepted deductions for 'short' items was proof that

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[56]C. N. Cotton to J. L. Hubbell, September 25, 1908, January 4, February 2, April 13, September 12, and September 28, 1912, Boxes 19 and 20, HPUAL.

the missing goods had not been lost off the wagons or been stolen en route, but had been taken by the drivers for their own use." In many years of trading, Schmedding never heard an Indian teamster argue "about this point."[57]

Horses and Mules

Horses and mules were nearly as important in this context as people. Hubbells owned many of them over the years and adapted their program to accommodate them in many ways including the construction of the stone barn and the operation of the farm. It has often been said that at the high tide of his freighting operation in the years after World War I John Lorenzo owned as many as 65 head of draft animals. Tax records, on the other hand, indicate that he never paid taxes on more than 45 head. For the early 1920s when Hubbell's horse count was at a maximum, Apache County tax forms did not itemize draft animals. However, available assessment lists showed the following: 1906, 16 work horses and mules valued at $566 and 1 saddle horse; 1907, 18 work horses and mules on which a value of $575 was placed and 1 saddle horse; 1908, 10 work horses and mules valued at $200 and 1 saddle horse; 1909, 13 work horses and mules and 8 Navajo horses and 7 Navajo mules; 1915, 20 horses and 25 mules; 1916, 25 horses and 20 mules which were assessed at $2,500; and 1931, by which time team freighting was

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[57]Schmedding, Cowboy and Indian Trader, p. 325.

nearly over, only 2 work horses and 2 mules were listed along with 1 saddle horse.[58]

One suspects, however, that the remembered high of 65 head was fairly accurate. If so, a maximum of ten freight teams of six animals each might be put on the road at a given time. Because of farming, mail contracting, and the tendency to overcount, the number of teams actually used for freighting probably conformed closely with the four or five drivers mentioned above.

Hubbell understood the importance of good animals. It is less clear that he always used good animals. Mules were often used and both small and large horse teams were kept. (Figures 40-41.) The Hubbells made no pretense of raising replacements or animals for sale. In a business like their's, most animals were probably geldings to avoid the fuss of mares in heat. Photographs show mules and horses, few of which exceeded twelve or thirteen hundred pounds. Hubbell animals were seen as "big horses" by their Indian neighbors but were probably run-of-the-mill for northern Arizona freighters of the era. By 1900, workstock was pretty well upgraded in the region. Good draft stallions and jacks were available. Scrub mares were crossed with Hambletonians to make tough, light, harness horses and with Percheron ("puddin-foots"), Belgium and Shire stallions to produce what one old-timer called "chubs" or good farm-freight animals. Small mules, sometimes referred to as "Spanish mules," were still common. Some of these were the product

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[58]Apache County Ass.-Treas. 1902-1939 Folder, Box 128, HPUAL.

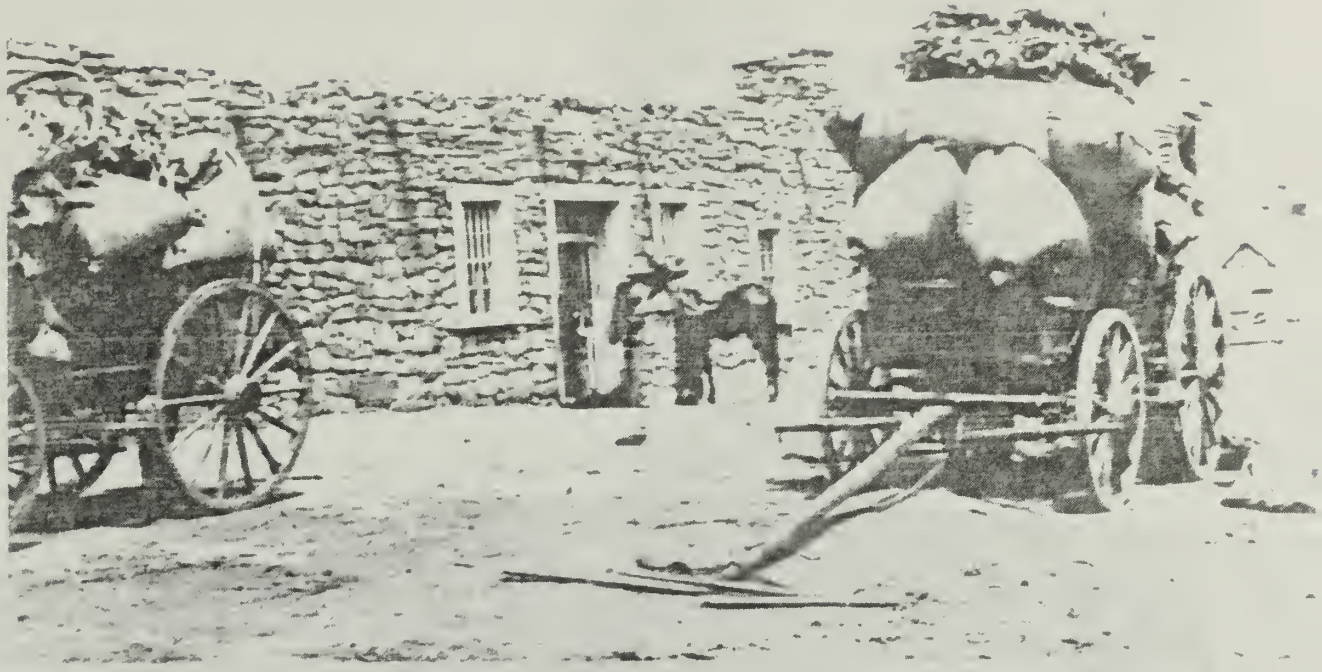

Fig. 38: Wool & Hides Loaded for Shipment in the Hubbell Freight Yard ca. 1905. (HTP RP-54.)

Fig. 39: Freight Wagons with Well & Water Trough in the Right Background & Slip Scrapers Against the Trading Post. (HTP RP-206.)

Fig. 40: Mules Headed to the Barn. Trading Post & Hubbell Home in the Background ca. 1910. (HTP #4485.)

Fig. 41: Hubbell Freight Outfits on the Road. (HTP PFL-2.)

of crossing mares from Navajo pony herds with "burro jacks" brought in by the government, beginning at least as early as 1888.[59] A string of sixty-five animals involved a sizeable capital investment. Depending upon the time and the call as well as the age, condition, and training of the animal, prices varied sharply, with references appearing in the Hubbell papers to draft animals selling for as little as $50 and as much as $300 each in good matched pairs.[60] Suggestive of value was a 1912 letter from Lorenzo, Jr. informing his father that Leo Crane, agent at Keams Canyon, offered to pay $350 for a certain pair of horses. The elder Hubbell curtly replied that Crane could have them for $600 and not a cent less.[61]

Problems of Horse Care

The critical relationship of draft and buggy animals to income

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[59]Photographs that show draft animals include: HTP-PFL-2, HTP-PI-332, HTP-PFL-10, HTP-PP-25, and HTP-4485, Photograph Files, WPHTP. Henry Hunning of Showlow, Lot Smith of Tuba City and freighters on the Holbrook-Ft. Apache run all raised good horses. For reference to Navajo horses and mules, see Hubbell's 1909 assessment list, Box 128, HPUAL; on upgrading Navajo draft animals see Agent S. S. Patterson to Commissioner of Indian Affairs, August 23, 1887, Report of Commissioner 1887, p. 254; and Levi Chubbuck to the Secretary of the Interior, May 6, 1904, Ganado Reservoir Folder, WPHTP, referred to Superintendent Reuben Perry's move to import "two jacks of improved breeding for use by the Indians in raising mules." Indians, Chubbuck continued, "are learning the greater value of even the little mules, the progeny of the burro jacks and the pony mares, for team work, and will appreciate still more the larger mules which will result from using better jacks."

[60]Bills of sale and other references to horse and mule transactions are widely scattered in the Hubbell Papers. For example, Thomas Paterson sold J. L. Hubbell a team of mules in 1914 for $500 and Roman Hubbell sold a team of horses to Domingo Casadas for $275 in 1927. Folder 4, Box 522, HPUAL.

[61]Ibid.

and social status was widely, although of course not invariably, recognized throughout the West. In working outfits as well as farming localities, relatively more attention was given to their care than to other animals. Hubbell's barn, which was much more a livery barn or stable than a farm barn, is unimpeachable evidence that John Lorenzo appreciated good horseflesh and recognized his dependence upon it.

Nevertheless, freighting was at best a tough business on draft animals. They pulled heavy loads over rugged roads under all weather conditions, jumping over tow chains as they made corners and occasionally getting run over as brakes went out or inept drivers let loads get away. Often horses were injured and crippled in getting out of muddy stretches or stream beds such as Mexican Cry Wash east of Ganado, the name of which undoubtedly dates to difficulties encountered there by Hubbell's freighters. A 1919 incident on the Ft. Apache road illustrates nicely the problem for teams. It was winter and, with thawing and new snow, road conditions at Cooley Draw (near McNary) were almost unimaginably bad. Wagons mired again and again. At one particularly bad spot eighteen horses were hitched to a single wagon, ten on lead and four on either side. As the wagon came out, the four horses on one side struggled into a large hole which was drifted full of snow. Amidst a welter of legs and hooves they floundered as the wagon went on "skinning . . . harnesses, saddle, bridles and collars" from the badly shaken animals.[62]

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[62]Leonora S. Rogers, Biography of Marion Rogers (Mesa: Millett Bros., 1961), p. 64.

More serious accidents were also frequent. Neither the Hubbell records nor traditions recount incidents of this kind. But major mishaps in one extended Snowflake family, which likely never had more horses than the Hubbells, suggest the magnitude of the problem. Fire was much feared. On March 16, 1897, at the height of a windy spring, mail teams were changed at the barn of contractor Joseph W. Smith. Fresh teams were picked up after midnight and the tired horses for both the north and south-bound mail were tied in stalls. A lantern was left burning and somehow a fire started. "The barn and all it's contents went down to ashes," including "eight fine mail horses" which "locked in the stable . . . were huddled in a pitiful heap, literally roasted."[63]

A couple of decades later, Smith's son-in-law was with a party of freighters bound to Pleasant Valley southeast of Flagstaff. Their horses had been pulling heavily and during the afternoon drank deeply of water that "was green, old and slimey." That night horses were hobbled to graze as usual. The next morning the entire string was sick. A little hay was fed and the horses hitched up. One horse soon collapsed and three others were seriously ill. Later that day they borrowed "two small mules and two small saddle horses which had been 'broken to work'" and proceeded, leaving two of their sick horses to shift for themselves during the "bad winter that followed."[64]

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[63]Leonora S. Rogers, "Journal of Joseph West Smith, the Life Story of an Arizona Pioneer 1859-1944," multilithed copy in writer's possession, pp. 391-393.

[64]Rogers, Biography of Marion Rogers, pp. 74-75.

Still later, the railroad upon which freighters depended demonstrated that it could be hard on horses. Fourteen head left in a makeshift corral near Holbrook got loose. A train came along, frightening the animals onto an approach to a trestle where "the wire fence on each side" crowded them in against the slotted ties of the crossing. With nowhere to go, they were hit and nine of them killed. "Their mangled bodies were cut up and thrown everywhere, horse flesh and blood covered the fences, rails and bridge ties." Economically it helped when the railroad paid $1,100 for the damage, but emotionally it was a sore blow and a tragedy which while perhaps not fully matched in magnitude involved losses not unprecedented in the Hubbell freighting experience.[65]

On the Road

The same floods that levelled Hubbell's dams and washed out his irrigation system were among the greatest challenges his freighting operation faced. As noted in Chapter V, 1923 was a summer known for devastating cloudbursts. Hubbell had the freight contract that year for the Ganado Mission. As described in mission correspondence, "a couple" of his "wagons which were loaded with our supplies" went "down in the water and quicksand of Black Creek. . . . We hope Mr. Hubbell will be able to pay. He is in great financial straits all the time." A later letter reported that Hubbell did meet his obligation and suggested something about the quality of his

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[65]Ibid., p. 139.

animals. As it turned out, "over $300.00 worth of provisions and school supplies" were lost. "In payment," Hubbell gave the mission "a fine team of mules that just fill the need of the mission. They are big and strong for the deep ploughing needed and gentle so that the boys can use them for a score of things about the place."[66]

On the road Hubbell's draft animals were cared for by various means. Often they were hobbled and allowed to graze. At times they were turned in the fields at Cienega Amarilla or St. Michaels or held and fed in the yards and barns of Sam Day and other settlers. Hay was also hauled and fed. When possible it was "cached" along the way together with water in wooden barrels, hundreds of which were used by northern Arizona freighters for this purpose. Hubbell, himself, bought "whisky barrels" in lots of forty, suggesting they were a popular item in the Ganado trade.[67] In Navajo country herds of Indian horses interfered with the practices of caching feed and water and letting hobbled teams run at night. Some sense for problems created by loose horses and dry camps may be had from an account of a Holbrook to Keams Canyon run in 1903. "The second night" the outfit stopped at a dry camp called "Malapai Springs" from which they drove their horses "five miles out to Seaps Spring

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[66]Farm and Dairy Records 1923-1952, College of Ganado Archives.

[67]C. N. Cotton to J. L. Hubbell, April 19, 1913, arranged to send one barrel per wagon until an order of forty had been sent, Box 20, HPUAL. Jennings, The Freight Rolled, p. 64 described a winter run from Holbrook to Keams Canyon that was so cold the freighters "burned the staves of the barrels and top rounds of the wagon beds to keep warm."

for water." "Seaps Spring" was accurately named, if not properly spelled, and it took "about five minutes to dip each bucket of water" so they were "until 1 o'clock . . . watering our 15 horses." Even when they got back to camp it was not a quiet night because "Indian ponies" which were "running everywhere" were "a nuisance . . . to our horses" and ate the hay from the wagons. All in all, as one of the freighters dryly concluded, "it was surely some job."[68]

The road from Gallup to Ganado was fairly well worked out by the years after 1900. During much of the time there was the Cross Canyon trading post, a few miles to the east and a little south of Ganado, where a stop was made and teams watered. In addition there was a stop at the "summit" of the Defiance Plateau a few miles south of Arizona Highway 264, where the high elevation probably made water and grazing abundant. As indicated above, St. Michael's was a major stop, although overnighting freighters likely camped rather than took rooms. However, at times Hubbell had a relay station for his mail stage there which may have provided sleeping quarters for freighters as well as mail drivers.[69] What the camp sites were

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[68]Rogers, Biography of Marion Rogers, p. 19.

[69]Dorothy Hubbell Oral History 1969, pp. 2 and 15, WPHTP. H. E. Gregory, "Water Resources of the Navajo-Moki Reservation, June 1910," p. 2, Water Resources Folder, Box 73, Irrigation District 5, BIA, RG 75, NA. This planning paper prepared for the BIA, called for the development of "watering places along the freight roads." By 1915, travel conditions were improved somewhat, even on the western part of the reservation, as the Division of Irrigation developed springs and wells where teams could be watered.

farther east toward Gallup is not known but several possibilities existed. West and north of Ganado, Nazlini and other posts and way stations were important. In good times both grass and water were doubtlessly found at some spots along the road but rarely in amounts sufficient to make hauling feed and water unnecessary.

Outfitting for Freight and Mail

Obviously the organizational demands of freighting were considerable. But both outfitting needs and organization were stepped-up by the mail contracts Hubbell took from relatively early times. Historian Frank McNitt and writer Klara B. Kelley indicated that Hubbell's mail services and freighting outfit dated to only 1915. This is doubtlessly in error as far as freighting is concerned which dated to well before the turn of the century, although changes might have been effected around 1915 that justify calling it a "freight line" at that time, as McNitt does.[70] With reference to mail contracts, there is evidence that Hubbell won the Ganado to Manulito contract in 1888, and correspondence to Lorenzo, Jr. in 1912 indicated a well-estblished mail business to Keams Canyon.[71] But whatever the date, mail contracts regularized

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[70]McNitt, The Indian Traders, p. 220; and Kelley, "Navajo Political Economy and Land Use," p. 83.

[71]For reference to the 1888 mail contract, see C. N. Cotton Letterbook, p. 885, cited in "Documentation of John Lorenzo Hubbell," p. 3, Farm Folder, WPHTP; and J. L. Hubbell to Lorenzo Hubbell, April 6, 1912 where the older man discussed the details of their mail contract to both Keams Canyon and Chinle; Farm Folder, WPHTP.

Hubbell's traffic over the road from Gallup to Ganado and on to Chinle and Keams Canyon and required that he establish stations and appoint agents along the way.

Before considering how Hubbell organized his mail carrying business it may be well to look at the Holbrook to Ft. Apache mail contract of Snowflake's Joseph W. Smith in 1894 for light it throws on the outfitting needs of mail contracting. Although previous carriers had let the Ft. Apache contract lapse as a poor risk, Smith took it for $4,200 a year, thinking it would bolster the ACMI's freight business. In a carefully kept diary, he recorded a rush of activities and travel to get operations underway. First he arranged with five businessmen and post mistresses to serve as agents at major stops along the ninety miles of his run. He rented stables all along the line and at Ft. Apache "bought 17 horses, 4 buckboards, 4 sets of harness, 3 tons of hay, house and barn . . . and all the extras, such as spring seats, grease jacks etc." A day's run north at Adair Spring he bought similar property from the previous contractors. In addition Smith pushed himself tirelessly, keeping drivers on the job, ironing out problems of collections, dealing with breakdowns, burned barns, floods, and his own farms as well as serving as director on the ACMI's wholesale outlet in Holbrook and managing the Snowflake store. For three or four months he even made weekly entries in his diary. Finally, however, he gave up his diary entirely for four years, noting much later that "many vexatious things" had interfered.[72]

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[72]Rogers, "Journal of Joseph West Smith," pp. 97-103.

The Hubbell Mail Runs

The Hubbell mail operation was similar to Smith's in distance but probably involved less mail and carried fewer passengers. Unlike Smith's line, however, it made two runs part of the way, going from Ganado to Keams Canyon to the west and north to Chinle. Although it probably ran less often in the early days, the Hubbell mail stage made a daily trip from Gallup to Ganado in the years after World War I but ran only twice weekly to Keams Canyon and Chinle. Later the Keams Canyon and Chinle schedules were advanced to three times per week. Stations or stops where horses were changed existed at Steamboat Canyon on the Keams Canyon run, at Nazlini on the Chinle road, and at St. Michaels on the Ganado-Gallup section and perhaps elsewhere.[73]

It is not known how the runs were made or the number of drivers it took. Indian oral histories make reference to carrying the Keams Canyon and Chinle mail by horseback in the earliest days. After buggies came into use, two drivers and four teams could have managed the Ganado to Gallup stretch, with the drivers either starting from each end and meeting at St. Michaels or making the entire trip on alternating days. Such a schedule, however, would have been demanding in the extreme, and additional drivers were doubtlessly

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[73]Schmedding, Cowboy and Indian Trader, p. 310, makes this clear for Steamboat Canyon. The assumption that a similar station existed at Nazlini is based on the fact that it split the distance to Chinle and upon the Hubbell association with the Nazlini trading post.

involved. Similarly a single driver could have made both the Keams Canyon and the Chinle legs of a twice weekly delivery schedule. At least two teams for each run were necessary. In bad weather they double-teamed to maintain speed. Although John Lorenzo and Roman often visited Gallup, it appears that C. N. Cotton was Hubbell's agent there for both freighting and mail contract business until about 1920.[74] During much of the 1920s the old gentleman lived in Gallup and ran that end of the business. By the 1930s the Gallup operation was of sufficient importance that Roman left the Ganado farm under shifting and unstable supervision, devoting his attention to mail contracts that came to include a Gallup to Shiprock and Farmington haul and a profitable tour business.[75]

A good account of Hubbell's mail stage operation was written by trader Joe Schmedding, who bought the Keams Canyon post from Lorenzo, Jr. in 1918 or 1919. Recounting a memorable December trip which he and Mrs. Schmedding and their infant child made through a fierce snowstorm, Schmedding wrote of "good roads" between Gallup and Ganado "kept open" by the daily mail stages and of John Lorenzo's graciousness as a host. In his account of the Ganado to Keams Canyon leg of their journey, Schmedding described the exposure

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[74]Cotton's role as Hubbell's wholesaler and references to the mail in his correspondence make this arrangement seem probable.

[75]By 1920 John Lorenzo was living in Gallup much of the time. After 1930 Roman and Dorothy lived there for more than a decade, running a mail and freight business that extended to Farmington and developing a lively tour business. See Dorothy Hubbell Oral History 1979, pp. 105-115.

of the open buckboard, the "snow-obliterated trail," the "warm stable" and "fresh teams" at the Steamboat Canyon "stage station," and the utter loneliness and "numbing cold" of the windswept "mesa lands" through which they traveled. Double teams tired quickly as they broke "breast-high snowdrifts," and several times horses lost their way, making it necessary to lead them "back onto the almost invisible roadway." The stage driver was a young Navajo who like the Schmeddings was making his first trip over the road, and, as darkness came, anxiety that they were lost was added to discomfort and fatigue. Finally, well after dark, they arrived. Lorenzo, Jr., who kept the trading post open to greet them, soon had them comfortably situated both for the night and the next decade of their lives. As the Schmedding's adjusted to Keams Canyon they quickly learned an even deeper appreciation of the "mail stage" which, although little used by passengers, "was important" because "it was the only link with the outside world, there being no telephone or telegraph, or other public means of communication."[76]

A point worth noting in Schmedding's account is that Hubbells used "heavy-duty" buckboards as did Smith in Snowflake. Remnants of of at least a dozen of these are piled in the barnyard of the Hubbell Trading Post to this day. By contrast, David K. Udall, who made the Holbrook to Springerville mail contract a family business for many years, often used two-wheel carts which in good weather were drawn by a single horse and even in tough weather by a light

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[76]Schmedding, Cowboy and Indian Trader, pp. 309-313.

team. On the other hand, Udall's carts had little utility for express duty and even less for passenger service.[77]

The demands seasons made on horses were also apparent in Schmedding's experience. Winter runs often required double-teaming. Although the pressures of its seasons were somewhat different, freighting too had its busy and its off-seasons. The farm operation not only provided feed for draft animals but along with wood-hauling provided work for off-season freight teams, thus rounding out Hubbell's enterprises during the draft animal era.

While business expanded with time for both wagon freight and mail and stage service, the mid-1920s marked the end of horses and mules on the mail run as cars and light trucks took over in all but the worst weather. Horses were phased out by trucks in freighting a few years later, with trucks taking the good weather and light drayage to begin with, then, as roads improved and better trucks became available, taking the entire transportation business by 1930. Foutzes from Farmington won much of the freight business even in Ganado with their International trucks. Hubbells themselves had at least five Rio trucks by 1927.[78]

Farming as a Freighting Strategy

In conclusion, it is important to see the relationship of Hubbell's farm to freight and mail teams. In the days before the

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[77]Udall and Nelson, Arizona Pioneer Mormon, pp. 161, 172 and 187-192.

[78]Robert Hall Conversation August 1983. From 1924 to 1927 seven Rio trucks were purchased by John Lorenzo and registered in his name, Folder 2, Box 18, Box 445, HPUAL.

1880 extension of the reservation, any livestock Hubbell owned ran on the public domain, although herding was necessary as well as determined defense of "customary" grazing grounds. Also important to his early freighting enterprise was the development of Navajo agriculture by the 1880s in the Ganado area and the consequent availability of fodder and corn to feed his ox teams.[79]

Later, as Indian grazing intensified and as Indian Service regulations on non-Indian use of grazing lands tightened, Hubbell had even more pressing need for sources of feed. There was, of course, the possibility of hauling it in. And this he did, both to feed his own animals and to fill contracts and sell retail. However, production of feed on his own land lent itself to Hubbell's freighting as it did the operations of other early freighters.

When John Lorenzo Hubbell took the Trading Post over from C. N. Cotton again in the middle 1890s, farming made sense in light of the business that was growing there. Although his struggle to control his water supply and later the struggle of the Indian Service to make the Ganado Project succeed often seemed futile, trading, freighting, mail contracting and farming made a complimentary and intelligent business strategy. For more than two decades the farm was an essential element in the organization of an expanding freighting operation. With the decline of the horse and mule freighting era, the farm passed from its period of highest utility.

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[79]H. F. Robinson, "Proposed Reservoir Near Ganado, Arizona," March 1910, Folder 2, Box 18, RG 75, NA.

The overlapping relationship between the decline of John Lorenzo's fortunes after 1920 and the progressive loss of advantage in freighting that the farm gave him in the days of horse power may well have been more than coincidental.

PART THREE: FARM LIFE: VALUES, WORK, AND PLACE

CHAPTER X:

FARM AND HOUSEHOLD: THE HUBBELLS AND NEW MEXICAN CUSTOMS

In terms of their values few people were more completely products of the Southwest than the Hubbells. Like the Southwest their heritage was divided between Hispanic and Anglo-American influences. And in nothing was the split heritage more apparent than in the customs and habits that dominated their approach to the land. On the one hand the business ethic and squatter's mentality of Yankee America were strong. This John Lorenzo demonstrated when he made a homestead part of his trading business, claimed water, and developed irrigation. On the other hand, Hispanic influences dominated his attitudes about the role of land and the way family organization and lifestyle related to it. Recognizing this is complicated by the fact that many of his activities were transacted in English and took place in a society in which strong biases existed against Spanish-American culture.

Yet Spanish-American elements were very much apparent in Hubbell's character both in early life and in his later reputation. Navajos saw him as Hispanic and called him Naaki Sani or "Old Mexican." Similarly others who knew him, including Mormon pioneers,

artists, writers and scientists, called him Don Lorenzo rather than the more Anglo Lorenzo or John Lorenzo. No one called him merely John or John Hubbell, the most Anglo renditions of his name possible. Of course, he was born of a Yankee-New Mexican union and was brought up and educated in the dual heritage of territorial New Mexico. During his first years in Navajo country (the early 1870s), he was widely known as a Spanish interpreter. John Lorenzo's wife, Lena Rubi, was of a New Mexican family and did not speak English. Genetically his children were more Hispanic than Anglo. His oldest son Lorenzo, Jr., who in later life was a portly man, was known as "Fat Mexican" among the Navajos. Spanish was spoken as the primary language in the home until at least the World War I years, as was suggested by his granddaughter LaCharles Eckel's memory that she learned Spanish as her first language because English was rarely spoken at home.[1] In addition Hubbell youngsters spoke Spanish as they played with the children of Hispanic neighbors and employees at Ganado and in Albuquerque and St. Johns. The Spanish language became less important as a cultural denominator as education

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[1]Forty or more Navajo oral histories are included in the WPHTP. Most of them refer to John Lorenzo Hubbell as Naaki Sani. Frank McNitt, The Indian Traders (Norman: University of Oklahoma Press, 1962), pp. 142-151; and LaCharles Eckel Oral History 1979, pp. 12-15, WPHTP. Among other things Mrs. Eckel tells that her grandmother, Lena Rubi, spoke no English and that she herself "didn't speak English at first. . . . Spanish was the language." She also explained that John Lorenzo's "immediate family was very small. Of his four children, those four only produced five (grandchildren). That's my generation. (That's) the reason we ran into problems here. (Not enough family to keep Ganado going)."

in American schools and intermarriage with monolingual people worked their flux and as older members of the family died. By 1945 it was of limited importance.

Although much more was said about the hospitality of the Hubbell home, visitors sometimes commented on its Spanish character. For example Francis Leupp, one-time Commissioner of Indian Affairs, wrote lavish thanks for Mrs. Hubbell's "rare Spanish courtesy . . . when she played the hostess to our party."[2] That Hispanic customs in the Hubbell household were locally recognized was suggested in Alberta Hannum's Spin A Silver Dollar in a section describing neighbors of the Lippencott's, whose experiences at Wide Ruins the book recounted. The Lippencotts arrived in the Ganado area in the late 1930s several years after John Lorenzo's death "but heard a good deal about him still." From conversations with them, Hannum described Hubbell as "Spanish" and as looking "like Theodore Roosevelt, except that his fierce white mustaches . . . turned up instead of down." He lived, she wrote, in a "Moorish-type house in the desert" decorated with "Spanish ancestral things." Relishing her description, Hannum continued that "he had been quite a figure in the Southwest," his "original grant" having "run clear from the Rio Grande to Rio Puerco." Attracted by his prominence, young traders sometimes called on his daughters who sat "primly in high

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[2]F. E. Leupp to J. L. Hubbell, January 29, 1900, Farm Folder, WPHTP.

old rockers, working black lace Spanish handkerchiefs while they made polite conversation."[3]

"The Big House" at Pajarito

There was obviously some distortion in Hannum's account. But it suggested the importance of land and of the Spanish family and household--institutions in which the Hubbell farm played roles beyond its economic contributions.

Even Hannum's garbled reference to an "original grant" that ran from the "Rio Grande to the Rio Puerco" was based on its element of truth. John Lorenzo's mother, Julianita Gutierrez, was heiress to what was known as the Pajarito land grant in a suburb of Albuquerque and had interests in six or seven other grants. According to a grandson, Philip Hubbell, she owned "at least 40,000 acres" running "from the Rio Grande to the Rio Puerco."[4] It was easy to identify "the Rio Puerco" with the Rio Puerco of the West which the Santa Fe Railroad followed from Gallup to Holbrook, as Hannum apparently did. Actually the Gutierrez land-grant holdings extended to the Rio Puerco of the East, an affluent of the Rio Grande which ran many miles to the east of Ganado. To even this more distant estate John Lorenzo had little claim. He later owned a small parcel of land

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[3]Alberta Hannum, Spin a Silver Dollar: The Story of A Desert Trading-Post (New York: Ballantine Books, Inc., 1944), pp. 35-36.

[4]Ibid.; and Philip Hubbell Oral History 1972 by Frank McNitt, pp. 9-15, WPHTP.

near Albuquerque that was almost certainly part of the Gutierrez holdings but otherwise had little share in it during the Ganado years of his life.

However, John Lorenzo was born on the Gutierrez estate at Pajarito and grew up there among parents, brothers and sisters, grandparents, aunts, uncles, cousins and retainers, in an atmosphere redolent with New Mexico's divided heritage. Philip Hubbell, a nephew who like John Lorenzo was raised in the "big house" at Pajarito, left a vivid oral history that helped explain the Hubbell mind set and the role the Ganado farm played.[5] After preliminaries in which he and historian Frank McNitt discussed members of the extended family, Philip Hubbell described the "big house" where John Lorenzo and his eleven brothers and sisters were born. As the family grew the house was enlarged, finally reaching a maximum size of twenty-seven rooms in the turn-of-the-century years. As Philip Hubbell put it, "it was immense." Later, as the size of the family diminished, they "took down" some of the rooms, but as late as 1972 "fourteen rooms" remained.

To run the house and estate the family "had lots of servants. Oh, heavens, lots of servants." These were dependents of the family which was under strong obligation to keep them employed. Around the house and fields there were "a mile and a half of adobe walls, high

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[5]Philip Hubbell Oral History 1972, pp. 9-15.

adobe walls, and they were kept in perfect repair. It was all hand work, but they were all dependent, a great number of people in the community depended on our family for their living." If work was slack on the farm or livestock "or the things that went along with the property," these dependents cared for "the property itself, to keep it in repair. And I remember as a child . . . when they whitewashed the inside of all of the rooms, you know, and they kept it in such perfect shape . . . it took constant care." The family "being so big," many personal servants were also employed. "For each one of us when we were little there was what they called a chichihua . . . sort of a babysitter because she tended to you all the time." Later in life Philip Hubbell sometimes saw these women. One, Maria Jaramilla, would say "'Ah! Here's my little boy! And I was a grown man, of course."[6]

Several of Philip Hubbell's comments throw light on life at the Ganado farm. First was the suggestion that "the big house" was physically adapted to meet the needs of the family, first growing with the family and, as they departed, being dismantled again. Another was the importance of livestock. As Philip related: "Land—if you had the land, all right, what would you use it for? For livestock. . . . Granddad and father had very good horses--the best buggies they could have; wagons, of course; lots of saddles, lots of saddle horses, and lots of livestock. The wealth then was mostly in livestock." Most important was his point about people

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[6]Ibid., p. 10.

being dependent on the Gutierrez-Hubbell estate. It was maintained for reasons of custom and social responsibility as well as for economic imperatives. Obligation and service as well as position were inherent in the land itself.[7]

Obviously the Pajarito estate functioned as a family institution as much as it did an economic operation. Undoubtedly there was an affinity for the land in the Hubbell makeup that was connected with the ancestral home at Pajarito. For many years John Lorenzo Hubbell owned property there and at times lived there. His wife, Lena Rubi, maintained a home to which the family gathered in Albuquerque until shortly before her 1913 death, and John Lorenzo's estate included land there that his survivors struggled to retain at least until 1940.[8]

Lena Rubi's role in the institutions of family and farm was complex and difficult to understand. John Lorenzo apparently did not marry her until long after Lorenzo, Jr. was born, and he lived away from her much of the time, including the period she was at the Ganado farm before her death. In many respects she was neglected. Yet she was honored in death, and, in the oral history of her granddaughter LaCharles Eckel, appeared as a powerful matriarchal figure as she presided over the Albuquerque home and set the lingual habits of her family. In this she was a worthy successor to Julianita Gutierrez Hubbell and other Spanish-American women of the pre-American period. Historian Janet Lecompte's "The Independent

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[7]Ibid.

[8]LaCharles Eckel Oral History 1979, pp. 1-5.

Women of Hispanic New Mexico, 1821-1846" dealt with the period of Julianita's youth from which came many of the customs that governed the Hubbell household. Lecompte showed effectively that New Mexico's Hispanic women were independent individuals whose influence counted in their homes and elsewhere. Searching court records, she found strong women with a wide variety of legal rights who demanded and were given a prominent role in society. She concluded that the "extraordinary independence of New Mexican women . . . came to an end in 1846 when New Mexico was invaded by United States soldiers." Their "way of life was gone." This was doubtlessly true with respect to the law and public role, but in the life of Lena Rubi and the lives of her daughters, daughter-in-law and at least one granddaughter a prominent private role continued well into the period of the Hubbell farm.[9]

Many of the Hubbell men were active in land-related businesses. According to Philip Hubbell, his father (a brother of John Lorenzo) "was in charge of the ranches and the farming" at Pajarito. He managed "grandmother's properties" after John Lorenzo's father died, and ultimately inherited the "big house" itself. Philip's 1972 oral history made a "present tense" reference to family property that was owned and operated "corporately" with other land-grant heirs.[10] Frank Hubbell, an uncle of Philip's and brother of John Lorenzo, ran two very successful ranches in New Mexico. During the World War II

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[9]Western Historical Quarterly, XII (January 1981), pp. 17-35.
[10]Philip Hubbell Oral History 1972, p. 10.

period, his operation was evaluated by the Navajo Tribe for possible purchase, a process that showed it to include thousands of acres and to be worth upwards of a half-million dollars.[11] It is not clear that Frank's operation included parts of the old Gutierrez land grants, but it seems certain that his success as a stockman was related to the family's land-grant base and that a careful examination of his operations would reveal other Hispanic influences as well.[12]

Perhaps because he was cut loose from the Gutierrez land grant John Lorenzo was less successful financially than Frank. Nevertheless, many of the landed traditions he inherited from the Gutierrez side of the family lived on in him. During his early years this was apparent in his associations, especially at St. Johns. Certain merchant families, notably Solomon Barth and his brothers, and the Hubbells provided a nucleus of business and political activity around which several dozen Spanish-American families gathered, took out water, farmed, ran livestock and freighted.[13] Indeed, the case of the Barth brothers provides

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[11]See appraisal and summary analysis of the Frank Hubbell operation in BIA Office of Land Operations, Window Rock.

[12]See Mrs. James L. Hubbell, "My Life on a Sheep Ranch," The New Mexico Stockman, 28 (December 1963), pp. 30-31, for a description of life on one of the Hubbell New Mexico ranches.

[13]See Allene Barth, "Life Sketch of Solomon Barth," Apache County Historical Society; J. H. McClintock, Mormon Settlement in Arizona: A Record of Peaceful Conquest of the Desert (Phoenix: Manufacturing Stationers Inc., 1921), pp. 177-179; C. L. and M. R. Wilhelm, A History of the St. Johns Stake (Orem, Utah: Historical Publications, 1982), pp. 20-21, 26-39; and C. S. Peterson, Take Up Your Mission: Mormon Colonizing Along the Little Colorado River 1870-1900 (Tucson: University of Arizona Press, 1973), pp. 24-25, 32-35.

suggestive insight into the strategies John Lorenzo Hubbell adopted. According to their own tradition, the Barth's freighted from Dodge City, Kansas to western Arizona with an ox train of as high as "thirty-eight Murphy wagons" and some 450 animals. They established a way base at Cubero, New Mexico where they intermarried with Hispanic families. As time progressed they contracted to supply Camp Apache and Ft. Wingate. As Hubbell did later, they shortened their supply line and, deciding to "grow their own grain and cut their own hay," settled the families of their drivers near the future site of St. Johns in 1871. A sense of the family connections is clear in the reminiscences of Isaac Barth, son of Solomon. In addition to Solomon there were "Nathan and Morris Barth" and Morris's wife Perfecta Sevedra and their son Jose Sevedra and his young wife. Also part of this first group were Don Cruz Rubi and his wife and "their beautiful daughters, two of whom married the Armijos, Ambrosio and Gabriel, and Dona Lina, said to be the most beautiful girl in the whole Southwest," who "subsequently married the handsome and dashing young trader from the Navajo reservation, Don J. Lorenzo Hubbell." In addition other relatives made up the "colony" of about "thirty families" that moved to what became St. Johns in 1874.[14]

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[14]Isaac Barth, "The Correct Story of the Settlement of St. Johns," St. Johns Herald-Observer, June 20, 1942 in Excerpts from Arizona Newspapers in the items appended to Jacob Barth Oral History 1972, WPHTP; and Allene Barth, "Life Sketch of Solomon Barth 1842-1928," for information on the Barth family. Like Lorenzo Hubbell and his father James Hubbell, Solomon Barth married a Spanish-American woman, Refugio Landavazo. She was from Cubero, New

Soon the Barth's owned large livestock interests near St. Johns and a "chain of general stores" that extended across northern Arizona. Headquarters was a St. Johns block on which stood the "Barth Mercantile Co.," the Catholic Church, the Barth Hotel, which doubled as a home and, interestingly, Apache County's "Original Jailhouse." The hotel consisted of "two long buildings and in between them . . . a breezeway." The buildings were all of adobe with "flat mud roofs" and were surrounded by adobe walls.

John Lorenzo's St. Johns home stood directly across the street. Like the Barth buildings it was modest in size, had a flat mud roof

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Mexico. She is said to have brought a dowry of 4,000 sheep to the union and was an important element in the connection between Barth and the Hispanic community at St. Johns. Local historians LeRoy and Mabel Wilhelm suggest that the bitter controversy that marred relations at St. Johns for several years after Barth sold his land to Mormons was due to the conviction of the Spanish-American farmers that they had a vested interest in the land that was injured by the Mormon take over. Wilhelm and Wilhelm, A History of the St. Johns Arizona Stake, pp. 29-31. Land and water books in the Apache County Recorder's Offices show many people with Hispanic surnames entering land and claiming water, including Cruz Rubi, Lorenzo Hubbell's father-in-law.

Two developments seem to suggest that Barth may have failed to honor obligations inherent in New Mexican land customs and that John Lorenzo Hubbell was more sensitive to the plight of the threatened Spanish-Americans than the Barths. The first is an October 26, 1880 letter to Mormon leader D. K. Udall protesting the Mormon invasion written by Hubbell whose name is one of three not clearly Mexican among the letter's thirty-one signatories. In addition, the Barths, who had been aggressive in opposition to the Mormon influence in Apache County, soon sought to join forces with them, breaking with the Hubbells and others including many prominent Mexicans. See John Lorenzo Hubbell file, Arizona Department of Archives and Libraries for the 1880 letter. For deteriorating relations between the Barths and the Hubbells see Joseph Fish, The Life and Times of Joseph Fish, Mormon Pioneer (Danville, Ill.: Interstate Printers & Publishers, Inc., 1970), pp. 189, 191, 202, 215, and 217.

and "was surrounded by a five-foot adobe wall."[15]

"Big House" Instituions at Ganado

The social and cultural relationships of New Mexico's "big house" institutions lent themselves to the Navajo trade and accounted in part for John Lorenzo's success as a trader. By the late nineteenth century the Navajos themselves had well-established social welfare customs through which the "ricos" both exploited and supported the "pobres." Wealthy Navajo stockmen kept property pretty well in their own hands but provided herding opportunities, and, in times of crisis, food and shelter for poorer relatives and neighbors. While rudiments of these arrangements probably existed from time immemorial, the advent of Americans created problems that required the development of new dependencies.[16] Among these dependencies were not only the groups that gathered around the rich Navajo stockmen of the Black Creek Valley and Crystal areas but the trading communities that surrounded trading posts throughout Navajo

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[15]Jacob Barth Oral History 1972, WPHTP.

[16]The role of headmen and "ricos" among the Navajos is described by Klara B. Kelley, "The Black Creek Valley: Ethnohistoric and Archaeological Evidence of Navajo Political Economy and Land Use," in R. T. Fehr, K. B. Kelley, L. Popelish, and L. E. Warner, Prehistoric and Historic Occupation of the Black Creek Valley, Navajo Nation, Navajo Nation Papers in Anthropology # 7 (Window Rock: Navajo Nation, 1982), pp. 80-95; Clyde Kluckhohn and Dorothea Leighton, The Navaho, re. ed. (Cambridge: Harvard University Press, 1974), pp. 104-107; Ruth Underhill, The Navajos (Norman: University of Oklahoma Press, 1956), pp. 81, 231; in addition Robert S. McPherson, "Ricos and Pobres: Wealth Distribution on the Navajo Reservation in 1915," New Mexico Historical Review, 60 (October 1985), pp. 412-423.

Country. In both the relationship of "Ricos and Pobres" and the trading communities there were striking resemblances to the interdependent community that existed at the old Gutierrez estate in Pajarito.

Anthropologist William Y. Adams and others have demonstrated that Navajo traders became an essential link between Indians and the white community with its material products, officialdom and complicated ways. Indians were exploited but traders came nearer being part of the Indian community than other whites. They not only performed a wide variety of services but felt obligation and responsibility to their Indian clients in varying degree. The relationship between the Hispanic institutions of the "big house" of New Mexican custom and Navajo traders has not been widely acknowledged but it is a topic that merits further study.[17]

Certainly the connection was apparent in the attitudes and affairs of John Lorenzo Hubbell. In the years between 1900 and 1930, particularly, household, farm, trading post, Indian community and political aspirations were projections of the man that emanated progressively outward to broadening dependencies. In him was a quality of paternalistic fondness for people with whom he dealt that

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[17]See William Y. Adams, Shonto: A Study of the Role of the Trader in a Modern Navaho Community, Bulletin of Bureau of American Ethnology 188 (Washington, D.C.: G.P.O., 1963), pp. 149-305; Kluckhohn and Leighton, The Navajo, pp. 78-80; and B. Youngblood, "Navajo Trading," in Survey of Conditions of the Indians in the United States, Part 34, 74th Cong., 2nd sess., Senate Subcommittee on Indian Affairs (Washington, D.C.: G.P.O., 1937), especially pp. 18041-18043.

was as real as his widely recognized penchant for the picturesque or his affinity for influence.

This was apparent in the Hubbell household and in the way the Ganado farm was at once part of the household and an extension into the Indian community. For decades Indian trading had been a lonely male-oriented activity involving travel and much absence from family. By 1900, however, an extended family group gathered around John Lorenzo at his Ganado home and at trading posts farther out into the reservation. In the latter context, several of his nephews, at least two of his brothers, a son-in-law and his son Roman ran trading posts for him or, as in the case of Lorenzo, Jr. at Keams Canyon and Oraibi, ran separate but interlocking and to some degree dependent businesses. It was a well-defined trading territory in which John Lorenzo's prominence was an important factor.

The course of family affairs also drew others of his children and grandchildren back. Each of them became part of a dependent family structure. At an early date, his daughter Barbara Goodman was widowed and returned to manage the kitchen and house. For decades after her mother's death she was first lady or household matron, an institution in her own right. Roman, the second son, made a brief sortie into independence at Douglas in southern Arizona where he worked in a bank for a time but, drawn by the country and the death of his first wife he was soon back at Ganado with two young sons. Another daughter Adele lived at Ganado much of the time during the last decade of John Lorenzo's life, as did Forrest Parker, her husband, LaCharles Eckel, a granddaughter and,

of course, after her marriage to Roman in 1921, Dorothy Smith Hubbell. Grandfather, grown children, grandchildren and in-laws, they made a close-knit group.[18] Although not large, it was a recognizable projection of the Pajarito family and, like it, especially dependent upon the central figure. Together with resident artists, scientists, Indian rights' advocates and occasional visitors, they filled the table in Hubbell's big hall and rightly earned him the reputation of being a host of unparalleled generosity and color. As historian Frank McNitt wrote: "He lived and entertained on an opulent scale."[19] For most of the traveling visitors, however, color and hospitality apparently obscured the influence of Hispanic customs on the family, and few undertook to comment on what the family meant as a social group or how it related to other people who were attached to the Trading Post and farm.

But John Lorenzo's tendency to gather dependents around him in a paternal way did not stop with his family and passing visitors. Also attached to the household was a long list of employees, many of whom appeared more in the role of relatives and loyal retainers than hired hands. Some of these were Indians, some white, a few black or oriental, and many Spanish-American. Of the latter, many were

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[18]Family relations are described many places in WPHTP but perhaps the most useful descriptions of the functioning family are to be found in oral histories. See Dorothy Hubbell Oral History 1969 especially the first 10 pages; Dorothy Hubbell Oral History 1979 is somewhat less useful in the family context. LaCharles Eckel Oral History 1979 is much shorter but in many ways even more revealing as this granddaughter of John Lorenzo speaks of the workings of family.

[19]McNitt, The Indian Traders, pp. 208 and 216-220.

related by blood or marriage or by long association. Outstanding among the Indians was Loco, who cooked for the family from the years before Lena Rubi died in 1913 until about the time of John Lorenzo's death in 1930.[20] Two of Loco's sons, Tully and Edward Lincoln, worked loyally during many years for the Hubbells, and for decades the Lincoln family lived and farmed their own plots of ground adjacent to the Hubbell farm. As late as 1984 third-generation members of the Lincoln family continued to draw from and support the National Park Service, the new tenants of the Ganado "big house." Similarly Joe Tippecanoe and the members of his family worked on the farm and at the Trading Post and lived adjacent to the homestead as did members of numerous other Navajo families.[21]

Some Hubbell retainers were clearly attached to the household and either ate at a table set in the servants' dining room or lived with their families in one of the smaller houses. In this category were several who worked in the store or the warehouse. Working in the yards were the baker, the gardener, the barnman and the blacksmith.[22] Some of these had helpers part or perhaps all of the time, although many of the helpers were Indians who rarely ate at the house. Yet three tables were commonly set to accommodate the

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[20]Dorothy Hubbell Oral History 1969, p. 2; Dorothy Hubbell Oral History 1979, pp. 4, 45; and LaCharles Eckel Oral History, p. 13.

[21]See Tully Lincoln Oral History 1970, WPHTP; and Joe Tippecanoe Oral History 1971, WPHTP.

[22]LaCharles Eckel Oral History, pp. 20-21; Dorothy Hubbell Oral History 1969, pp. 2, 3, 6-10; Dorothy Hubbell Oral History 1979 pp. 5-6, 36, 51; also Tully Lincoln Oral History, p. 1.

various status groupings, the one in the big hall for family and guests, the workers' table, and one in the kitchen where the cook and waiting servants ate. In addition, Hispanic teamsters came and went, sleeping in bunk facilities behind the house and eating at the workers' table.[23] Thus the household that Hubbell supported was large indeed. Some, including resident artists, live-in missionaries, and even traveling bureaucrats, scientists and reformers, may have played an economic role, but their connection with the household certainly had personal and social overtones that transcended money matters.

Clear evidence of how personal feelings and social obligation functioned were apparent in John Lorenzo's interaction with his Hispanic teamsters. Although Gallup Spanish-Americans with teams of their own were frequently hired, the men referred to here worked for Hubbell full time, driving his teams and wagons.[24] Some were the sons of Mrs. Hubbell's sisters or were related otherwise. The connection of still others with the family is unknown but they stayed on for many years. C. N. Cotton portrayed some of the Hispanic teamsters as careless and drunken and sometimes urged Hubbell to discipline or get rid of them. Hubbell, however, was

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[23] When asked how many employees Hubbell had, LaCharles Eckel recalled that "When the farm was going full blast and freighters (were here). . . . The men's dining room, as we called it. . . . would feed anywhere from seventeen, nineteen men, maybe twenty. Seasonal of course. There were always the freighters, four probably, maybe five. I don't remember exactly." Oral History, pp. 20-21.

[24] Ibid.

patient. Some of the worst offenders continued to drive and to irritate wholesaler Cotton and his employees, who not only felt inefficiency was bad business but often picked up the pieces after them.[25] Hubbell's interest in these men certainly ran deeper than mere finances.

Somewhat more removed in this "big house" community was a class of Navajo field workers and teamsters who lodged and boarded themselves but worked regularly on the Hubbell farm, drove his freight wagons, hauled wood, or built reservoirs, dams and ditches. There can be no doubt that Hubbell turned a profit on their labor or hoped to. In normal farming periods, his Indian work force varied from three or four irrigators to twenty or more on haying and baling crews. When fences were to be built, land cleared or leveled, or at other times of development, he employed many more. They were what Hubbell's St. Michael's friend Sam Day might have referred to as "your Indians."

In view of the efficiency-conscious, highly-mechanized standards that have come to prevail, the large farm crews seem like gross mismanagement. Even under conditions of the times, many a northern Arizona family managed farms as large as Hubbells' with only limited seasonal nonfamily help. But the farm work force made contributions

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[25]The year 1912 was particularly bad. In addition to explaining several delays and breakdowns, Cotton wrote Hubbell four times about his teamsters being drunk and once about them selling his blankets. See C. N. Cotton to J. L. Hubbell January 4, 1912, April 15, 1912, September 13, 1912 and September 28, 1912, Cotton Folder 1912, Box 20, HPUAL.

to the broader Hubbell interest. They worked off debts, built up credit and enhanced John Lorenzo's business. In addition work opportunities helped attach them to Ganado as a trading territory. In promoting the reservoir and encouraging Indians to farm at Ganado, Hubbell went one step farther in the process of gathering around him a community that was at once supportive and dependent. The Hubbell farm was a key to this. Like the Trading Post it was a community core.

A final word on this point may be addressed to John Lorenzo Hubbell's capacity as a businessman. Although he was a colorful and respected businessman who moved with prominent Americans of his time, his success in business was not remarkable. Looking at him candidly and without the pressure of literary demands, historian Frank McNitt once wrote David Brugge of the National Park Service, that Hubbell was after all, of "pretty ordinary clay".[26] Hubbell's shortcomings in business were most apparent in the hard times of his last years and in the sizeable indebtedness he left when he died.[27] His business practices often distressed his one-time Ganado partner C. N. Cotton, who chided him particularly about his attention to public affairs at the cost of his own. Cotton also denounced his tendency to pay more for wool or sheep than necessary, and, as pointed out above, called on him to get rid

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[26]Frank McNitt to David Brugge August, 1968, Farm File, WPHTP.

[27]This is apparent in the heavy mortgage burden the operation carried in the 1920s. See Mortgage Folders, Box 329, HPUAL ; and McNitt, The Indian Traders, pp. 221-222.

of teamsters who were breaking his equipment and failing to make deliveries on time. During 1912 for example, Cotton dwelt on many of these points in his letters, sometimes waxing caustic in his indignation. On April 30th while Hubbell was at the legislature in Phoenix, he scolded him for neglecting an order for 2,000 goats and with ironic wit threatened to invoke "the referendum and recall" on the conservative Hubbell for whom such Progressive measures were anathema. With a final note of exasperation Cotton concluded: "It would be a good idea to expend some of your salvation on your own business and let the Democrats take care of the dear people."[28]

Cotton did not take exception to Hubbell's interest in farming or even the long campaigns to develop an irrigation system and create a farming community at Ganado, but there was an instructive difference of style and inner man in the two. It was Cotton who left Ganado for Gallup, set up a successful wholesaling firm and became a banker.[29] Hubbell, on the other hand, chose not to devote himself to business and profits plain and simple, and even in his public interests and politics was willing to accept the liabilities of community obligation as well as isolation and distance. This was after all a product of what he was culturally, and what he was culturally included the inclination to approach farming as part of life in the "big house." In this context farming

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[28]Cotton Folder 1912, Box 20, HPUAL.
[29]McNitt, The Indian Traders, pp. 221-224.

was part of the family setting, and an obligation of position as well as a matter of economics.

However, time gradually diminished the Hispanic influence. Lena Rubi died in 1913, the old gentleman in 1930. As time passed, others also took their leave of the Ganado homestead and its "big house" tradition. With the exception of Dorothy Smith Hubbell, Roman's wife, death claimed the members of the second generation; daughter Adele Parker in 1937, Lorenzo, Jr. in 1942, Roman in 1957, and finally in 1964 Barbara Goodman. Given the nature of the Hubbell relationships, it seems likely that in the difficult years after 1942 there were simply too few of them to perpetuate the family's traditions or to maintain the full thrust of its farms and businesses. As a granddaughter explained, it was, after all, a small family. There were only five grandchildren. One of these, the son of Roman, was killed in World War II, depriving the family of an expected successor. As a result they "ran into problems." There simply was "not enough family to keep Ganado going." That the Hispanic elements in the Hubbell tradition themselves became very diluted was suggested in 1979 when historian Lawrence Kelly asked LaCharles Eckel if the "position of the women, that is supervising in a fairly well-to-do family . . . would have been out of the Spanish tradition of your grandmother [Lena Rubi]?" Mrs. Eckel's response, "I suppose. I had just never thought of it that way," suggested that consciousness of the Hispanic past had become very

dim indeed.[30] Yet Dorothy Hubbell's long years as a participating member of the Hubbell business team and its manager after 1957 reflected qualities that seemed to carry over from Hispanic times as well as from elements in her own character and background.

Nevertheless, after John Lorenzo's death the "big house" function of the Ganado home was of decreasing importance as the third generation matured and moved on and as the pressures of business increasingly demanded that the second generation spend their time elsewhere. Like the Trading Post, farm management was still a family affair, with relatives and outside people giving day-to-day attention but with major decisions falling to Lorenzo, Jr. or Roman, who were rarely there. Despite the tendency to place a premium on family traditions, the farm and the lifestyle associated with it became less important. This was a matter of the family's decline numerically and the diminishing influence of "big house" customs as certainly as it was a function of changing economic conditions in which John Lorenzo's dreams of a farming community supporting his Trading Post became less practical. Even in failure, however, the old homestead remained a fitting monument to the dual traditions of the Southwest.

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[30]LaCharles Eckel Oral History 1979, pp. 14-15.

CHAPTER XI:

THE HAY RANCH: PEOPLE, MANAGEMENT, AND OPERATION

There is a quality of timelessness to the Hubbell farm that strikes the modern observer. Although this reveals itself in field layout, the ancient stone headgates, and the continuing presence of the barn, it is especially apparent in the way alfalfa hay dominated the farm's cropping pattern. Unlike many other northern Arizona farms where a near subsistence kind of diversification was the order of the day, Hubbells' farm was highly specialized. It had been conceived as part of a larger enterprise. Its characteristics included marginal natural resources, cheap labor, remoteness, and a limited economic community over which Hubbell and his family exerted considerable control. In its early years, the hay culture of the farm was well suited to John Lorenzo's peculiar needs. As discussed previously it fed his draft animals and supplemented his livestock trade. It also served his ego, provided an outlet for his sense of social consciousness and helped draw Indians to the Ganado area. When the Hubbell operation changed and transportation made hay from the outside available at less than it could be grown locally, no real effort was made to adapt or seek new markets.[1] Fundamentally

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[1]See Dorothy Hubbell Oral History 1969, p. 59, WPHTP.

only one crop was grown. Over the decades cropping patterns changed little or not at all. Even the passing efforts that were made to introduce other crops point up how little changed.

The Hay Ranch

The Hubbells referred to the Ganado homestead as the "hay ranch."[2] It was an apt term for a number of reasons. It differentiated the Ganado farm from their "bean ranches" at Pinyon Springs and Vander Wagen in neighboring McKinley County and the two "fruit farms" at Farmington. In addition, it was descriptive of agriculture on the Ganado homestead where alfalfa was the primary crop. With its potential for three cuttings per year and its production possibilities of one-and-a-half to two-and-a-half tons per acre, alfalfa's advantages were obvious. Since it returned nitrates to the soil by natural processes, alfalfa wore soil out much less quickly than many crops. It was excellent for forage, although its advantages as a horse feed were somewhat limited by the tendency of its dust to induce "heaves," a serious equine repiratory condition. In addition it could survive relative periods of drouth and was generally well suited to the Four Corners region.

The Hubbell tendency not to tinker with or change their farming methods suggests that they plowed fields up and replanted them only when it was necessary. In other parts of northern Arizona, fields

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[2]For an example see Item 2 under date of June 1936, Box 391, HPUAL.

planted to alfalfa were often not broken up for many years, some being left for as long as a quarter-century. It seems entirely possible that alfalfa patches first planted by the Hubbells around 1905 could have remained until 1920 or later. In this case, spring-tooth harrowing or disking was necessary to renovate soil and, in view of broadcast fertilizer spreaders among the homestead's old farm equipment, to work in commercial fertilizers. On the other hand, Dorothy Hubbell remembered that there was rarely a year when some field or other was not broken up and replanted.[3] A contributing factor were rodents, "gophers" according to her account, but perhaps the prairie dogs that still inhabit the abandoned fields, or possibly both. Years of drouth or breakdown in the dam or canal may also have killed alfalfa stands, making it necessary to replant. As soil wore out and bindweed (an especially pernicious form of morning-glory) invaded the farm, it was more necessary to reseed fields in her day than it had been in John Lorenzo's.

The strains or varieties of alfalfa planted are not known, but the Hubbells were forward-looking in such respects and occasionally corresponded with the Department of Agriculture in efforts to improve yields or control blights. In addition rather close contact was maintained with seed and nursery firms in Kansas, Oklahoma, Arizona, New Mexico, and especially in Colorado. Among the Colorado firms were Burton Seed Company, Barteldes Seed Company, Mountain

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[3]Dorothy Hubbell Conversation August 16, 1983.

States Mixed Feed Company, Eliott and Myers Company and the Western Seed Company of Denver with which the Hubbells often dealt in the late 1930s. Western Seed advertized a line of alfalfa seed called "Gold Seal Seed" but offered nowhere near as many strains as did Barteldes, whose monthly flyer listed Colorado Common, Colorado, Wyoming or Nebraska Grimm, Nebraska Cossack, Ladak, Meeker Baltic, Ranger White Tag, Imported and Buffalo strains. Prices varied from $37.50 to $87 per hundred.[4]

In other arid farm localities where water could be applied only once or twice in the spring, alfalfa farmers made excellent returns on alfalfa seed during the years after 1910 by letting the second or third cutting of hay (depending on moisture) blossom and mature. The existence of an ancient seed separator of small capacity among the farm's abandoned machines suggests that, on occasion, Hubbells harvested some alfalfa seed. However, the rainy season in July and August made late summer production of hay a more likely alternative than it was in Utah, Nevada, and Idaho, where late summer rains were comparatively rare.

As suggested above, alfalfa fit well in John Lorenzo's turn-of-the-century trading enterprise. It was necessary to feed the fifty or sixty Ganado-based horses and mules with which he handled his freight and mail-stage service.[5] He also fed hay at

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[4]For an example of correspondence with federal agencies see W. Scott Smith to J. L. Hubbell, June 3, 1905, Farm Folder, WPHTP. Also Seed Catalog Folders, Box 529, HPUAL.

[5]Dorothy S. Hubbell Conversation August 16, 1983; and Dorothy Hubbell Oral History 1969, p. 81, WPHTP.

his barns and stables in Gallup, but doubtless bought it there. Like other traders, the Hubbells maintained a "hay room" from which alfalfa was sold to Indians a bale or two at a time. Need for horse feed was especially acute when Indians worked on irrigation construction as they did for years at Ganado. John Lorenzo also raised hay to meet the needs of the Moqui agency and the government school at Keams Canyon, where he had obvious freight advantages over contractors from outside. Early in his experience, while he was still experimenting with rye as well as alfalfa hay, Hubbell wrote H. H. Miller, superintendent of the Keams Canyon Indian school, outlining the advantages of locally raised hay and indicating that crops were good. With justifiable pride he told Miller "a fine lot of same" would be ready for delivery "from this farm about the 10th of June."[6]

During good years, raising hay for contract sales worked nicely. In 1907, for example, Miller acknowledged receipt of 15,160 pounds of hay in May. In September hay was counted in three-bale lots, loaded 30 bales to a wagon, and shipped to Keams Canyon in several different consignments. The next year the shipping season to Keams Conyon began July 24, when 29 bales were shipped, and extended through December 10.[7] In all nearly 1,000 bales were delivered. Records for the early 1920s show brisk over-the-counter

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[6]No date is on this letter, but it is probably 1904. See BIA 1880-1932 Folder, WPHTP

[7]H. H. Miller to J. L. Hubbell, BIA 1880-1932 Folder, WPHTP; and Folder 1, Box 349, HPUAL.

sales at the Trading Post, some transactions amounting to a half-ton, and some only to a single bale.[8] At the dam store, Navajos who worked their teams on the reservoir often bought hay in amounts as small as the "leaf," or the single sections into which baling machines folded the hay within the bale. For years the trading price of hay at the Hubbell Trading Post was pegged at 4¢ per pound. In 1936 baling began in May and ran until the following March. About 1,360 bales were put up at 125 pounds per bale, making an approximate total of 85 tons.[9] Other years nearly three times as much was reported.

Many years hay produced fell far short of local needs. As a result the Hubbells continued to import hay periodically. In 1914 and 1915 for example, when demand for hay to feed horses working on the dam was high, correspondence with Hunning and Connell of Los Lunas, New Mexico, showed that Hubbell bought hay by the carload. Hunning and Connell hay ran $13 put down in Gallup in 1913, and in 1914 cost $14 for "number one" alfalfa, and a dollar less for "number two," and two dollars less for "meadow hay." Hubbell dickered for one to four cars at different times and apparently purchased them, because freight records showed many wagonloads of hay coming into Ganado. Much later, after trucks and good roads were common, hundreds of tons of hay were hauled from the Salt River

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[8]Folder 1, Box 245, HPUAL.
[9]Folder 2, Box 391, HPUAL; and Katherine Quimaiyousie Oral History 1973, p. 26, WPHTP.

Valley and Colorado to meet Hubbell Trading Post contracts and over-the-counter trade during the drouth of 1930-1934. In Dorothy Hubbell's eyes, it was the availability of cheap hay that really defeated their efforts to farm.[10]

After 1921 considerable hay was also raised by Ganado's Indian farmers. In 1931, for example, they were reported to have 180 acres in alfalfa (as contrasted to 200 acres in corn) from which they raised 360 tons of hay. The presence of at least one Indian-owned hay press in the community suggests that they sold some hay commercially, but no evidence has been found that the Hubbell Trading Post actually traded for it in substantial amounts.[11]

Farm Work

As on farms elsewhere, work on the "hay ranch" continued year round but varied greatly from season to season and even from week to week. Both long-time employee Friday Kinlichinee and Mrs. Hubbell reported peak crews of up to thirty men. The most specific records about farm crews were time sheets from 1939 and 1940 which indicated that seven or eight men were employed regularly during the summer and as many as eighteen when they were actually putting up hay.

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[10]Box 42, HPUAL. Twenty-six truck loads of alfalfa hay amounting to about 180 tons were received at Ganado, Oraibi, and Pinon between September 24, 1934 and January 5, 1935 from the Arizona Farmers' Exchange at Mesa, Box 129, HPUAL; and Dorothy Hubbell Oral History 1969, p. 59.

[11]Indian Service Crop Report, December 31, 1931, Box 12, Irrigation District 5, BIA, RG 75, DRC.

These time sheets almost certainly showed only Navajo laborers. Included among them were names well known in the tradition of the Hubbell family including Joe Tippecanoe, Frank Gorman, Des Cheenii Nez and Edward Lincoln. The going wage was $1.50 per day. However, sometimes for a few days at a time individuals like Joe Tippecanoe were paid $2.00 per day, only to be returned to the lower figure later.[12] A possible explanation was that the higher rate of pay was reserved for irrigating which was a more technical job and almost certainly involved working early and late, if indeed not at night as well. With reference to pay and working hours, Tully Lincoln, who was employed on the Hubbell farm from his boyhood, later recalled "it was really bad." People worked "for $1.25 per day" from "six in the morning" until "six in the evening." If they used their own horses "pay was . . . four dollars a day. And it was the same from six in the morning till six in the evening."[13]

By the late 1950s and early 1960s when Dorothy Hubbell was running the farm, she paid as much as $3.50 per day and "lunch and sometimes supper." Although she did everything possible to cut costs, wages continued to rise, contributing finally to her decision to quit farming.[14] Indians who worked on the farm in the earlier years reported they were paid in tin money. Undoubtely they also

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[12]Book 1, Box 403, HPUAL.
[13]Tully Lincoln Oral History September 1970, p. 13, WPHTP.
[14]Dorothy Hubbell Conversation August 11, 1983.

worked off accounts at the Trading Post and at times were paid in cash as well.

In addition to pay and their noon meal, workers were sometimes allowed to pick fruit and gather cull potatoes for personal use. With relation to the latter, Anabell Hardy told that in the early days "alot of Mexicans and Navajos" worked "on the Wheatfields and potatoe fields." Some hauled "hay to the barn and some picked potatoes. Only the good potatoes were packed and sold at the trading post." Workers "just packed" up the others "and took them home." Indian children were also allowed to pick crab apples and at times to glean from other apple trees. In addition they picked mulberries from the Hubbell trees. Later, when Russian olives were planted to control erosion along the arroyo, the children picked and ate their fruit which they called "monkey eggs."[15]

The work force on the farm varied considerably. Until late in the farming era, at least one Navajo was maintained on the farm payroll year round. In 1939 this man was Chester Shirley, who worked five days a week by himself from November 28 when the baling crew shut down until February 22 when the spring crew was put on. Purchases charged against the farm during that period suggested he put harnesses in shape, hauled manure, made repairs around the corral and chopped wood or perhaps cut and hauled posts for fence repairs. The large crews of August worked six days each week.

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[15]Anabell Hardy Oral History n. d., pp. 1-2, WPHTP; Alice Quimaisyousie Oral History 1973, p. 31.

Although they obviously put up a crop of hay in September, the size of the crew was sharply reduced, and for about two weeks in the middle of the month no one worked. During October the work force rarely exceeded five men, but they worked more regularly than they had in September, sometimes on a five-day and sometimes on a six-day-a-week basis. Crews varied from one man to five during November but still worked regularly.[16]

The 1939-1940 farm account book provided a few other insights into farm operations. For instance, among the items purchased in March of 1940 were several pounds of nails and two shovels. In addition "R. [Rumalo] Sais" was paid $30 and an R. L. Hunt $85. Into these signs of spring may be read evidence that upkeep work started around the corrals and on the Ganado ditch system. Sais was the barnman and was probably paid at least part of a month's wage by the farm and in later years apparently assumed more responsibility for the entire operation. Hunt may have done some plowing. His name did not appear elsewhere, but Dorothy Hubbell referred to Anson Jones from Zuni and others doing the spring plowing. Perhaps he was one of these.[17]

In the main the Navajos who worked on the farm were from Ganado. Many of them either owned irrigated farms themselves or came from families that did. Most were day workers and came and went from their homes each day. The "lane hogan" was used as a

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[16]Book 1, Box 403, HPUAL.

[17]Ibid.; Hubbell Tax Assessment Lists, 1902-1915, HPUAL; and Dorothy Hubbell Oral History 1969, p. 9.

shelter for them as well as occasionally for lodging for traveling Navajo families. Farmhands who lived at greater distances camped there to shorten their work day. An apple tree grew immediately behind the "lane hogan" by the ditch. Among its northerly branches was arranged a food box which Indians used at times as a cooler. A 1951 photograph (4422) showed a privy in the lane near the southeast corner of the corrals. Early photos (2140 and HTP-PAV-21) showed no such amenities in that vicinity. Because of the advent of indoor plumbing and the progressive disuse of two privies west of the big house, it seems very likely that this mid-century outhouse was installed for the convenience of the farmers and barn crews.[18]

Irrigating was a continuing function of Navajo farmworkers. It is not clear whether water was allotted to the Hubbells on turns or was available on some kind of continuing basis, but some arrangement for regulating how much each user got was necessary. After 1913 Hubbells paid the Indian Irrigation Service a rate that varied upward to $3 per share for an amount of water fixed by the number of acres farmed. Many years, particularly in the early decades, the Hubbells hired Indians to work out their water assessment each spring by cleaning the canal. Between 1931 and 1951 they paid water assessments for land varying from 99 to 114 acres. In the confusion and hard times of the years immediately after Lorenzo, Jr.'s death, they failed to pay their water assessments for three years, bringing

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[18]Dorothy Hubbell Oral History 1969, p. 29.

the farm's obligation for water costs to $898 on January 12, 1944, a sum that was paid in full by Dorothy Hubbell.[19]

Friday Kinlichinee recalled that he often irrigated for the Hubbells. The number of times they watered each year varied according to rain and water availability in the reservoir. Kinlichinee thought four waterings over the entire fields was usual, although on wet years they did not irrigate at all after rainy season began. Irrigating was often done by two crews of two men although sometimes just one crew was needed. One man worked at the head of the field and one at the bottom. According to Kinlichinee, irrigators did not work during the night hours. The bordered fields facilitated this practice by contrast to row irrigation which required more attention. In addition, the holding pond may have been used to store night water. According to Arthur Hubbard, the government "dam watcher" regularly turned water on and off at the big reservoir at night and followed the stream down the canal each morning to get trash out and see that it was used by the right farmer. Water loss in this kind of operation would have been high, and it seems unlikely that it would have been the practice generally. Whatever the case, shared irrigation turns did much to mold the Hubbells and their Indian neighbors into a single community. A half-dozen or more broken shovels thrown together in the farm's castoff equipment, with points unworn but handle's

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[19]Water Assessments Folder, Box 185, HPUAL.

snapped at the haft, give mute testimony that irrigating the farm was a struggle even with its stone headgates and bordered fields.[20]

Farm Management

The Hubbells ran their farm more than they actually worked it. Before his death John Lorenzo and his son Roman carried managerial responsibilities. Later, Roman and, still later, his widow Dorothy Hubbell managed it. During the 1930s Lorenzo, Jr. also shared in this duty, although he, like Roman and Dorothy, lived elsewhere. At times a foreman was employed as well. For example a Mr. Collins served in this capacity sometime prior to 1920. According to Indian neighbors Howard Gorman and Chester Hubbard, barnman Rumalo Sais bossed the farm for many years. Mrs. Hubbell, however, was certain they misunderstood his function. Some custom work was hired. Anson Jones and others plowed. Tom Horton, apparently a white, was "hired to operate the tractor" during the last few years. Bill Young, who was later with the Park Service, also played some role on the farm in its last years.[21] During the entire period after John Lorenzo's death, Trading Post managers assumed some responsibility for setting schedules and arranging for work crews.

Although emotionally a part of every Hubbell make up, the farm was rarely the primary object of anyone's attention after the old

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[20]Friday Kinlichinee Conversation June 7, 1984; Arthur Hubbard Conversation August 25, 1983.

[21]Dorothy Hubbell Conversation August 16, 1983 and Dorothy Hubbell Oral History 1969, p. 7; Friday Kinlichinee, Howard Gorman, and Chester Hubbard Conversations August 1983.

gentleman's death. The creative interest and day-to-day attention that characterized its management in the first decades of the century were replaced with a condition of loyal commitment and half-management, while tours, trade and financial problems occupied the really effective efforts of the family. From the standpoint of farm management, the entire period after 1930 was at best a time of partial neglect. Indian workers actually did the farming. Many were skilled and careful and thoroughly loyal. Yet often they worked without immediate supervision in the field and had few incentives beyond their meager pay. As a result, turnover was frequent and the farm suffered from their lack of interest as it did from managerial neglect.

Haying Operations

Hay was handled with machinery on the Hubbell farm from 1903 when they purchased their first hay baler. Sam Day, Sr., who sold Hubbell the machine, was at a Chinle trading post much of the time during those years and the machine he sold them may have been one that he had used during more active farming periods at his St. Michaels homestead. No written evidence has been found proving that Hubbell also bought a mowing machine and a hay rake in 1903. However, the hay baler itself, as well as the character of his farming operation make it certain he owned a mowing machine and rake at that time.[22]

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[22]S. E. Day to J. L. Hubbell from Chinle, October 14, 1903 informing him "the Hay baler is worth $75" and offering to "deliver

Production of quality hay required careful scheduling, coordination of procedures and good luck with the weather. Like many of their northern Arizona contemporaries, the Hubbells were only moderately successful in controlling these elements. According to Mrs. Hubbell, hay was cut when "the alfalfa was about 1/3 in bloom" while the leaves were still on. However, photograph RP-263 showed several haystacks, in some of which the heavy stems of cured hay suggested that hay was sometimes cut at a rather mature stage. Mowing patterns almost certainly followed the terraced borders. Until 1947 when a side delivery rake was purchased, hay was raked with a dump rake and often cocked or piled by hand. This may have been a concession to the bordered terraces or it may have been done on the assumption that fewer leaves were lost piling it with pitchforks. Rain was a common problem that put pressure on haying and sometimes resulted in hauling and stacking hay that was still damp, badly browned, or from which most of the leaves had fallen. In hope of resolving this problem, Hubbells considered buying at least one apparatus that was supposed to facilitate drying but apparently did not follow through with the purchase.[23] Heating in

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it and show you how to run it—I mean we will start it." Day Folder, Box 23, HPUAL. International Harvester Company to J. L. Hubbell, January 23, 1907 informs him that a "No. 3 Return Apron Spreader with steel wheels" would be shipped to him promptly, Farm Folder, WPHTP.

[23]Dorothy Hubbell Oral History 1969, p. 39. A side delivery rake was bought on April 17, 1947 from the Flagstaff Implement Company at a cost of $214, Box 184, HPUAL; on the "Ardrier" see Folder 8, Box 564, HPUAL. Arthur Hubbard Conversation August 25, 1983.

the stack and loss of palatability resulted if hay was stacked damp. To control this workers sometimes scattered sheep salt on the hay while stacking. Hubbells like other farmers undoubtedly lost hay to heating in the stack or the bale.

Hay was hauled loose on hayracks from the fields. Friday Kinlichinee recalled that four wagons were used, each handled by a teamster and a fork man. A field crew of four men and a stacking crew of four rounded out a total work force of sixteen. Certainly there was variation in this. For one thing, four seems an excessive number of wagons. Considering the short haul, two, or no more than three, could have kept field and stack crews hard at work. Yet the 1939 time sheets list several days in August when four Indian teams were hired without accompanying mowing machines, suggesting they may have been put on to pull hay wagons.

Although Hubbells owned a crawler tracter by 1925 and a wheel tractor by the 1950s, and field balers were everywhere in use by the later date, Mr. Kinlichinee remembered only horse power and hand-working of loose hay. Yet he recalled a derrick or hay pole. (Figures 42-43.) This was in use by the early 1920s. Instead of using a Johnson fork to grapple and lift the hay, wagons were equipped with woven wire slings laid over the hayrack which made it possible to lift entire loads off by horse power, greatly facilitating stacking. Hay was stacked in good-sized stacks in the yard southwest of the barn at spots that shifted over the years to

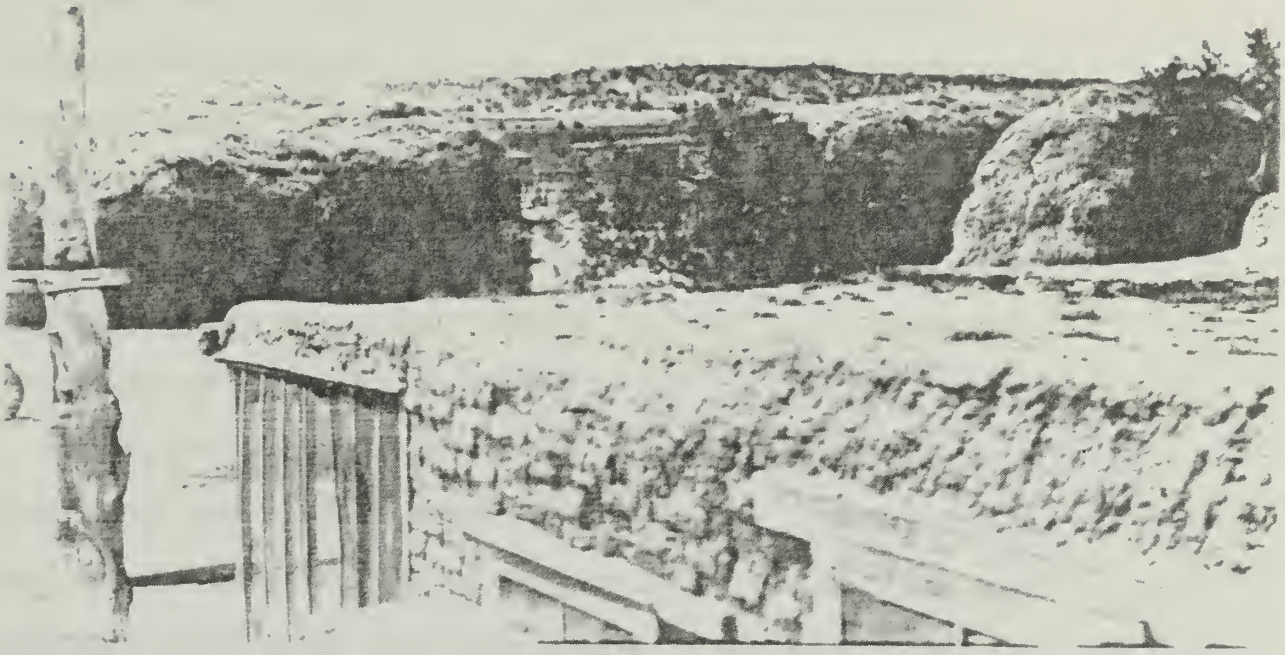

Fig. 42: Hubbell Stack Yards ca. 1920. (HTP RP-263.)

Fig. 43: Stack Yards & Haypole With Woodpile in Center Background, Roundup Corral Distant Right Background. (HTP RP-201.)

meet other needs.[24] Tully Lincoln, who worked in the Hubbell hayfields and stackyards "from way back," had vivid memories of his experience there. "At that time" there was "lots of hay . . . growing all over." Using his own horses, he cut and raked hay and helped with the hauling, as well as plowed and planted hay fields. One of his horses "was always" used on "that big . . . wooden pole that sticks up" for "hoisting the hay to the top."[25]

Little or no loose hay was stored in the barn. Although late summer rains sometimes damaged stacks and roaming livestock fed on them, hay was always stacked in the yard and baled later. Separately fenced stack yards were apparently not used. After it was baled, the hay was moved into the barn or hauled to some other destination. However, in keeping with widely accepted customs of the time, hay used on the place was sometimes fed loose from the stack.

Like the rest of the haying process, baling was a job that employed a good sized crew. Hubbell hay presses, two of which remain south of the barn, were primitive stationary apparatuses powered by a sweep pulled by one or two horses which circled the

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[24]Friday Kinlichinee Conversation August 16, 1983 dealt at length with handling hay. Photograph HTP-PM-30 shows a crawler type tractor and dates it around 1925. Mrs. Hubbell recalled an early tractor, although she did not differentiate between tracks and wheels, Oral History, 1969, p. 7; Photograph HTP-PH6-58 showing haystacks and a hay derrick is dated 1910 which must be in error because what appears to be a 1920-1925 vintage automobile is visible in the picture.

[25]Tully Lincoln Oral History 1970, pp. 21-22.

baler, stepping over its low end in their rotation. As indicated, baling was sometimes done in the summer to meet demand for hay. More often it was a fall and winter job. In 1939, for example, hay was baled in August and during almost all of October and November. Other years baling began in June and continued throughout the winter.[26]

Five or six men worked the baler, although fewer could have. Well-trained horses operated the sweep without much attention. One or two men fed hay into the machine. This involved slicing three or four-foot sections of hay from the stack with a hay knife and then pitching it into a hopper in time with a plunger that forced it into the press. One man tied bales and one shoved blocks and threaded wire. These were demanding tasks because of the dust produced and because in the early years bales were often tied with as many as four wires. At least one man moved hay from the baler. Friday Kinlichinee recalled that he had worked on baling crews for many years and that the usual procedure was to bale during the forenoon only. In this event, bales could have been stacked in the barn during the afternoon and a setup made for the next morning.

As elsewhere, baling on the Hubbell farm was sometimes accompanied by mishaps. Joe Tippecanoe worked with baling crews until 1947, when he "stepped into a hay baler and it skinned my leg quite abit, also torn [sic] one of my ligaments, so for that reason I left my job, even tho' they didn't want me to." Anabell Hardy,

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[26]Book 1, Box 403, HPUAL.

whose people had also been closely associated with the Hubbell family, related that her uncle had his leg cut off in a haying accident at a neighboring valley and died.[27]

Static Cropping Pattern

Crops were not rotated systematically at the hay ranch, but the Hubbells may have achieved the same effect by cropping land less intensively than did many farmers. At least 110 acres were under irrigation but at times after 1915 only sixty acres were listed as farm land for tax purposes and one government report from 1939 recorded that only fifty-four acres were cultivated that year. Reports may have minimized land farmed and the same fields may have lain idle year after year. But even allowing for such possibilities a substantial portion of the irrigable land was uncultivated some of the time, thus allowing certain fields to lie fallow.[28]

Corn may also have featured in a rotation system. Oral histories indicated corn was always raised for table use but rarely for forage and grain purposes and then not in large acreages. Nevertheless, corn was occasionally raised in larger amounts. For example, the Irrigation Division reported in 1931 that thirty acres of corn were grown by Ganado's white farmers (the mission and the Hubbells). The mission planted no more than ten acres to corn,

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[27]Friday Kinlichinee Conversation May 31, 1985; Joe Tippecanoe Oral History November 1971, p. 15; and Anabell Hardy Oral History, pp. 3-4.

[28]Navajo Service Crop Report 1940, Box 185, HPUAL

suggesting that Hubbells raised about twenty acres. Taken together with a corn lister still on the premises, this indicates that this one year, at least, considerable corn was raised. However, although Ganado's Indian farmers consistantly raised more corn than alfalfa, the isolated incidence of this reference suggests that while Hubbells tried to introduce corn into their cropping pattern the outcome was not such as to merit planting a large acreage on a regular basis.[29]

Potatoes did well, particularly in the sandy loam west of the Trading Post near the arroyo where they were planted regularly. Usually only an acre or two of potatoes were planted. However, in 1940 twenty-eight of the sixty acres farmed were put in potatoes and plans made to sell them commercially. At 240 bushels (which brought only $1 per bushel), the harvest was disappointing and the Hubbells resumed their earlier practice of planting only a small patch for local consumption. Potatoes were stored in the root cellar and sold at the Trading Post.[30]

Inspite of Indian references to the Hubbells' "wheatfields," wheat and barley were never grown. In the beginning, rye was used as a nurse crop to shelter tender alfalfa plants when they were starting. Because of its drouth resistant qualities, rye was also planted by itself on fields that could only be watered once or twice annually. Oats, a much more conventional nurse crop, were also used

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[29]Annual Irrigation Report December 31, 1931, Box 12, Irrigation District 5, BIA, RG 75, DRC.

[30]Navajo Service Crop Report 1940, Box 185, HPUAL.

to start alfalfa after 1910. There is no evidence that grain was ever threshed at the Hubbell farm.[31]

Truck Crops, Fruit and Pasture

Some truck crops were always grown. As much as an acre was sometimes planted to melons and large gardens were planted. With respect to the latter, Mrs. Hubbell recalled "we had all kinds of vegetables, kale, rhubarb . . . lots of watermelons, pumpkins, banana melons, canteloupes and similar things."[32]

In time the mission and some of the Indians surpassed the Hubbells in the extent and diversity of their gardening. Encouraged by the "dam watchers" who distributed seeds and the Ganado Valley Water Users Association, some Navajos proved to be particularly adept at truck farming. Among the best was David Hubbard whose place was on the north-side ditch near the reservoir. As his daughter related, he liked to farm and "could raise almost anything." Among other things, he tried "peanuts, wheat and sugar beets." The beets, which he learned about in the Grand Junction area of Colorado as a boy, proved to be a particular flop. His wife tried to cook them but his children refused to eat them. Finally he fed them to his sheep in disgust. Carrots, cabbage, tomatoes, peas, peppers, corn, watermelons and celery went over better. His

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[31]Folder 1, Box 349, HPUAL references shipment of rye, oat, and alfalfa hay. Neither Friday Kinlichinee nor Mrs. Hubbell remembers threshing and there is no evidence of either grain binders or heavy duty separators in the "junk paradise" south of the corrals.

[32]Dorothy Hubbell Oral History 1969, p. 9.

daughter was suprised that peanuts grew under the ground but was enthusiastic about roasting them and eating them. Celery, carrots and cabbage were kept for winter use by burying them in the field with sand hauled "from the wash." Many years they lasted all winter.[33]

The mission was even more vigorous in its truck farming. In 1937, for example, its annual report listed large amounts of no fewer than nineteen varieties of vegetables in addition to corn, potatoes and alfalfa. During these years the mission gardens and farm also provided the mission hospital and school with milk, beef, mutton, pork, poultry, eggs and honey. In 1943 livestock inventories included 79 pigs, 250 chickens, 80 ducks, 12 cows, a bull evaluated at $1,000, and an amazing 155 rabbits.[34]

If few cash crops other than alfalfa were raised on the Hubbell farm, a number of incidental cropping efforts were made. Doubtless the most interesting of these was fruit. John Lorenzo Hubbell was interested in raising fruit there from the time water was first developed. The early 1900s were a time of intense interest in horticulture regionally. Each of the Four Corners states had its areas of fruit culture, and Arizona territorial policy favored fruit growing. Hubbell was very much a product of the times in his flirtation with fruit trees, and his later acquisition of the Farmington fruit farms indicated his sense that

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[33]Katherine Quimaiyousi Oral History 1973, pp. 8 and 51.
[34]Farm Records 1923-1945, College of Ganado Archives.

fruit he raised could become important to his trading business.

However, he likely learned quickly that Ganado's elevation (about 6,300 feet) and the region's raw spring climate did not lend itself to fruit growing. A large number of trees may have been planted east of the Trading Post, but it remains to be shown whether orchards as such were ever planted.

On the other hand, it is clear the Hubbells planted fruit trees along many of the laterals and the head ditch. This had the obvious advantage of placing trees near moist soil otherwise unused. Among the varieties planted were plums, apricots, pears, and apples. Shipping notices for about 200 apple trees in 1906 indicated the irrigation system was working by that year or before. On December 12, 1906, the Spencer Seedless Apple Company of New Mexico in Roswell, shipped 110 "seedless apple trees" with instructions to plant them at once. In February of the same year a Wichita nursery also sent both apple and pear trees.

In the long run fruit became more a matter of the Hubbell farm's tradition than an economic factor. People who visited the place sometimes mentioned fruit trees and vineyards as well. Some picked and ate plums. Others noted the role of black walnuts as a source of natural dyes for Indian weavers. Indian children picked mulberries without interference, and some remembered being chased off the premises for taking apples. But there was no commercial production. Spring frosts regularly froze blossoms. Insects were not controlled. The trees were not effectively pruned. In time the

Hubbells shifted their interest in growing fruit to Farmington, New Mexico, where they purchased the two fruit farms.[35]

The fruit trees have some bearing upon the use of the Hubbell fields for pasture. Because it was hoped fruit would be produced, the trees were likely protected from horses which could have reached foliage on the smallish trees that grew on the Hubbell ditch banks and under some circumstances would have chewed their bark. Another factor that bears on pasture use for horses was the fact that Hubbells kept only draft and saddle animals which were stabled in the barn and fed or herded on pasture off the farm. There were never any brood mares and colts for which fenced pastures would have been more important.[36]

The Profit Factor

Contributing to the sense that little changed on the Hubbell farm are problems in pinning down just how farming was supposed to add up to a profit. Indeed there is little to indicate that the Hubbell farm ever turned a profit or that it was even essential that it do so. John Lorenzo was apparently pleased with its performance to begin with, and hay sales together with feed for the freighting operation may have exceeded costs some years. No indication has been found that anyone tried to summarize its profits during these

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[35]See letters to J. L. Hubbell, Farm Folder, WPHTP.

[36]Dorothy Hubbell Conversation August 16, 1983; and Friday Kinlichinee Conversation August 3, 1983.

early years much less to factor the costs of farm development and the irrigation system into profits and losses. Extensive work in the Trading Post books would probably make possible an estimate of gross income for some years. Lost somewhere in the Hubbells' accounts may also be information about who worked on the farm, but extracting labor costs would probably be impossible, although it is conceivable that some kind of a profile or estimates for a typical year during early times might be arrived at. Receipts paid for taxes on the entire operation exist for most years. Analysis would yield close estimates of how much of this was paid on the farm. Water assessments exist for several years in the late 1930s and 1940s, when they ran about $300 per year. Earlier water fees to the Irrigation Service were somewhat less. Early expenditures for machinery did not show up in summaries of the Hubbell accounts, although correspondence and other occasional references suggest that the $300 or $400 value placed on farm equipment in tax receipts may not distort true value too badly.[37]

Although the greatest period of expansion in trading and in freighting and mail contracting still lay ahead, the cost of developing the farm between 1903 and 1913 together with the unsuccessful bid for the U. S. Senate in 1914 probably ruined John Lorenzo Hubbell financially. There is no specific data making the connection, but correspondence for these years suggests that

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[37]Water Assessments Folder, Box 185, HPUAL; and Apache County Tax Folder, Box 128, HPUAL.

obligations incurred to highly placed members of the Republican Party while Hubbell was securing his land and developing water influenced him to make his unfortunate senate race. If nothing else, members of the Roosevelt and Taft administrations contacted in lobbying for his water system encouraged him to run. But more to the point here, the heavy cost of developing his water system left him without reserves to meet the campaign debts of 1914. The first large mortgages appeared immediately after the senate race. Some mortgages were paid off, but when one was closed others took its place. By 1940 mortgages secured primarily by the Hubbell farm amounted to more than $50,000. Beginning in 1926, taxes were often in arrears. By 1931 delinquent taxes had escalated to $1,787.08, of which more than $250 was interest on unpaid back taxes. Two years later the Ganado property was put up for "forced sale" but the sale was "suspended" when a state law made it possible to pay back taxes "over a period of ten years." Problems with back taxes and mortgages on the farm continued until at least 1954 when Roman and Dorothy Hubbell declared bankruptcy.[38]

In the late 1930s and early 1940s accounting procedures began to include annual summaries of the farm's performance. The accounts

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[38]Mortgages Folders, Box 329, HPUAL; and correspondence between H. W. Atkins, the Hubbells' lawyer, and Lorenzo, Jr., Atkins Folders, Box 5, HPUAL. On the farm's tax problems during the 1920s and 1930s see Lorin M. Farr to Roman Hubbell, April 12, 1932 and L. R. Gibbons to J. L. Hubbell, September 5, 1933, Apache County Folder, Box 3, HPUAL. Mrs. Hubbell recounted the bankruptcy proceedings in some detail in her Oral History 1979, WPHTP. This part of the interview was not transcribed but exists on tapes #16 and 17.

from which these summaries were compiled were not found and the summaries themselves are scanty and confusing. They include only such items as labor, depreciation on machinery, operating expenses and income. During these years farm losses were regular. Costs usually ran about $5,000. Income was about $3,000. In 1941, for example, expenditures ran $5,863 and income $2,629 for a loss of $3,235. In 1944, expenditures, including $2,279 for farm machinery, amounted to $5,756 for a loss of $3,233. Land was evaluated at $80,000, buildings at $30,000 and farm machinery at $4,521. An exception to the pattern of farm losses occurred in 1939, when it appears that the farm ran expenditures of $3,069 and "credit balances" of $5,434 listed under "hay sold Ganado store" and "feeding sheep."[39]

By 1949, the farm had become a serious encumbrance to an already extremely shaky business. Wages paid farm workers were high. Nearly $6,000 were tied up in farm machinery and production was negligible. In April, farm labor and contracted plowing amounted to $700, and through the rest of the farm year labor totalled $1,320. Other expenditures brought the total to $3,747. Income was only $583, leaving a loss of $3,154. Subtracted from the net profit at the Trading Post of $5,589, this left a net profit for the entire operation of $2,435. Beyond brief and inconclusive entries for 1950 further farm accounts were not found. But, in view of the bankrupty in 1954 and final suspension of all farm activities in the years

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[39]See Folders 1-8, Box 497, and Folder 8, Box 529, HPUAL.

that followed, it seems certain that the trend continued, making farming in those last years as much an act of loyalty to tradition and an expression of cultural values as was the cultivation of native plots by Indians during the summer of 1984.[40]

Thus from the first the Hubbell farm's chief crop was alfalfa hay. In an era and region subject to change and adaptation, an entire array of production factors fixed its operation in the haying mold. The ranch was beyond the reach of outside markets. The Hubbell sons never saw their prospects as being primarily related to farming and were not driven to experiment with it to improve profits. There was never any sense that the farm ought to be utilized more intensively to provide opportunities for upcoming generations or new members of the family. The practice of running it under their own general and sometimes casual supervision with Navajos to work it tended to inhibit change because adaptation required new skills that no one wanted to gear up for. By contrast, the mission's dairy, swine, and larger-scale truck crops required special skills and intensive management. In its hospital and school food services and its more explicit obligation to train students, the mission had different markets and functions.

To a degree the "hay farm" was also established for purposes that were not directly economic. It was part of the Hubbell mystique and part of a setting carefully staged by John Lorenzo. To crop it differently was to alter the contributions it made in this

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[40]Ibid.

sense. Additional factors that inhibited change in cropping patterns included the nature of the water supply, the unusual relationship to the government, and the farm's remoteness from markets, land promotions, and profit-motivated neighbors. Also, carryovers from a variety of indirectly related decisions allowed them few alternatives. For these reasons the Hubbell farm, including its long dependence upon alfalfa as a crop, had a quality of timelessness about it. It is as though the model were stricken off and remained unchanged thereafter. Contributing to this characteristic but also part of the web of circumstances in which the Hubbells were caught was the farm machinery which will be considered in the next chapter.

CHAPTER XII:

OLD MACHINES: USES AND MEANINGS

It has been clear throughout this study that John Lorenzo Hubbell and his family had a flare for expressing style, tastes and values through things and places. This attribute was displayed in even such mundane things as farm equipment, which in its use and ultimate disposition helped describe the character of the Hubbells as well as to throw light on what they did. Although the family members were all traditionalists who did much with their farm to preserve customs and tradition, their approach to farm machinery was essentially pragmatic. They got equipment that suited the job, yet they responded intelligently to Ganado's isolation and the consequent difficulty in supplying parts for new machines that might be temperamental. They also responded to the human requirements of their operation, worked as it was primarily by Navajos and managed by a loose family overseership. For the same reasons they preferred machines on which capital outlay and maintenance costs were modest. As noted earlier, once the irrigation system was set up and the cropping pattern established, they tended not to experiment. Similarly, they were not innovators where machinery was concerned.

Discarded Equipment and the Historical Record

Farmers in the ranching country of the Southwest and other arid regions have been notorious in their tendency to keep antiquated machinery around. Implements were often abandoned where they broke down in the field or were parked behind a shed in an area which quickly deteriorated into a junkyard. This was in some degree a matter of poverty and slothfulness. It was also a matter of frugality and foresight, and many is the "treasure island" or "junk paradise" that has been combed again and again for parts. Fortunately, the Hubbells were no exception in developing a "junk paradise." Indeed, they were persistent and perhaps even systematic "keepers." If the Hubbells lacked anything in the way of ordered saving, the National Park Service has made it up, and today the barn, a machine shed, and parts of the corral as well as a grand "dump" south of the corral, dignified in one report as "Stacks 1, 2 and 3," are primary sources of information on the character of the Hubbell farming operation. (Figures 44-45.) In this context it is important to understand that farm equipment reflected on the values and character of the men who worked the farm as certainly as it did on the Hubbells. In the same sense that the Hubbells made choices about equipment and its use, farm workers influenced selection of implements and by their special gifts and inclinations gave the farm a character that to some degree may still be

recognized.[1]

While antiquated farm equipment is useful as a primary historical record, it has certain drawbacks on the Hubbell farm. They kept many things. But what they did keep says little about what they did not keep. Written records provide some additional information on machinery and oral histories add an even smaller dimension of insight. In viewing the three kinds of evidence—physical remains, written records, and oral testimony—there is a tendency to project directly backward from the old machinery. This inclination would say "what is seen is what they had." To a degree this is doubtlessly true. However, written records and oral sources suggest there may well have been entire lines of equipment that are not seen today and entirely forgotten. While certain controls, including what is known about farm equipment elsewhere in the Ganado area, help eliminate some of these possibilities, caution must be used not to presume that the entire story is known or can be known.

The equipment on the Hubbell farm will be approached with the intent to learn what kind of world it depicted and particularly how it reflected on the people who owned and worked the farm.

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[1]See Benjamin Levy and Charles Pope, "Historic Structures Report: Part II, Two-Story Barn," National Park Service Office of Archeology and Historic Preservation, n.p. and n.d.; A. Berle Clemensen, "Historic Furnishings Study: Barn and Blacksmith Shop," National Park Service, Historic Preservation Division, Denver, n.d.; John Conklin, and Jim Ostler, "Inventory: Barn and Corral Area," September 13, 1983, WPHTP; and Farm Implement Photographs by Liz Bauer, 1984, Photo Collection, HTP. "Treasure Island" was the local name for the machinery graveyard at Redd Ranches in Utah's San Juan County where the writer searched again and again for odds and ends to keep ranch equipment going between 1952 and 1956.

Fundamentally there were three kinds of equipment used. Discussed in an approximate order of utilization, these were earth-moving and preparation implements, tillage equipment, and harvest implements including wagons. To this will be added a short discussion of power sources.

Earth-moving and Leveling Implements

Wagons were important to the Hubbell trading enterprise for decades before any earth-moving or leveling implement was ever used, but the relationship of earth-moving equipment to the development of the farm placed it in the first order of importance. Development began at least as early as 1903 and leveling and ditch work continued to be important until farming was abandoned. Initially, scrapers and other leveling devices were the primary implements. Today several of them are still found on the place. These include a two-horse fresno, a four-horse fresno, a tractor-drawn tumble bug, two wood-frame drag levelers and the remnants of a blade-type land leveler.

Tools of this type were used to put the farm in shape and to build the "Hubbell Ditch" as well as to construct the government dam. The earliest definitive information relating to scrapers at Ganado is a photograph from 1913 showing several wheel scrapers in use making the Ganado dam. (Figures 46-47.) These were small units drawn by two horses and operated by two men. Unlike other scrapers they were equipped with rigid tongues to which "snatch teams" were hooked to help pull the scraper when it picked up its load.

The wheel scrapers used on the dam were doubtless provided by the government and may have been selected over larger versions of similar outfits because of the small horses worked by the Navajo teamsters. Others like them were probably found on all the irrigation projects undertaken by H. F. Robinson and his colleagues of the Indian Irrigation Division during the early decades of the century. Like his Navajo farmer counterparts, Hubbell used them and similar scrapers on his own place.[2]

By the first years of the century when Hubbell began his development work, much construction had been accomplished in the region and farmers had adapted earth-moving equipment to their own needs. Well known were "Mormon board" scrapers and slip or scoop scrapers. Hubbell would almost certainly have used both, and one photograph shows what appear to be two slip scrapers against the wall of the Trading Post. (Figure 39.) Of these two varieties, the slip scraper was the more common or universally used. It consisted of a metal scoop perhaps 30 inches wide, and was 30 inches from front to back, and about 15 inches deep. It was worked with two wooden handles extending to the rear and was drawn by two horses from a swiveling half-circle drawbar over which the filled scraper was tipped to empty its load. The slip scraper was a vicious

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[2]H. F. Robinson, "Project Histories: Navajo Reservation 1913," Miscellaneous Reports and Correspondence 1908-1936, Irrigation District 5, BIA, RG 75, DRC; information on actual workings of a wheeled scraper is from Q. M. Hansen to C. S. Peterson, February 15, 1985. Hansen described driving the snatch team for loading wheeled scrapers at the Jacques Reservoir near Lakeside, Arizona in the 1920s.

implement to operate. It required much stoop work and great exertion to manipulate. Worse, it was apt to catch the operator under the chin as he stooped to control its cut or as it flipped over to dump its load coming out of a ditch or over other rough terrain.[3] But it moved a quarter of a cubic yard of earth and far surpassed a shovel and other available options for many operations.

Although no slip scraper is found on the Hubbell premises today, they were essential in the development period and useful thereafter in maintaining ditches until the end of the horse power period. In terms of the utility of slip scrapers on the Hubbell farm, several factors applied. First was the physical existence of the 185 stone headgates which not only terraced the Hubbell fields but broke ditches into twelve to fifteen yard sections that both limited the use of go-devil ditchers and made for conditions favorable to slip scrapers. Blow sand and flood fills as well as rodent action made ditch work a routine operation.

Several factors may have reduced the extent slip scrapers were used. Included was the fact that approximately half the ditch footage on the farm ran so close to fencerows that it complicated

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[3]Q. M. Hansen to C. S. Peterson, February 15, 1985; Photo #RP-200, HTP; James A. Young, "Scrapers," from a "Manuscript on Land Preparation for Irrigation," a copy in writer's files, hereafter referred to as Young, "Scrapers." Young is a United States Department of Agriculture range scientist who is preparing a book-length study on agricultural earth-moving equipment. Throughout this chapter the writer draws heavily upon personal experience on northern Arizona and southern Utah farms and ranches. Many judgments are advanced about how things were done on the Hubbell farm. With additional research and field examination these should be revised in many respects.

using teams, although a powerful single animal might well have done the job. A well-trained team might also have worked one animal in the ditch and one out. An abundance of cheap labor may also have led the Hubbells to use manpower to shovel their ditches, although at this date there is no evidence of the shoveled mud buildup that usually accumulated where ditches ran along fencerows. Another factor that raises some question about the use of slip scrapers is the fact that there is no evidence of headgates having been damaged over the years as teams jumped in and out of ditches or scrapers caught stone abutments.

Go-devils were doubtlessly also used at times for ditch making and cleaning. There is one go-devil among the abandoned implements at the Hubbell farm. It is metal and was drawn by a tractor. In addition, its size and character suggest it was used to make borders rather than in the compartmentalized ditches formed by the stone headgates in the Hubbell fields. Go-devils were simple in design, being basically a "V" with one side long and the other short. Their function was to throw mud or earth loosened by a plow out of a ditch in much the same way a snowplow throws snow. They were easy to build of materials available everywhere, and the Hubbells likely experimented with them, although they may not have found them to be of much utility for ditch cleaning. One thing is certain. Ditch cleaning was a necessity, horse drawn go-devil or scraper, or shovel and manpower, it was part of life on a regular and on-going basis.

A homemade wooden device known variously as a Mormon scraper, Mormon board or buck scraper would have been utilized by Hubbell and

in the construction and maintenance of the Ganado dam. Used extensively for earth moving in the late nineteenth century, these had been superceded by other equipment by 1900 except for grading fill and for water work in ditch cleaning. These were apparently what G. E. Barr of the Kansas City John Deere Office referred to in a letter to John Lorenzo in 1907 as the "old style Buckboard or Pony Scrapers." While "these goods" had been "discontinued years ago," Babbitt Brothers of Winslow could "furnish them." They were constructed of boards and were perfectly flat except for four-to-six-inch sideboards. Their cutting edge consisted of a steel blade or strap, and like the slip scraper they were pulled by a half-circle drawbar although the drawbar sometimes extended to a short tongue to give distance and flotation for grading purposes. Also, like the slip scraper, they had two stubby man-killing handles. For grading and water work, these were located on the back. (Figures 48-49.)[4]

For grading, the Mormon board was held near the perpendicular with stay chains and was usually equipped with a "step board" hinged to the back near the cutting blade on which the operator stepped to provide thrust as the board gathered dirt. Although Herbert Gregory in a 1917 report referred to "graders" as being needed by Indians much finish work was still done with Mormon boards as late as the 1930s on reservoir and tank construction jobs. While the Irrigation

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[4]G. E. Barr to J. L. Hubbell, October 22, 1907, John Deere Folder, Box 23, HPUAL.

Division would doubtless have had access to more sophisticated equipment, the interest in employing Indians and keeping equipment simple would have encouraged use of Mormon scrapers for finish work on the Ganado Project.[5]

Clearly the Mormon board was an implement known to John Lorenzo Hubbell when his ditch was built and when his place was leveled. Worked with a step board, it could well have been used in developing his fields although there were other options for that function that seem more likely. For use with a stream of water for ditch cleaning in high sedimentation localities like Ganado, the Mormon board had few superiors and was not supplanted until late. Held vertical by stay chains and with part of the boards taken out of the back to let water rush through, these scrapers were pulled down head ditches and canals. The operator stood on top, his legs braced on the upright handles, with his team pulling the scraper behind another team with a four-foot disk which loosened mud and cut moss and weeds while a stream of water ran in the ditch to carry riled-up materials out of open sluice gates. Evidence that these were used at Ganado is lacking, but their utilization in the communities surrounding the reservation, especially at St. Johns where they were used as late as the 1950s, make it extremely likely that people employed by the Hubbells and other Ganado ditch cleaners would have used them.

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[5]H. E. Gregory, The Navajo Country, United States Geological Survey, Water-Supply Paper 380 (Washington, D.C.: G.P.O., 1916), p. 105; Young, "Scrapers;" and Hansen to Peterson, February 15, 1985.

If no evidence survives about buck scrapers, such is not the case for various other types of earthmovers. One of the most efficient was the fresno, of which two much used examples still survive on the farm along with one tumble bug scraper, a closely related tractor adaptation. Developmentally, the fresno came later than Mormon and slip scrapers, and like many earth-working tools it was developed in the San Joaquin Valley of California. A Scotsman named William Patterson who settled near Fresno about 1880 reputedly invented the fresno. Tiring quickly of an "old-fashioned scraper, you had to flop . . . over upside down," he "fixed two pieces of wood . . . so it would tip only half way." A wheelwright and a blacksmith helped him modify it with steel runners extending "out from each end of the bucket in a forward loop." It was manipulated from a Johnson bar behind. It could make a controlled cut, haul a good load, dump all at once or spread dirt at a desired thickness or be used for grading fill by inverting the bucket and letting the blade drag. It was an ideal machine, simple to build, efficient, relatively easy to use and long lasting. Not surprisingly, it quickly became the "standard short haul earth moving implement."[6]

While there is no evidence fresnos were used to construct the Ganado dam, the Hubbells surely used them. Local Navajos still recall the multiple team hookups by which they handled their big leveling jobs. With their large draft animals, the Hubbells were better equipped than their Indian neighbors to handle the four-horse

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[6]Young, "Scrapers."

fresno that is still on the west side of the corral. Although the fresnos were clearly horse-drawn implements, they may also have been pulled by a crawl-type tractor acquired after about 1925 for which the Hubbells adapted many other horse-drawn implements. In the late 1940s a wheel tractor with a tumble bug scraper was brought onto the place.[7] (Figures 50-51.) Leveling was a repeated job, one known well to all the Hubbells, including Dorothy Hubbell who managed the farm during its last years. The tumble bug was a prehydraulic lift unit and it lacked the utility and precision of the fresnos. On the other hand, it speeded up earth-moving procedures appreciably. The one still in the Hubbell junkpile was heavily used. The iron skids on which it was dragged were badly worn and one of the bearings by which it was mounted in its frame was pulled out.

Even fresnos were better for haul and fill than for grading and with their borders and terraces Hubbells sought better solutions to the problem of land leveling. As early as 1904 John Lorenzo corresponded with John Deere Company and with B. F. Shuart Company of Oberlin, Ohio, relative to the purchase of a farm grader. The graders he was interested in were modest in cost and designed for farmers. A letter from the John Deere Company of April 10, 1905 acknowledged Hubbell's order for "1 # 1 Shuart land grader." He may also have purchased another in October of the same year. Machine

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[7]Dorothy Hubbell Oral History 1969, WPHTP, p. 7. Mrs. Hubbell did not date the tractor to which she referred, but, in view of photo HTP-PM-30 which shows a crawler tractor dated to "ca. 1925, it has been concluded she referred to the machine that was there in the twenties.

remains make it clear that he bought at least one such apparatus. The Shuart grader had many of the advantages of the fresno but was also on a fixed platform and had a blade that could be adjusted to control distribution of fill and enough length to give it some of the flotation attributes of modern land planes. (Figure 52.) Users gave enthusiastic testimonials to the Shuart grader's utitlity, but there is little way of knowing how it worked on the Hubbell ranch. Little of the machine remains in the junkpile. Whether that means it wore out in good service or that it was pillaged for parts is not known.[8]

In addition, large rectangular wooden drags were used. One of these remains intact and parts of at least one other may be seen among the abandoned implements. The one that is intact is about ten feet wide and nearly twenty feet long. It is constructed of 2"x12" hardwood lumber, and the cutting edges are fronted with angle iron. It may well be factory made, although most implements of this type were made on the farm. (Figure 53.) This piece of equipment is in relatively good shape, and some effort ought to be made to preserve it. For real use again, the wooden parts will need to be replaced. An older drag was obviously made on the premises of rough-cut lumber that was nearer 3"x12" than 2"x12" in dimension. Enough of it is intact to identify it clearly, but some parts have been pirated for other equipment. It is difficult to date either piece of machinery,

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[8]April 10, 1905, and October 10, 1905, John Deere Folder, Box 23, and Shuart information, Folder 8, Box 375, HPUAL.

but it is probable that neither would have been the first drag leveler on the place.[9]

A variation of these "box" drags that was related to the Mormon board scrapers referred to above was also frequently used on northern Arizona farms. This was the "T" drag, which, as its name implied, was a single cutting board with a beam extending back from the middle to provide flotation and control. In both the "T" drag and the box varieties, weight, including the operator, could be applied according to the character of the soil and the strength of draft animals. Planks were also affixed, allowing the operator to shift his own weight to take off high points or otherwise distribute fill.[10]

Tillage Equipment

The class of implements characterized as tillage equipment above is larger and much more general. Included are tools used for soil preparation, planting, and cultivating. It is of fundamental importance in any farm operation. A complete inventory of equipment used by the Hubbells cannot be offered, but a presentation can be developed that follows the seasonal sequence of land preparation, planting, and cultivating which will at the same time reflect change over the years.

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[9]E. K. Miller, agent at the Hopi Agency in 1927, informed the Hubbells that "drags" could be built or ordered from the "Russell company" which "has a fine lot of them," Indians 1927 Folder, Box 44, HPUAL.

[10]Q. M. Hansen to C. S. Peterson, February 15, 1985.

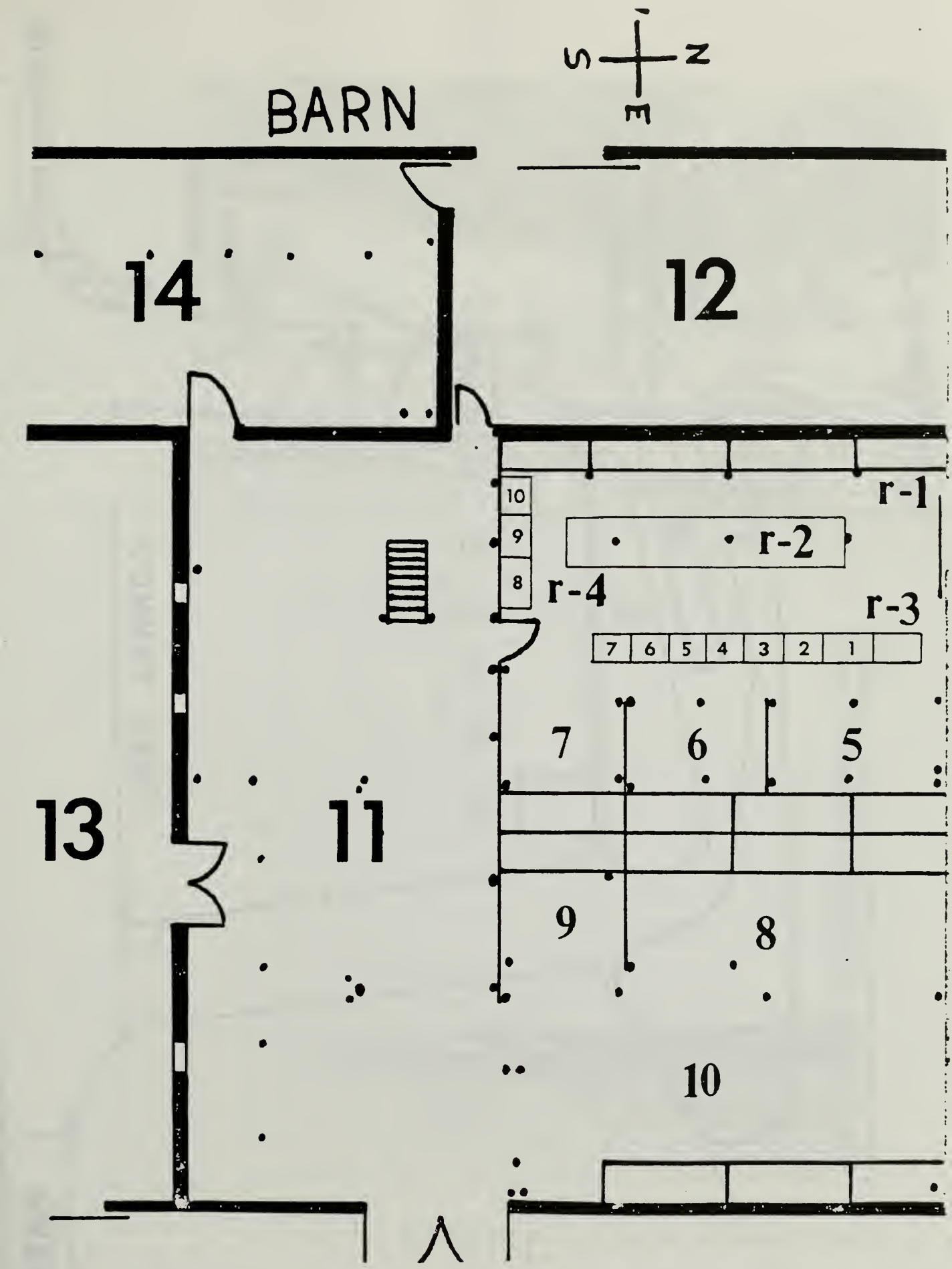

Fig. 44: Barn Plan Showing Stables Now Used for Storage. (Conklin & Ostler, "Inventory: Barn & Corral Area," HTP.)

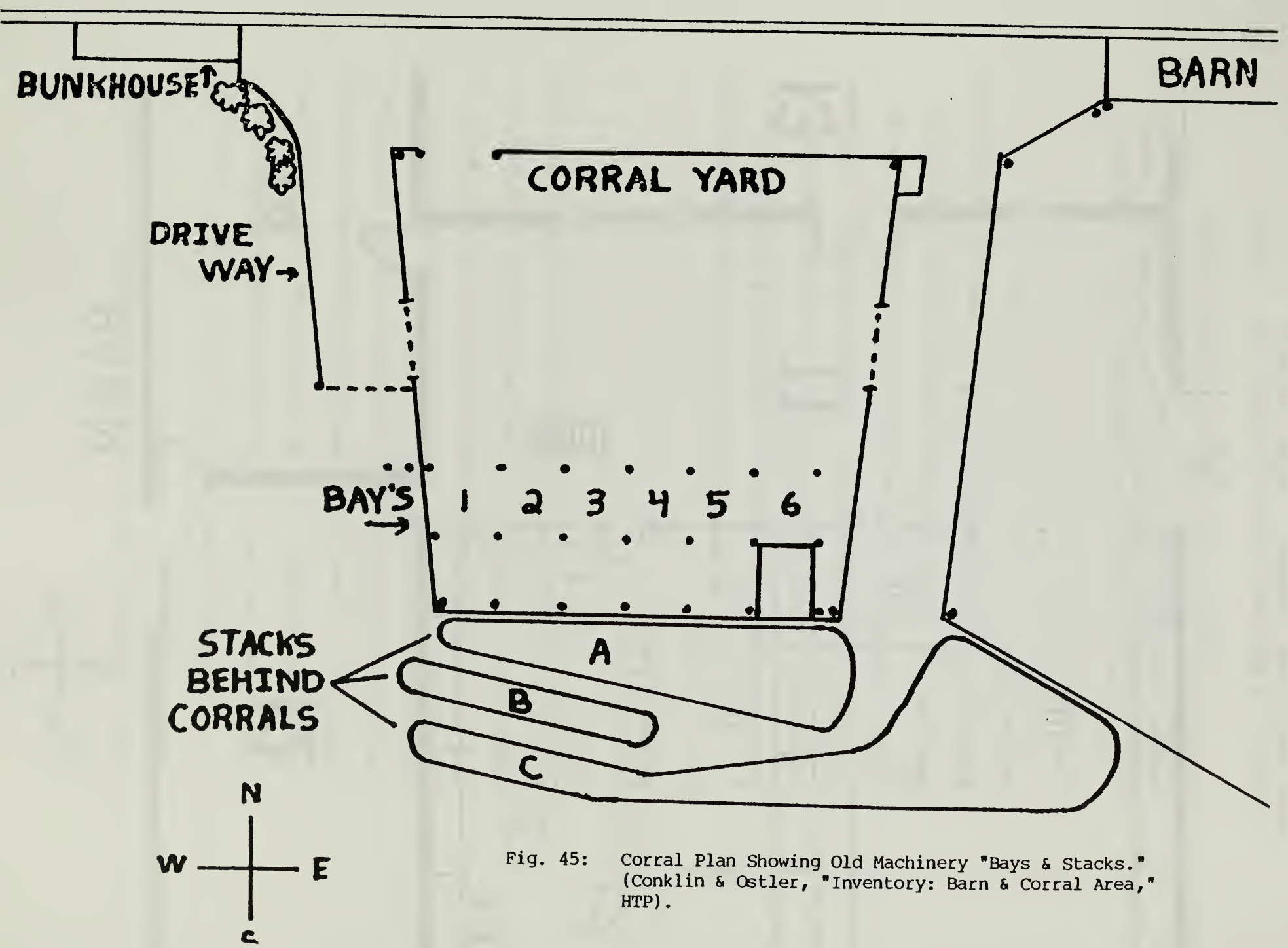

Fig. 45: Corral Plan Showing Old Machinery "Bays & Stacks." (Conklin & Ostler, "Inventory: Barn & Corral Area," HTP).

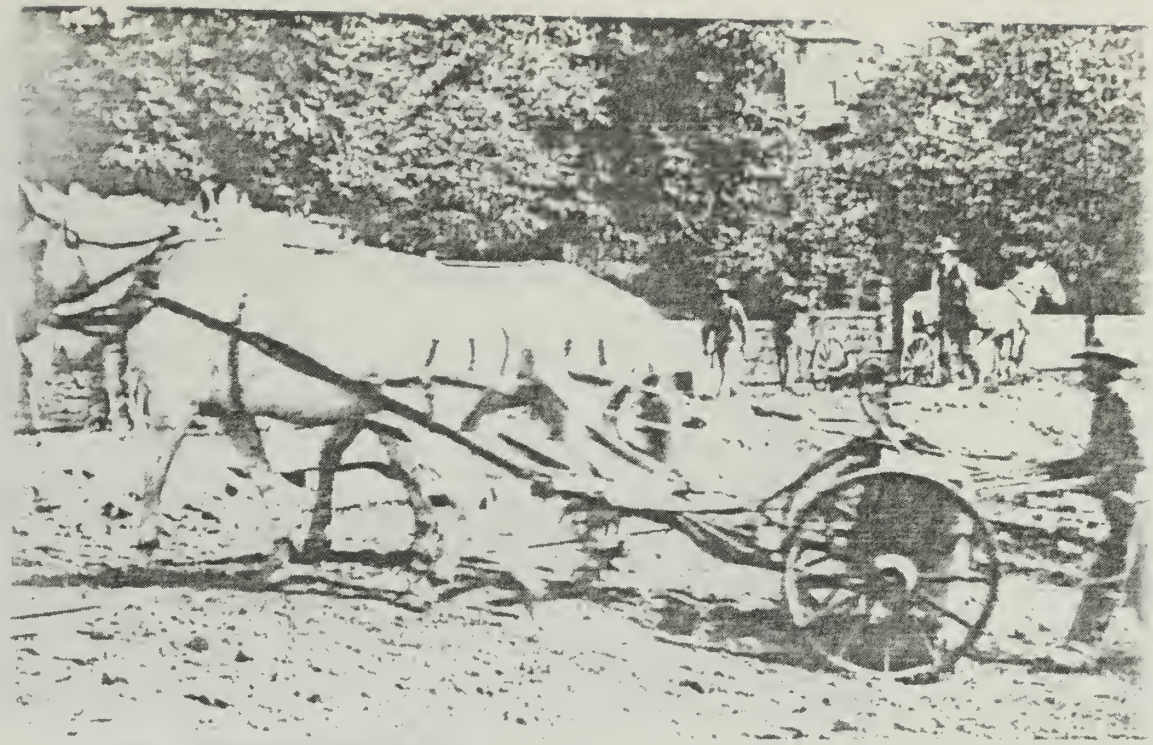

Fig. 46: Close-up of a Wheeled Scraper in "Dumped" Position. (Utah Historical Society.)

Fig. 47: Wheeled Scrapers in Use on the Ganado Project ca. 1913. (DRC.)

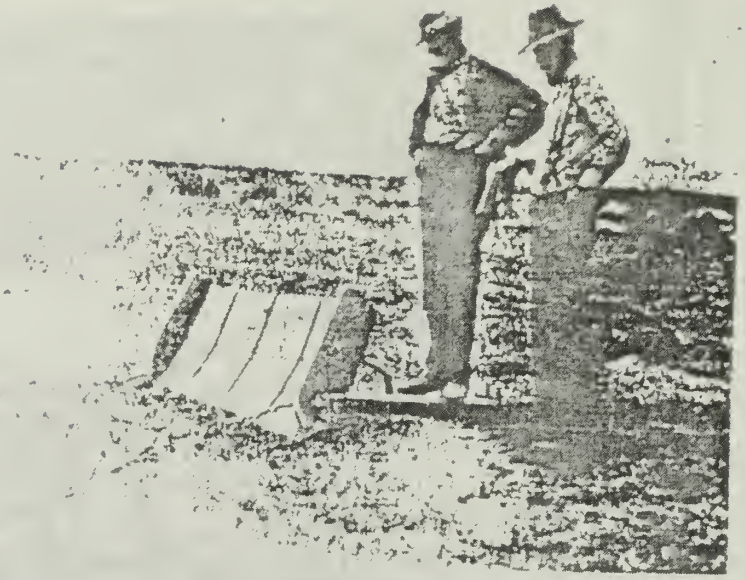

Fig. 48: Mormon Board Scraper with Step Attachment. (James Young.)

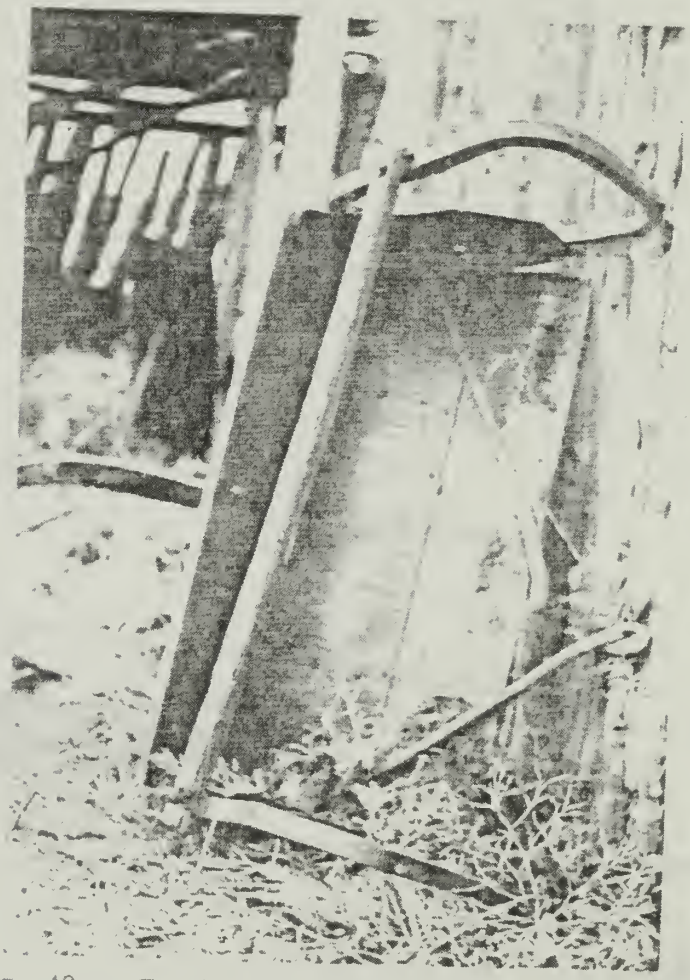

Fig. 49: Two-horse Fresno at the Hubbell Farm. (1984.)

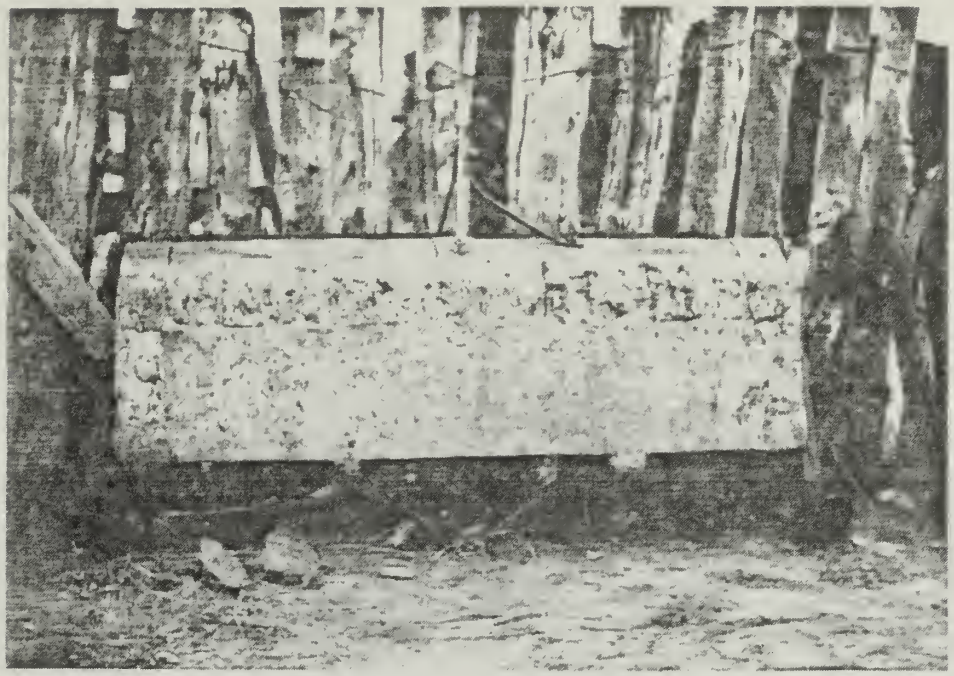

Fig. 50: Four-horse Fresno at the Hubbell Farm. (1984.)

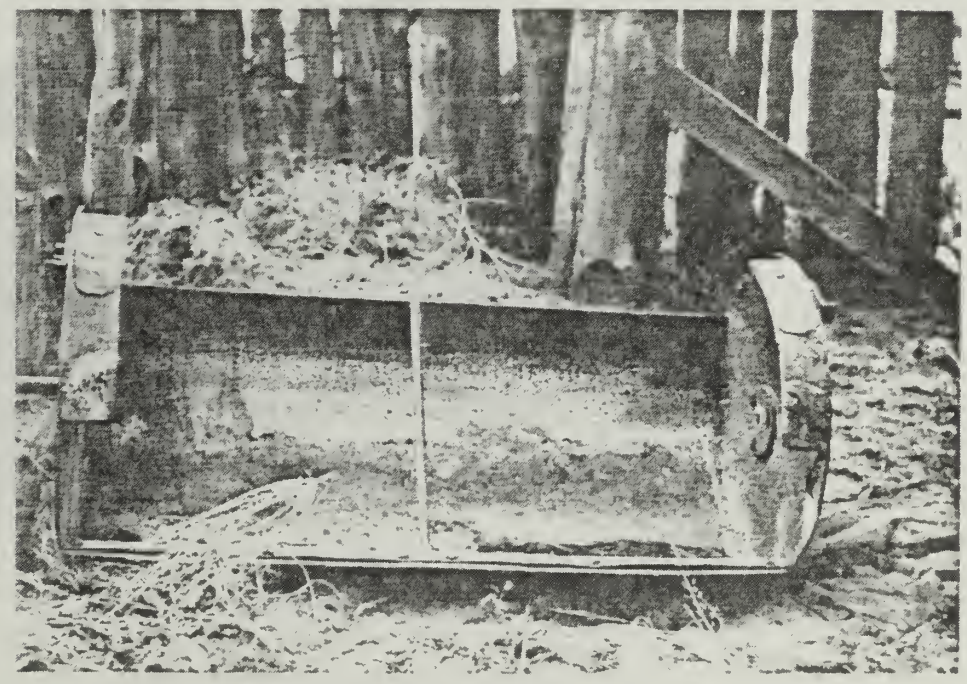

Fig. 51: Tumblebug Tractor Scraper at Hubbell Farm, Note Wear on Skids. (1984.)

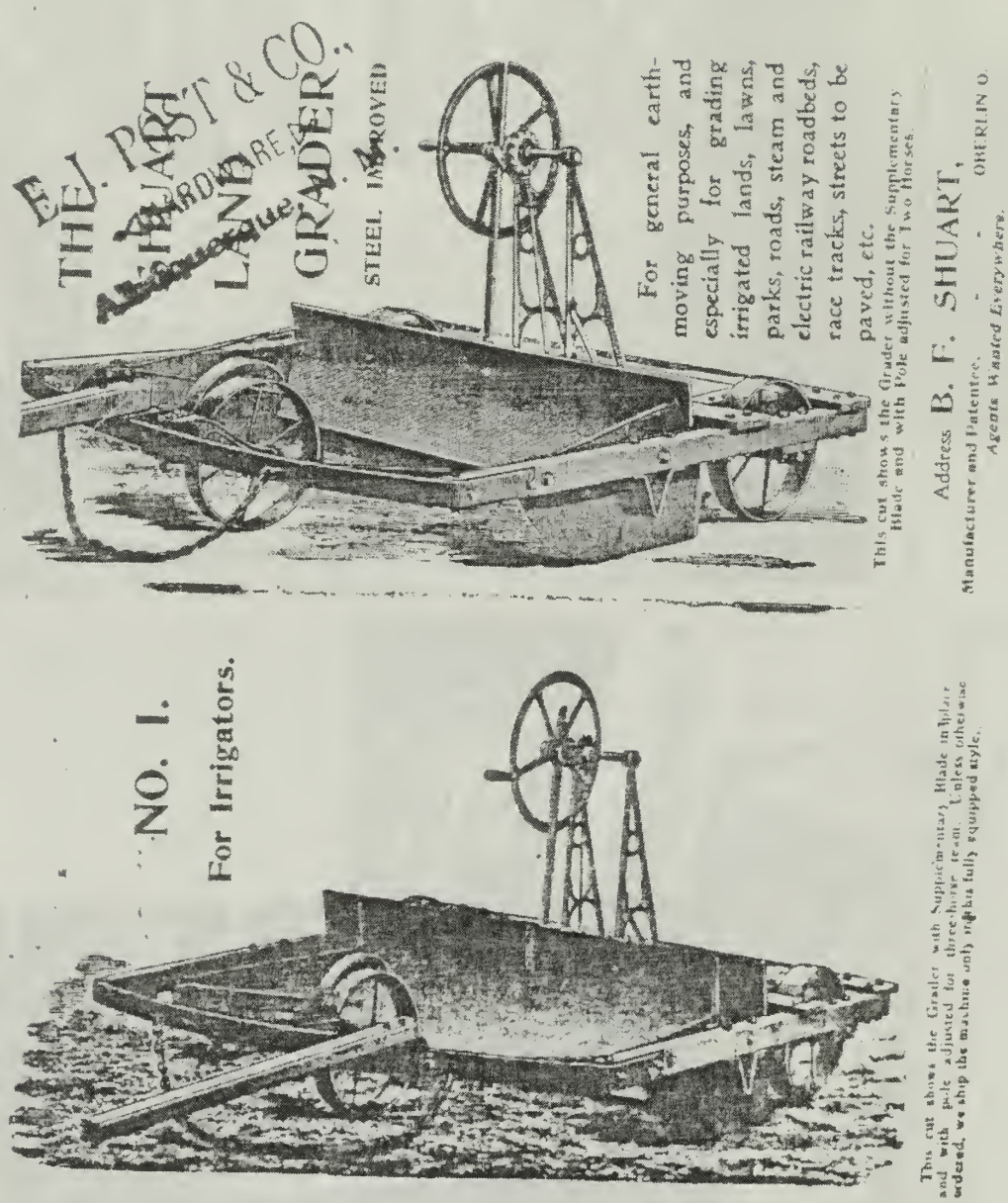

Fig. 52: Advertisements for Shuart Land Grader ca. 1905. (Shuart Catalog, HPUAL.)

Fig. 53: Hardwood Land Leveler with Angle Iron Encased Cutting Edges. (1984.)

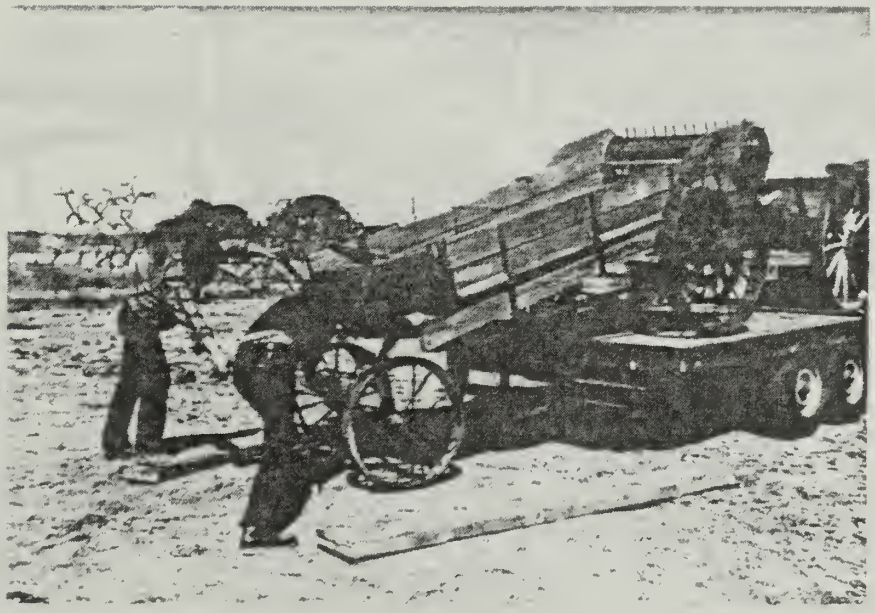

Fig. 54: Hubbell Manure Spreader Enroute to Restoration. (Liz Bauer, HTP, 1984.)

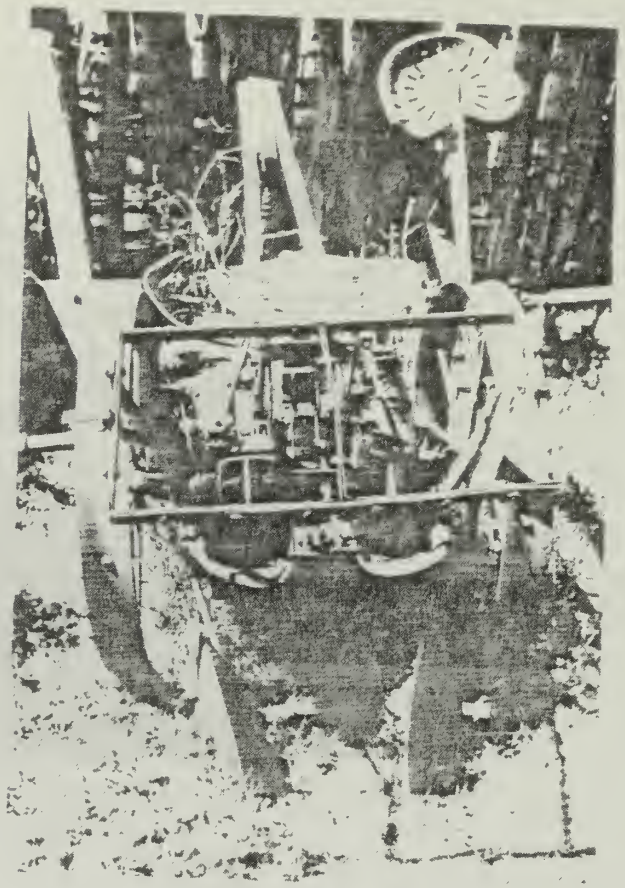

Fig. 55: Horse-drawn Potato Planter Adapted for Tractor. (Liz Bauer, HTP, 1984.)

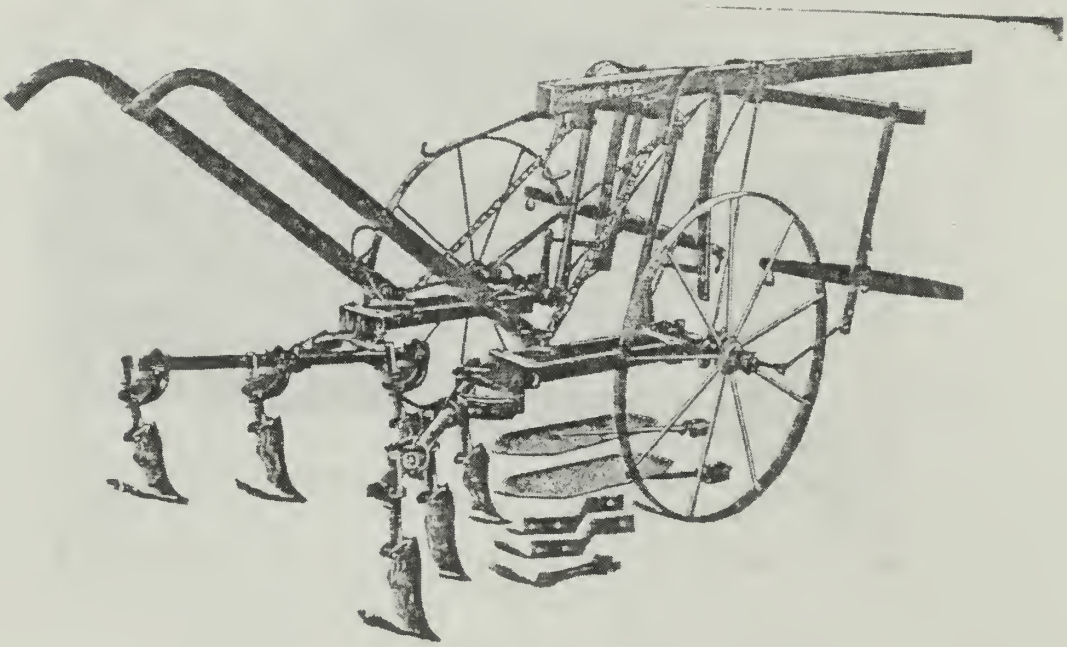

Fig. 56: Two-horse "Iron Age" Walking Cultivator. (Iron Age Farm Catalog, HPUAL.)

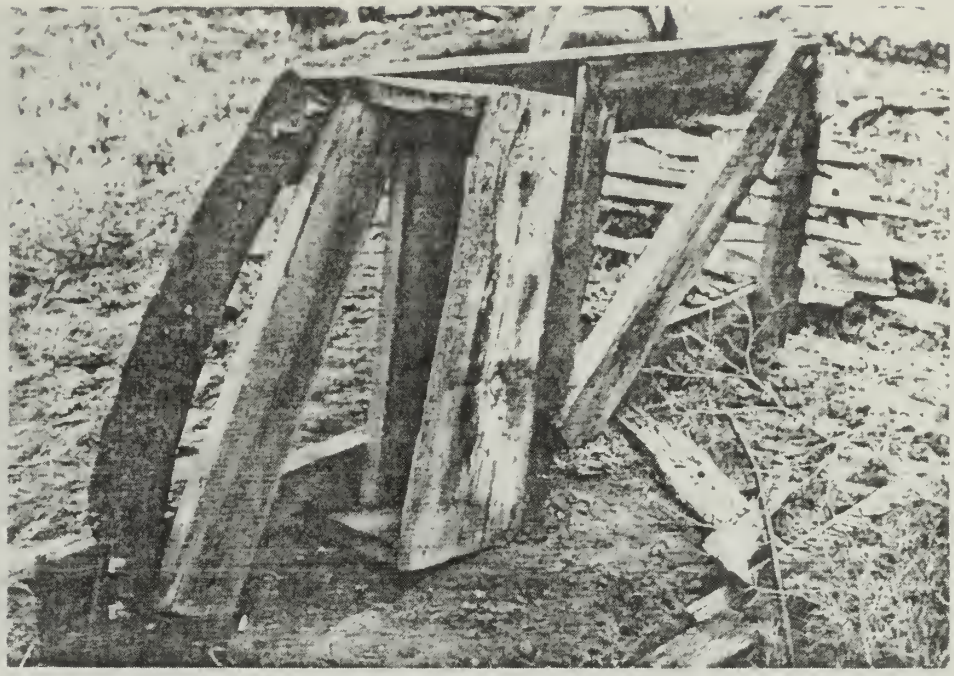

Fig. 57: Homemade Weed Sled at Hubbell Farm, Note Hammered Cutter Bar. (1984.)

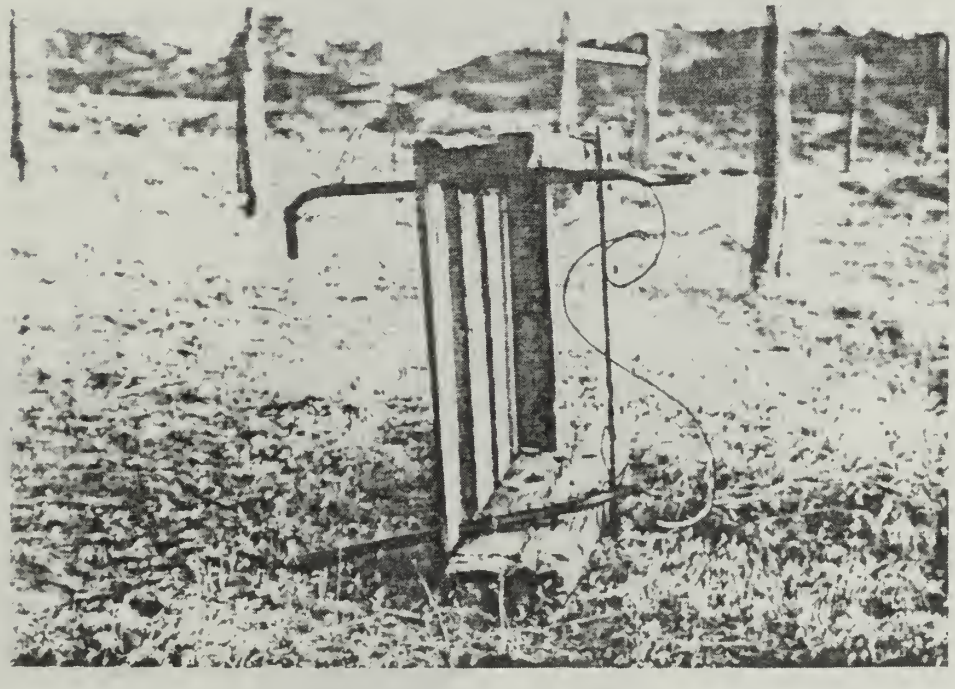

Fig. 58: Homemade Weed Sled on the Curley Property near the Hubbell Farm. (1984.)

Fig. 59: Old Hay Press at the Curley Farm. (1984.)

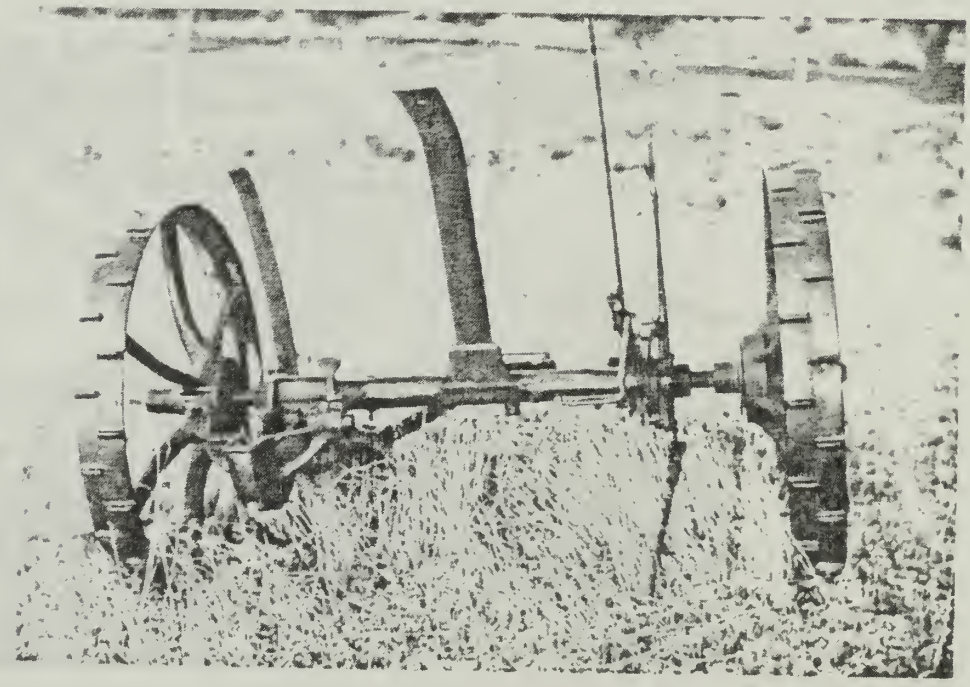

Fig. 60: Remains of a Mowing Machine at the Curley Farm. (1984.)

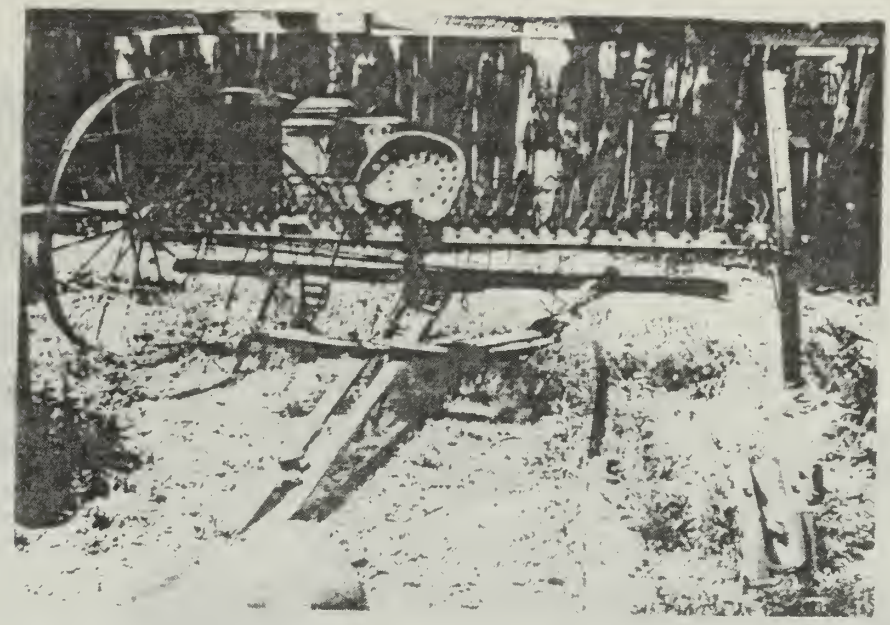

Fig. 61: Dump Rake at the Hubbell Farm with Makeshift Repairs. (Liz Bauer, HTP, 1984.)

Fig. 62: Close-up of Makeshift Repairs on Hay Rake. (Liz Bauer, HTP, 1984.)

Fig. 63: International Harvester Side-delivery Rake. (Liz Bauer, HTP, 1984.)

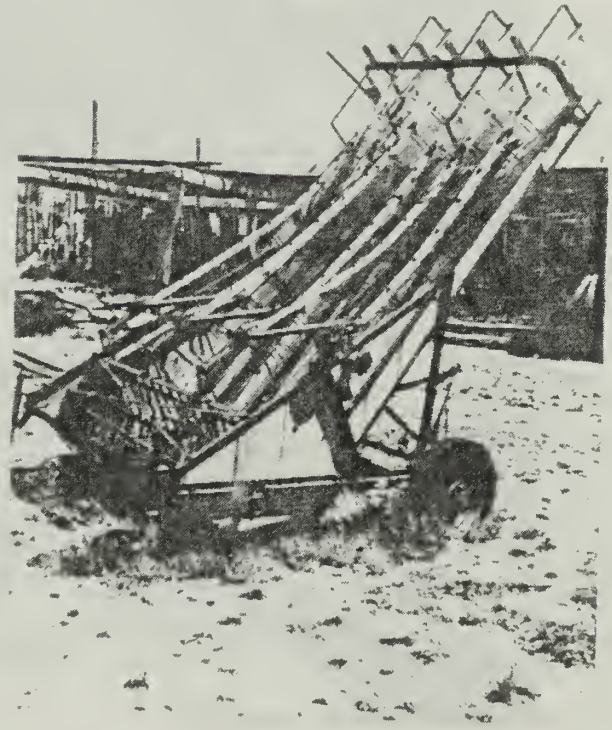

Fig. 64: International Harvester Cylinder Hay Loader. (Liz Bauer, HTP, 1984.)

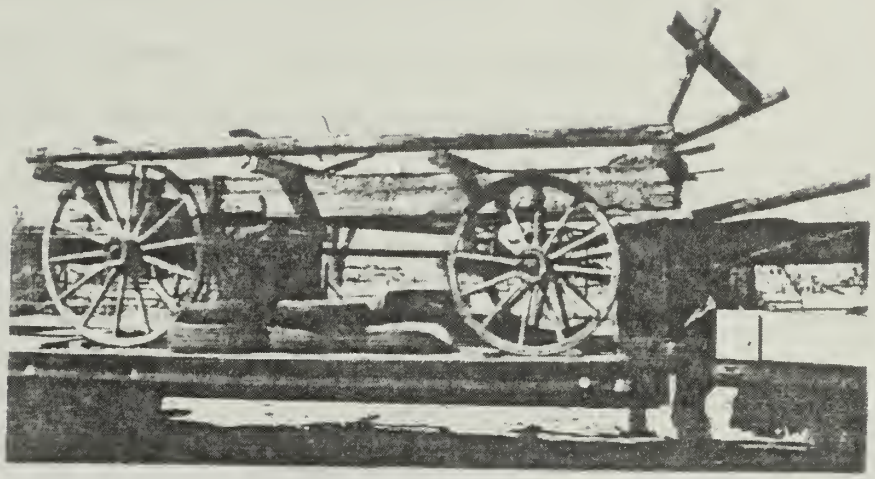

Fig. 65: Hubbell Hay Wagon Headed for Restoration. (Liz Bauer, HTP, 1984.)

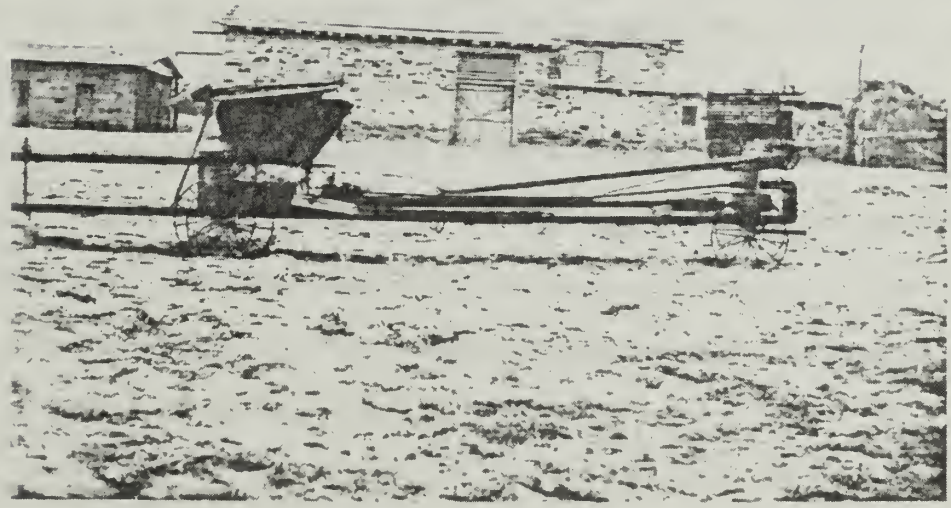

Fig. 66: Lightning Hay Press with Hubbell Barn in the Background. (1984.)

Fig. 67: Early Tractor, Roman Hubbell on Front of Log, Well House, Stonewall and Hubbell Hill in the Background ca. 1925. (HTP PM-30.)

An important part of soil preparation was fertilization. Cheap labor and problems of transportation notwithstanding, Hubbells had mechanized fertilizing equipment of at least two varieties. Unlike native Indian farms which were rarely known to suffer loss of fertility, Ganado's irrigated lands, including the Hubbell farm, wore out in time. In the first decades, however, Don Lorenzo's operation was well set up to meet the nutritional needs of his land. Up to sixty-five animals were used in his freighting and mail-contracting business. The barn had stable facilities for at least twenty-four head, and, pasturing possibilities aside, a substantial number of animals were housed in their stalls where their manure had to be disposed of. Horesmen suggest that draft animals consumed a minimum of thirty pounds of hay and grain per day. Of this 50 percent was turned into energy and 50 percent or fifteen pounds passed off as manure. But in the meantime the feces absorbed fifteen pounds of water, returning a total waste of thirty pounds. Calculated for twenty-four animals this amounted to more than 130 tons of manure per year or more than a ton of fertilizer for each of the 60 to 112 acres the Hubbells actually farmed.[11]

Understanding the potential of this situation, John Lorenzo inquired about a manure spreader by 1907 and probably purchased one at that time. An iron-wheeled "apron" spreader not unlike models described to him is still on the place and has been restored by Melvin DeWitt of Moscow, Idaho. (Figure 54.)

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[11]Professor J'Wayne McArthur Conversation April 2, 1985, Utah State University.

Even at the height of Hubbell's horse freight operation the manure produced was only about one-quarter of the amount needed for a sustained fertilizing program based on manure alone. A wheel-powered cyclone "lime" spreader, used to broadcast some kind of chemical fertilizer, is still on the farm. Superphosphate was used as a manure supplement by 1915 in alfalfa culture at some places in the West, but there is no evidence that this machine was used that early. For one thing, it appears to be of a somewhat later vintage. In the second place, it is almost certain that if Hubbells had been among the progressive few who turned to phosphate this early they would have dumped it on top of a load of manure and let the manure spreader broadcast it as most other farmers of the period did. The "lime" spreader was more likely an addition of the World War II period, when it became increasingly apparent that the land had worn out due to long, and, after horses were phased out, totally unfertilized use.[12]

Plows are hard to pin down in the Hubbell farm economy. Certainly they used them from the very first. Navajos were issued a few plows by the 1890s, and John Lorenzo would have found plows as essential to building his irrigation system and leveling his land as he did scrapers. Moldboard walking plows that turned a 10" or 12" furrow were the basic agricultural implement in the decade after

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[12]International Harvester Co. to J. L. Hubbell, January 23, 1907, Farm Folder, WPHTP; and Professor Jay Haddock Conversation April 2, 1985, Utah State University.

1900 on northern Arizona's small farms. For ditch work and breaking new land, heavier plows with reinforced beams, called "grading plows", were necessary, but the 12" moldboard probably prevailed as Hubbell began his farming operation. Soon after, however, he was negotiating for 14" two-bottom "gang" plows and even for two-way sulky plows that threw the soil only one direction as the plow worked up and down the field in the same furrow. The two-way plow avoided turning dead furrows at the center or outer edges of a plowing pattern, thus contributing to the important process of land leveling.[13]

At the present a variety of plows are still on the place. Among these are a walking plow or two, a horse drawn two-way plow and, for the new tractor that was purchased in the 1940s, a one-way disk plow and a two-way 16" moldboard plow. The last two were relatively advanced implements for the 1940s and neither shows evidence of hard use. Arthur Hubbard of Ganado related that "in the early times big hookups of mules were used, up to twelve or fourteen on gang plows." While four, or under extraordinary circumstances as many as six mules, might have been used on a two-bottom plow, Hubbard's report makes the possible use of larger gang plows seem worth consideration. Availability of horse power may have invited their use but the lack of other evidence and the remotness of the Hubbell farm make it seem highly unlikely. Anson Jones, the farmer who ran

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[13]John Deere Plow Company to J. L. Hubbell, June 1, 1905, September 9, 1907, and October 22, 1907, John Deere Folder, Box 23, HPUAL.

one of the Hubbell places in McKinley County, New Mexico, occasionally plowed the Ganado fields, apparently bringing his equipment with him. It is possible he had a big plow and used Hubbell animals to supplement his own. On the other hand it is not clear that Jones did not use a tractor.[14]

Rounding out the tillage equipment now at the Hubbell farm are several disks and part of one harrow and a spring-tooth implement or two that might be called harrows. Like most of the other equipment lines, these date from early times to the 1940s in their vintage. Surprisingly there is only one section of a spike-tooth harrow. In sandy loam soils, as is much of the Hubbell land, the spike-tooth harrow would seem like a useful implement and was probably used. At the turn of the century, many northern Arizona farmers still manufactured their own spike-tooth harrows by putting spikes through oak poles which were then bolted in triangles. Given John Lorenzo's tendency to use posts and logs in buildings and fences and the existence of oak on the Defiance Plateau nearby, the possibility is strong that harrows of local manufacture were used. On the other hand, steel harrows had the advantage of adjustable spikes and of being worked in multiple-section hookups to speed the process of harrowing. At times when horse power necessary to do two functions at once was available, a single section harrow was also pulled behind sulky or gang plows. Harrowing was done to break clods, control weeds, and to mulch the topsoil on the assumption that it

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[14]Dorothy Hubbell Oral History 1969, p. 9; and Arthur Hubbard Conversation August 25, 1983.

kept moisture in the ground, reducing need for irrigation.[15]

Disks on the Hubbell premises now include a riding disk about four feet wide. Instead of the usual cutting edge, disks on this apparatus are equipped with spikes. The presence of this machine is sure evidence of heavy dry clods and strongly suggests that plowing was sometimes done under less than ideal circumstances. Alfalfa fields unplowed for several years turned up in adobe chunks in any event. If plowed in the fall, winter storms and frost action broke clods down. But as demonstrated by plowing done just north of the the holding reservoir in June of 1984 after most of the winter moisture had left the soil, spring plowing doubtlessly turned up clods that required a lot of disking and harrowing to prepare seedbeds. Chances are that Hubbells, like many others, would have found it necessary to irrigate before clods could be broken successfully. This implied a real struggle if borders worn down from years of service and shot through with gopher holes failed to force a stream of water over the cloddy soil. That disks were used from the first and equipped with attachments that enabled more than one function to be done in one trip over the field is apparent in a

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[15]Q. M. Hansen to C. S. Peterson, February 15, 1985; J. Arley Peterson, who spent his boyhood (around 1905) on a northern Arizona homestead, wrote that at "Lakeside [125 miles south of Ganado] I first remember oak wood 3 corner harrows with holes bored in and bolts driven in for teeth. I think about one is all we built. Father soon bought a new metal harrow, about the first in Lakeside. I saw quite a few homemade ones over the first few years." J. A. Peterson to C. S. Peterson, March 2, 1985

1907 letter from John Deere Company acknowledging J. L. Hubbell's order of a "seeder" to be mounted on his John Deere disk.[16]

Another disk is a heavy gang implement obviously of more recent vintage and purchased to be used with the wheel tractor. This would have been a substantial improvement on the lighter weight disks and spring-tooth harrows used previously. Two spring-tooth tractor bars are also found in the old tool shed. As they now exist, these have only two teeth each, and it is unclear for what or how they were used. With additional teeth, they may well have been used for aerating aging alfalfa stands, which is more a function of cultivation than soil preparation, although it would often have been done in the spring.

The discussion of a seeder attachment for a disk in the John Deere Company letter referred to above establishes that grain and alfalfa were sometimes planted with a seeder. No seeder is still on the place, and there is no reference to what became of one purchased in 1907. It is possible, of course, that over the farm's sixty-year period several others were owned. It is also possible that like some other northern Arizona farmers Hubbells also planted grain and alfalfa fields by broadcasting. This procedure was done by hand as the farmer walked across the prepared field or rode on the back of a farm wagon driven by another person. In June of 1984, Eva Showa and other members of the Lincoln family who live adjacent to the Trading

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[16]John Deere Plow Company, September 9, 1907, John Deere Folder, Box 23, HPUAL.

Post sowed alfalfa and oats by broadcast on the piece of land north of the holding pond. This was interesting because of Mrs. Showa's apparent intent to perpetuate the tradition of the good alfalfa crops raised there as well as for what it suggested about sowing methods used by Navajo farmers at Ganado.[17]

A planting implement that does remain is a two-row wheeled corn lister. This is particularly interesting in light of the fact that photographs from the Northern Naschiti Project of the 1930s showed Indians planting corn with "government issue," hand operated jab planters. Similarly, the Naschiti Project Navajos were also issued walking plows and cultivators much like those issued in turn-of-the-century years. By contrast, most of the Hubbell farm machines (probably including the corn lister) were operated by Navajos with little supervision, suggesting that by inclination and circumstance the Hubbells may have pursued a somewhat less paternalistic policy than the BIA was willing to adopt even in Commissioner John Collier's era of self-determination.[18]

As in the case of certain other implements, the tongue on the Hubbell corn lister has been cut down for tractor use. Among the

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[17]Ibid. A relative of Mrs. Showa, Roberta Tso, explained that Showa was interested in returning to traditional ways and that, in addition to her effort to farm the "Hubbell field," she had acquired sheep a year or so earlier and had suffered heavy losses because "we" did not know how to lamb them. Roberta Tso Conversation May 29, 1984.

[18]"Development of Northern Naschiti Project, 1938," Reports and Related Records, 1891-1946, Box 17, Irrigation District 5, BIA, RG 75, NA.

other machines adapted to the tractor is a potato planter. Unlike early potato planters for which Hubbells had advertisements, this one apparently did not require a "boy or a man" to ride behind to keep the flow of cut potatoes moving. This suggests that it was purchased after the earliest years, but its construction makes clear that it is from well before World War II. (Figure 55.) Its adaptation for tractor use indicates that it was a good machine that did its job well. The presence of the lister and the potato planter also points to the possibility that substantial amounts of corn and potatoes were raised, perhaps more than the emphasis on hay in sales records and oral histories would indicate.[19]

Cultivation was of course necessary in the case of row crops and garden truck. Much cultivation could have been done with heavy field hoes common on the reservation and likely was. Yet simple walking cultivators were very cheap implements, and remnants of one or two of them are still in the castoff pile, making it clear they were used. Moldboard and shovel plows would also have been used in hilling potatoes. A crude and perhaps homemade version of the latter is to be found in the barn, but its shovel lacks wings ordinarily necessary for hilling potatoes and this particular instrument may have been used for furrowing rather than

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[19]For examples of two-man potato planters similar in other respects to the Hubbell planter see The Iron Age Farm and Garden Implements Catalog (Grenloch, N. J.: Bateman M'f'g. Co., 1909), p. 38, Folder 8, Box 565, HPUAL.

hilling.[20]

The bordered terraces of the Hubbell fields reduced the role of furrows even for row crops. Borders probably did away entirely with their need on hay fields. Yet it seems possible that in time of short water, especially, rows would have helped get small streams through the long run of the bordered fields south and west of the barn. In some portions of the fields the slope of the land suggests such rows may sometimes have been used. If so, a marker was needed. There is no remaining evidence of markers unless horse or tractor cultivators were adapted for this purpose. However, wooden team-drawn markers were commonly used throughout the Four Corners states and were a cheap, easily built item. The usual pattern was to nail a 2"x6" platform on three small logs of three or three-and-a-half feet in length. These were cut on a 45-degree angle at the front and placed long side to the ground as runners. A stationary tongue was afixed. The depth of the cut was controlled by adjusting breast straps to lower or raise the tongue. The operator rode to add depth to the cut. In well-prepared soil these homemade markers made first-rate rows. On rough hard ground they made for a wild ride at best and left little or no impression.[21]

A light two-row cultivator adds further interest to the abandoned equipment inventory. Like other two-row cultivators of

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[20]Ibid., "Horse Hoes and Cultivators" as The Iron Age Farm Catalog, called walking cultivators sold for about $5 in 1909, pp. 22-26, Folder 8, Box 565, HPUAL.

[21]Q. M. Hansen, February 15, 1984 and J. A. Peterson, March 2, 1984.

the horse farming era, it was wheeled and intended for two animals. Unlike more common lines, it was intended for walking rather than riding, and the draft of its shovels was controlled by plow-like handles rather than foot levers. What its advantages were is not known, although it may have allowed for more precise control, thus reducing plant damage while cultivating corn or potatoes. It may have been considered more like the one-row walking cultivators and less complex to operate, although the riding machines were not complicated themselves. These implements were advertised at least as early as 1910, as is evidenced in catalogs in the Hubbell papers.[22] (Figure 56.)

Navajo Workers and Vernacular Adaptations

There are certain pieces of homemade equipment on the Hubbell farm and on the Indian farms in the neighborhood. The most interesting of these are three wooden cultivators or what may be called "weed sleds" that reflect generally on the state of farming technology in Ganado and indicate the ingenuity of Indian farmers. Each of these was built on wooden runners and included a metal cutter bar apparently designed to run at ground level or slightly below. An item of this kind at the Hubbell farm was constructed of heavy 2"x8" lumber with the right runner about seven feet long and the left perhaps a foot shorter. It was about twenty-eight inches

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[22]The Iron Age Farm Catalog, pp. 16-37, Folder 8, Box 565, HPUAL.

wide and solidly cross-braced with an eight-inch seat or stand platform toward the front. It had a crude cutter bar or knife formed on a moderate curve and attached at the front on perhaps a forty-five degree angle. At the rear several mowing machine knife sections were nailed to each side on the bottom of both runners, apparently with the intent to provide something of the same effect a keel and rudder do for a ship. There is no hookup for either horse or tractor at the present, and it appears that it was never used. (Figures 57-58.)

While this apparatus could possibly have been intended to be a corn sled, which were used to cut corn fodder on northern Arizona farms until World War II, it was tentatively identified as a cultivator because of its similarity to two other homemade sleds which were definitely intended as weed-cutting cultivators. The first of these is one of several pieces of farm equipment on Tom Curley's place directly south of the southwest corner of the Hubbell farm. It was about four feet long and thirty inches wide. The cutter bar was an old piece of grader blade and placed at right angles to the runners and extended perhaps two inches below them. It was equipped with handles made of bent pipes attached to the runners by sixteen-penny nails bent around them. This sled was drawn by a piece of 3/8 inch cable and was clearly meant for cultivating row crops. Near the Kinlichee Ruins Tribal Park is another sled of similar design. At both the Curley place and Kinlichee the soil is a sandy loam and under favorable conditions might have been successfully worked by these weed sleds, although by

field examination it was impossible to ascertain how much they had been used.

These crude implements testify of the conditions under which Navajos farmed at Ganado and of Indian determination to utilize what they had. Those who plan to make a farm exhibit at the Hubbell Trading Post would be well advised to acquire these implements and perhaps to look for other Indian innovations as evidences of cultural interaction related to the Hubbell farming operation.

Harvest Equipment

Harvest-related machinery completes the farm equipment now identifiable on the Hubbell farm. Although most of this is haying equipment, there is one walking potato digger. Like others of its kind, it consisted of a shovel plow with shake bars extending behind to bring the potatoes to the top and sift out the soil. It was horse drawn although it may have been adapted for tractor use by a simple chain hookup.

Suggesting at least one other operation are the remains of a small-seed separator. This apparatus was of a type generally used for separating grass or other small seeds rather than threshing grain, although small separators were sometimes used to clean grain for experimental and limited operations on USDA experiment farms and elsewhere. A slim possibility was that the Hubbells may at times have tried to thresh enough grain seed (possibly oats and rye) for their own planting.

More likely this machine was used for separating alfalfa seed. Even so there are certain problems connected with this assumption. In the first place, the climate at Ganado is not well adapted for alfalfa seed operations. Furthermore, fall pasture needs connected with the Hubbells' sheep and goat trade created special demands for grazing in the fields during precisely the same dry summers that would have led to seed production rather than haying. It should be added, however, that even in the case of alfalfa seed production, fields produced a good amount of late fall grazing that would also have served the sheep trade. In light of all this and with no better explanation, the remains of this machine suggest that dry years and the high price of alfalfa seed may well have made home production of alfalfa seed feasible at times.[23]

As seen in an earlier chapter haying was the main business of the Hubbell farm. This is apparent in the machines still extant as it is in records, oral histories and photographs. Sickles and scythes were used in the earliest years of white pioneering as they were by Indians who raised a little native hay during that period. But by the early 1880s farmers in surrounding areas had introduced mowing machines, and by 1886 farmers at Tuba City brought in the first mower to that remote community. While at least one scythe has survived on the Hubbell farm, it is almost certain that it was used to cut grass and weeds along fencerows and other inconvenient places

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[23]In Colorado, Utah, and Idaho, dry summers favored alfalfa seed production. It was an especially important crop in dry-farm country settled during the same years as the Hubbell farm.

rather than as a haying implement. It seems equally sure that mowing machines were used on the Hubbell ranch from the time the first hay was produced in 1903.[24]

There are two horse-drawn mowing machines still on the place. Both were manufactured by International Harvester Company. They both have five-foot cutter bars, are driven by wooden pitman rods, and otherwise appear to be standard equipment. No detailed study has been undertaken to date them, but it is clear both date before 1940 and one may date to 1920 or earlier. The drive gears of both are housed in boxes, which suggests that neither machine is of a really early vintage. Because Indians with mowing machines were sometimes hired to hurry mowing along while hay was in good condition, it is possible that these two machines may have been the only horse-drawn mowing machines ever on the place. Yet this does not seem likely. Some Indians, including Tom Curley and Tully Lincoln, the Hubbells' closest neighbors, had haying equipment. (Figures 59-60.) They may have bought new machines, but Friday Kinlichinee indicated that Hubbell sometimes traded them worn haying equipment when he purchased new.[25]

As in the case of wagons, mowing machines were kept in running order on the place. Standard repairs included replacement of guard

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[24]"Diary of Christian Lingo Christiansen," August 10 to August 19, 1886, typescript at Brigham Young University Library.

[25]In addition to the physical presence of horse-drawn haying machinery on some of the Indian farms, at least two mowing machines belonging to Navajos were hired by the day. Book #1, Box 403, HPAUL; also Friday Kinlichinee Conversation June 7, 1984.

sections on the cutter bar, rivetting new blades in the knife and installation of new pitman rods. Keeping the knife sharp was the most essential and common upkeep function. There are at least two grindstones still on the premises. One of these was apparently used in conjunction with butchering operations as indicated in Photo RP 236. The stone on the other, which stands in the shed, is beveled suggesting that it may have been used on mowing machine knives. Yet neither grind wheel is adapted to the specific purpose of sharpening mower knives, and certainly by the 1920s and 1930s bench grinders were available and would have been standard items in blacksmith shops. Hand-powered field emery wheels were also available for temporary mounting on mowing machine wheels, thus allowing operators to sharpen knives without coming to the barnyard.

Runaways and normal wear and tear on the mowing machines made basic repairs necessary as well. While most of these were within the reach of a blacksmith's capabilities, occasional problems required the replacement of gears and wheels. In some cases broken parts were sent to Gallup or Colorado and occasionally as far as Kansas City for repair.

The newer of the two mowing machines now in the old machine shed is adapted for tractor use. Taken together with the fact that there is no tractor mower on the place, this suggests that a decision may have been made to forego the luxury of a tractor mower when the wheel tractor and its supporting line of equipment was purchased. This conclusion, however, should be approached with extreme caution. The advantages of a tractor mower were obvious. Not only

would a tractor handle a seven-foot cutter bar and cut much more hay with a mower actually manufactured for it, but it hardly seems consistent to buy a new side-delivery rake and hay-loader which would speed haying up appreciably without upgrading mowing capacity at the same time. However, costs may have made it wiser to continue to hire Indian custom mowers as Hubbells did during the 1930s. Similarly, there is no evidence that they abandoned the old stationary horse power baler in the 1940s, although efficient motor-powered field balers had been available for a decade or more.[26]

For decades hay was raked with a dump rake. Early advertisements suggest John Lorenzo at least considered a rake that had running parts of wood including wooden wheels. However, the only dump rake on the premises in 1984 was a decrepit thing long jolted over borders and gopher holes and more than once abused. The frame was a snarl of discarded car springs and other bits of iron wired there by generations of operators attempting to keep the rake running with facilities at hand in the fields. The fact that no permanent repair was made suggested just how much the Hubbell farm ran itself and just how jerry-built it became as time progressed. (Figures 61-62.) Modifying this interpretation was Friday

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[26]No documentary evidence was found dating the tractor purchase. Yet certain hints exist. Machinery valuations increased sharply on financial summaries during the mid-1940s. Catalogs and correspondence from the Lorenzo Hubbell Motor Company of Winslow provided further evidence. See Commercial Credit Corporation Folder, Box 145, and Catalogs, Box 565, HPUAL.

Kinlichinee's comment that this particular rake was lent to other farmers in the community and that the patch job should not be blamed on the Indians who farmed at Hubbells or be taken as evidence to infer a slow collapse of the Hubbell farming operation.[27]

A possible explanation is that a better dump rake had indeed been on the farm until the time the change to tractor power took place. When buying a modern four-bar reel side-delivery rake for their tractor, it made sense to dispose of a rake that still had value but for which they no longer had use. In any event, the side delivery rake is a McCormick Deering machine and represents a major advance over the dump rake that remains on the farm. (Figures 63-64.)

About the same time a cylinder-rake hay-loader was also purchased. It, like the side-delivery rake, was rubber tired. Cylinder-rake loaders were drawn behind wagons, elevating hay from the windrow which both vehicles straddled, and were pulled by the same team or tractor that pulled the wagon. Doing away with the need to pitch with forks and loading more quickly, it reduced the field crew necessary during haying season and, like the tractor and equipment bought to go with it, undoubtedly represented an effort to farm more efficiently and to combat wage increases that occurred as a result of World War II.

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[27]The Iron Age Farm and Garden Implements 1909, pp. 56-67, Folder 8, Box 565, HPUAL; and Friday Kinlichinee Conversation May 28, 1984.

Wagons

It is not clear to what extent horses were abandoned when the tractor was purchased in the 1940s, but it does appear that wagons were secure on the Hubbell farm and especially in the haying operation. As noted in other chapters, wagons with trailers hauled baled hay to Keams Canyon and elsewhere on the reservation. Until the advent of the pickup truck in the decade after World War II, they were the vehicle of choice for traveling Navajos. On the farm the same high-wheeled wagons made primarily of wood were used to move equipment, corn, and potatoes and for years hauled in the vast amounts of wood burned at the Trading Post. Adapted with collapsible sides and floors, they were used for moving dirt and rocks for headgates and fences. Until the 1920s even the wheel hubs and axles were wooden. Thereafter some of the new wagons and buckboards had steel hubs and steel axles. However, the Hubbells likely did not make the transition to the lower, more convenient steel-wheeled wagon that was the immediate predecessor of rubber-tired trailers and trucks on farms elsewhere in the West. More to the point, wagons equipped with hay racks were an essential part of the haying routine.[28]

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[28]Numerous wagon catalogs are in the Hubbell Papers. Prominent lines include the Aldoco Farm Wagon, Studebaker Wagons and Kentucky Farm Wagon Company. Catalogs show the transition from wooden hubs and axles to steel and other advances in wagon technology as do wagon remnants on the farm. Catalog Folders, Box 565, HPUAL.

It appears that only one hay rack remained on the farm when the Park Service took over. It was equipped with poles instead of boards for the floor extension and would doubtlessly have had certain drawbacks for loading and tramping hay. It is possible it was used for other purposes, but likely it was indeed a hay rack. If so, it demonstrates nicely the tendency of Hubbell farm workers to build with what was at hand even if it left something to be desired. There are also several contemporary photographs that show hay racks on wagons and others that show racks leaning on buildings and fences. Most of these were for the period before 1930 and were made with boards or planks rather than poles. To accommodate their bulky loads, hay wagons were also equipped with a longer reach than freight or dirt-moving vehicles. (Figures 65 and 43.)

A major item of upkeep on wagons were the wheels. A particular problem in arid countries like Ganado was shrinkage of wooden wheels, loosening the iron tires. Consequently, a standard tool for a freighting operation was the tire shrinker, a heavy metal apparatus used for reducing the size of the tires as the wood shrank. There are three of these on the Hubbell premises, two in the barn and one south of the corral, which together with other blacksmith tools were essential to wagon upkeep. A substitute for a well-equipped blacksmith shop in many localities of the Southwest was a pond or widened irrigation ditch in which wagons were parked to allow the felloes to absorb moisture, thus tightening the tire. Although a full-time blacksmith may have kept wagon wheels in good shape without recourse to soaking in the early days at Ganado,

wooden shims and wire wrappings on some of the inventoried wheels suggest that in the later period tires ran loose and that it would have been necessary to park wagons in ponds where crossings enlarged the stream bed or ditches. Perhaps even the holding pond was used for this purpose.

On the Farm Adaptations

Two or three wagons were commonly used in the haying operation. In addition to the flat hayrack, some or perhaps all of these were equipped with headboards and tailboards, especially when oat or rye hay was to be hauled, both of which were slick and often slipped off wagons, the best efforts to control them notwithstanding. Until the cylinder-rake loader was purchased in the 1940s, wagons were loaded with pitchforks. For years they were unloaded by the same method. By the 1920s a hay pole made possible the use of a wire net or sling. This sling lay flat on the hayrack and, with the hay in it, was picked up by the pole or derrick. When it was over the appropriate place, one end was released, allowing the entire load to drop onto the stack. While a great labor saver, this system would probably have made for smaller loads of hay, or, barring that, likely unloaded only the bottom part of loads because of the weight involved.[29]

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[29]Friday Kinlichinee Conversation August 16, 1983, described the haying operation in detail including loading and stacking with pitchforks and the woven wire sling.

Perhaps the most sophisticated of the homemade implements on the farm was the hay pole. It was also one of the most useful. Photograph HTP PH6-58 is the only known photoraph of the Hubbell hay pole. Fortunately it provides a useful perspective. Hay poles and derricks were common throughout much of the West, particularly in Utah, Nevada, and Idaho. These were often called "Mormon derricks" and varied in their construction by area. They were in every sense a vernacular response to hay making and were built of resources at hand. Their presence in a farming country was closely related to timber supplies. With the yellow pines of the Defiance Plateau close at hand, the Hubbells had ready access to the best of material.

The Hubbell apparatus should properly be called a hay pole rather than a derrick, as it consisted of an upright pole about twenty-five feet tall and perhaps eight or ten inches in diameter and apparently had no boom or derrick. Although photograph PH6-58 does not suggest it, a vague possibility is that it had a boom which was broken or deteriorating at the time the photograph was taken. Clearly apparent were two lesser brace poles which rose to approximately two-thirds of the upright's height. The upright was also supported by a laddered "A" frame service platform rising to about eight feet. The entire apparatus rested on a skid platform. In operation the pole functioned by means of a cable, pullies, and horse power and was probably moved on skids, although in the last years of their use hay poles and derricks were increasingly built on wheeled platforms to allow bigger and higher capacity units to be

moved. Wheels could either be recessed in the ground or taken off to give stability in operation. The Hubbell hay pole is entirely typical yet involves innovations that would set it apart from local adaptations popular in other regions.[30]

Over the years hay was stacked in somewhat differing parts of the yard. A photograph by Simeon Schwemberger from about 1905 shows one large stack which was somewhat to the south and west of what has been called the machine shed in this chapter. Two later photos show stacks in somewhat different places within the barnyard proper. Both of these include automobiles and may date to about 1925. In all three pictures, the hay is held down by poles, and in one picture stacks show some evidence of horses having fed at them.

Hay Presses

Two horse-powered stationary balers complete the line of abandoned farm equipment at the Hubbell Trading Post. The first baler purchased was acquired from Sam Day in 1903. It is not known if either of the balers now on the place is the Sam Day original, but it seems quite likely that the older of the two, which is parked

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[30]See Austin E. Fife and James M. Fife, "Hay Derricks of the Great Basin and Upper Snake River Basin," Western Folklore Quarterly, 7 (July 1948), pp. 225-239; James A. Young, "Hay Making: Mechanical Revolution on the Western Ranges," Western Historical Quarterly, XIV (July 1983), pp. 311-326; L. A. Reynoldson, Effective Haying Equipment and Practices for Northern Great Plains and Inter-Mountain Regions, USDA, Farmers' Bulletin 1525 (Washington, D.C.: G.P.O., 1927); and L. A. Reynoldson, Hay Stackers and Their Use, USDA, Farmers' Bulletin 1615 (Washington, D.C.: G.P.O., 1929).

in the junkpile south of the machine shed, is the Day baler. The two machines are similar in construction and both date back many years. (Figure 66.) Catalogs in the Hubbell Papers suggest that, once perfected, these stationary balers changed little. Baling was a repeated and important function on the Hubbell farm but rarely involved over 3,000 bales per year, and machines would not have worn out rapidly. The newer baler is a "Lightning Hay Press" manufactured in Kansas City. An undated catalog with Depression or World War II vintage illustrations indicated that the Hubbells were in touch with the Lightning firm during those periods.[31]

By this time cumbersome field balers were available, but the old sweep-powered stationary balers were still offered by all major farm equipment companies as well as the Lightning Company. However, it does not appear the Hubbells purchased a new baler when they mechanized their operation in the mid-1940s. Indeed it is clear from the fact that a cylinder-rake loader was purchased that there was no intent to go into field baling. Two things may have influenced their thinking in this respect. In the first place the old baler still worked and could be operated effectively by Indian labor. In addition they may have been moving increasingly towards a situation where they fed part or all of the hay raised on the farm

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[31]S. E. Day to J. L. Hubbell, October 13, 1903, offers to deliver a baler and start it running. Day Folder, Box 23, HPUAL; Dorothy Hubbell once recalled: "We would get about 3 crops a year and about 1000 bales per cutting." Figured at 100# per bale 3,000 bales, would amount to only about 150 tons per year. Oral History 1969, p. 39.

to sheep held there during the buying season. If so it might have been more economical not to bale it at all. Notwithstanding the heavy outlay for new equipment, farm production was on a distinct downward trend in the late 1940s and early 1950s. In the face of this it may not have seemed wise to add a field baler to the new line until later. As it turned out, later never came.

Tractors and Generators

There remains the question of tractors themselves. Mules and horses made an important contribution to the tradition of the Hubbell Ranch and showed up clearly throughout the records. By contrast, tractors hardly appeared at all. Yet it is certain at least two tractors were owned and that the one purchased in the 1940s represented a major chapter in the farm's history. Frustratingly, however, both of these machines remain almost completely out of sight. As indicated above, Friday Kinlichinee denies they were ever on the farm. Dorothy Hubbell makes passing reference to a machine that was on the place early, perhaps in the 1920s. A crawler tractor in photograph HTP-PM-30 is identified as belonging to the Hubbells and must coincide with the one Mrs. Hubbell speaks of. Scattered catalog materials suggest they were interested in a Fordson Trackson, a track-laying machine, which was an adapted version of a popular lug-wheeled tractor produced by the Ford Motor Company in the World War I years and the 1920s. (Figure 67.) Catalog illustrations match the photograph closely and make it

possible to tentatively identify the Hubbells' crawler tractor as a Fordson.[32]

Beyond this it is difficult to pin anything down. The crawler tractor would have been used for heavy work including plowing, leveling and earth moving. With the exception of a fuel tank that obviously came from the crawler tractor (see HTP-PM-30), there is no specific equipment still on the place that may be identified with it. This in itself is not surprising, as early tractors were for draft purposes and were often used only for pulling lines of horse-drawn implements already on farms. Some of the tractor adapted equipment, including the potato planter and corn lister, are of a vintage that in their early use may correspond closely with the period of the crawler tractor and the adaptations may well date to an early period too. It is also possible and perhaps even probable that this is the tractor Mrs. Hubbell relates was tipped over "in the wash" by an inexperienced Navajo operator. For now it must be left with the conclusion that this machine could have been widely and heavily used, almost to the extent of supplanting horse power for leveling and tilling purposes in the years after the mid-1920s. However, since there is so little evidence that it did, the better conclusion would be that it was around for a period but that it did not stay long or play an important role.[33]

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[32]Dorothy Hubbell Oral History 1969, p. 7.
[33]Ibid.

Equally a puzzle is the tractor that was purchased in the 1940s. This machine appears in the oral history of Ganado Indians. Some remember a Spanish-American operating it. It was also figured into the financial summaries of the 1940s and early 1950s but specific documentation of its purchase is wanting. The line of equipment still on the premises gives unimpeachable evidence it existed. But what kind of tractor it was cannot be stated at this point nor can it be said when it was purchased, who used it, or when it was disposed of. Because many catalogs in the Hubbell Papers are for International Harvester equipment and some attachments still on the farm were manufactured by International Harvester, it is reasonable to think the tractor was a Farmall. The equipment suggests it was large, at least a Farmall H or more likely an M, respectively the largest gasoline tractors offered by International during that era. It could also have been one of several diesels available in the Farmall line, but that carries conjecture far afield because it is not certainly known that it was an International Harvester.[34]

Beginning in the mid-1920s there was also a succession of generators that supplied the Trading Post and farm with electricity. These may be identified and a little learned about their use from Dorothy Hubbell's oral histories and from catalogs in the Hubbell Papers. The earliest machine was a Kohler purchased about 1923. After several years use it was replaced by a Delco

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[34]Dorothy Hubbell Oral History 1979, pp. 36-38.

generator in 1926, which was itself supplanted by a diesel plant by the early 1930s. Although John Lorenzo warned that generators would always be breaking down, they functioned reasonably well. The Kohler plant was housed about where the Park Headquarters are now. The Delco was kept in a corner of the wareroom. The diesel was housed in what is presently the hen house.[35]

Each of the generators constituted something of a problem for mechanical upkeep. Roman, Romalo Sais and others became backyard mechanics as the entire operation was mechanized. Photos show several of them poking under automobile hoods and provide mute evidence of the struggle to keep early tires inflated. Car parts were scattered over the entire premises, including in the ditch rows in several of which rip-rapping was made not only of sheet metal but of car frames, axles, motor blocks, and scores of spring leaves. A car or small truck of early 1920s vintage was also cut down for use as a trailer. Its presence among other farm equipment suggests it was used on the farm, but there is no evidence this was its exclusive use. Mechanical tinkering was obviously a way of life. Yet the Hubbells did not replace the blacksmith with a full-time mechanic. Upkeep, including work on the generators, fell on people around the place. When problems went beyond their capacities, Gene Haldeman, mechanic at the mission stepped in. His role was particularly important in dealing with the diesel motor during the last years before public power became available.[36]

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[35]Ibid.
[36]Ibid.

Remains exist of one or two other gasoline engines. Catalogs in the Hubbell Papers show the engine lines for several companies including Witte Engine Works and Fairbanks Morse Company. It is not clear what single-stroke engines of this type were used for, but likely possibilities included pumping water, powering a wood saw or the seed separator referred to above, or even running a washing machine in the days before generators made electricity available. The presence of a light windmill and parts of its tower in the junkyard suggest some effort was also made to harness the famous northern Arizona winds for electrical purposes. A wind charger for car batteries was purchased in 1929. Backed-up by a catalog from Jacobs Wind Electric Company, its presence establishes beyond doubt the use of this implement for a time about 1930.

By the early years of the century there were at least two wells at the Hubbell farm. One of these stood in front or just east of the early jacal trading post. Where the second was is not known specifically, but photographs from the early part of this century seem to show a well immediately behind or west of the big house. A windmill operated there in the early 1920s, but no photograph has been found showing it. This may suggest that the windmill did not function satisfactorily and hence did not last long. Spring winds notwithstanding, it may not have been powered adequately in all seasons. Like other shallow wells at Ganado, it was pumped dry frequently, especially on bath days, and water was hauled with a

sled and horse.[37]

Made to accommodate one or two fifty-gallon barrels, water sleds were a ubiquitous feature of dry-land America until the end of the Depression era. In addition to hauling water for the household, Hubbells used them to water poultry and other farm animals. The mission had a deep well of large capacity by 1930, but it is not known when the Hubbells acquired more dependable domestic water.[38] Although Navajos hauled water in wagons as the efforts of H. F. Robinson and the Irrigation Division succeeded in developing wells and springs, they too often used sleds, especially for shorter runs. This among other things may help explain their adaptations of sleds as weed cutters and cultivators, as explained earlier in this chapter.

Finally, what may be made of all this? From the point of the researcher there is much about it that is unsatisfactory. In spite of the detailed nature of some of the information presented here, much is unknown. Speculation has been substituted for fact in certain areas of this discussion. Perhaps interpretive commentary is also overused. Evident in the clearest way is that the Hubbells did not have the farm or its operation in mind in their record keeping. Nevertheless, much about their farm machinery can be

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[37]Ibid.

[38]After many disappointing efforts to open a productive well, the mission succeeded in drilling a deep well that flowed 4,500 gallons per hour in 1927 to supply its hospital. See Florence Crannell Means, Sagebrush Surgeon (New York: Friendship Press, 1955), pp. 37-40.

learned from their records. Similarly, their penchant for keeping outmoded things was a godsend. It is also apparent that farm machinery has been remote from the minds of those who have done historical research and taken oral histories. The right questions have rarely been asked at the right time. Ironically, the rule of thumb that the more remote the past the more obscure our view of it does not seem to apply here. From the record, from extant machinery, and by inference, the early picture is quite as clear as the more recent.

Viewed over the six decades of the farm's operation, machinery makes a statement about the character of the Hubbell experience. In general farm equipment served the purposes of the farm admirably. Desperation and crisis were evident in the business operations of the Hubbells, but by comparison to hard-pressed farmers throughout the Southwest crisis was muted on the Hubbell farm. There were no desperate quests for new cash crops, no shifting efforts to change from crop to animal husbandry or to modernize or drastically modify machinery lines and irrigation or other field equipment. The new equipment of the 1940s notwithstanding, the Hubbells were as slow to embrace change in this as they were other facets of their farming enterprise.

Generally their equipment fit the special conditions of their farm. The equipment John Lorenzo bought served to develop the farm initially. It was well calculated to work a haying operation supplemented with limited production of corn and potatoes. Operated by hired hands under the loosest supervision, the Hubbell machinery

reflected a more enlightened and salutory process of assimilation than the BIA's Navajo farm projects of the 1930s with their government issue jab planters, walking plows and cultivators. Together with the mission's farm school and the individual development of farm ground under the Ganado Project, work with machinery on the Hubbell farm introduced a large number of Navajos to mechanization. The fact that mowing machines, hay rakes, and balers that closely paralleled the line of abandoned machinery on the Hubbell farm were used on Ganado's Indian farms strongly suggests that their preferences in crop selection and machinery lines was a continuing example for the Navajos.

In addition to these considerations, farm machinery fit the personal and emotional needs of the Hubbell family. Perhaps this was most apparent in John Lorenzo's time. Like the Painted Desert, Navajo Indians, resident artists, and his hospitable table, the farm and its equipment were projections of the man, satisfying as much because of their contributions to life style and ambience as because of any promise of profit. Perhaps it is in this relationship between farm machinery and the Hubbell instinct for style and showmanship that lies the equipment's deepest meanings and its best potential for interpetive utilization by the Park Service.

CHAPTER XIII:

FENCES, SHEDS AND CORRALS

Historically, the stone and adobe buildings of the Hubbell Trading Post and homestead always took the eye of people who observed them. Similarly, the buildings including the barn have been the object of considerable attention during the Park Service era and have been studied, interpreted, and restored. As extensions of the romance and color that are such appealing aspects of the Hubbell tradition, the buildings have been put in shape and quite appropriately are the centerpiece of the Park Service presentation.

Interpretive Counterpoint

In their present condition, the corrals and sheds as well as the unrestored machinery play another role in which Park Service interpretive treatment picks up a note of nostaligic decay that gives both dimension to the past and a realistic counterpoint to the simulated and artificial character of restored buildings and vehicles. The interpretive value of the decaying yard and corrals does not lie in any suggestion that the Hubbells let their corrals collapse, although to some degree they did, but lies rather in the fact that the delapidated premises help convey a sense of time.

They also provide a point of visual and emotional connection with the decaying remnants of the homestead and trading era that continues to mark the landscape of the Southwest so vividly.

For reasons that are perhaps more related to administration than to interpretation, fences around the farm and along its interior lanes have also been restored since 1967. Whether any attempt was made to reconstruct the kind of fences the Hubbells had or not, the eight-strand fence that surrounds the place now is in keeping with the interpretive character of the Trading Post. Presuming that an institution as conscious of historical integrity as the National Park Service would have responded to at least the immediate past in "restoring" the fences, there is a tendency to look at these well-made fences with their big, uniformly-sawed-off posts as being typical of the Hubbell fences for all time or to read what is presently visible back in time. From this it is but a short step to conclude that the Hubbells had built well in their fences as well as in their store and barn. Perhaps the assumption is warranted.

The pages that follow will address the question of corrals and fences. Information on them is scanty. It will be difficult to improve on the base of information on which Park Service interpretation has rested much less to resolve policy questions about the relative merits of the artificiality of living history exhibits and the realistic but still progressing decay of the corrals and fences. Nevertheless, an effort will be made in this chapter to see the premises of the Hubbell farm in the perspective of the family's farming experience.

Fences and Order in the Landscape

In a rural or ranching context, fences play an organizational role that is visual and emotional as well as functional. Surveys establish boundaries which, although essential, are ultimately nothing more than legal abstractions. Like irrigation laterals, headgates, and stone buildings, fences give physical form to landed property that is both a matter of eye appeal and effective barrier. In a region where surveys have traditionally been of lesser importance and fences rare, the Hubbell homestead played a remarkable organizational role in the visual sense. Map after map, including United States Geological Survey maps and aerial photographs, show it as something of a benchmark of order and direction in a swirl of elevation contours, looping roads and the confused overlay of Indian attempts to "subjugate" the uneven land of Ganado's other farms.

As physical expressions, the Hubbell fences have something of the same effect with respect to the landscape. Like maps, they define the property. Like the big house and the Trading Post, they were intended to have this effect. In addition, the growth of livestock numbers during the early years of this century not only complicated native Navajo farming at Cornfields and elsewhere but made fences imperative for the Hubbells. Horses which ran loose by the hundreds consituted a special problem, putting almost unbelievable pressure on fences. Sheep were herded but came to the Trading Post by the tens of thousands each year for dipping. Best efforts at maintenance notwithstanding, roaming livestock broke into

the Hubbell fields hundreds of times over the years. Hubbells herded their own stock, draft animals as well as cattle and sheep, and recognized fences as being as necessary to their own management purposes as they were to keep Indian stock out.

Although the Hubbells or Cotton may have undertaken a little gardening that required some kind of enclosure in the years before 1900, there can be no doubt that 1902 marked the real beginning of the fencing era for the Hubbells. The formal process of homestead entry was inititated then, removing doubt about future possession and requiring John Lorenzo to make improvements. In 1903 crops were raised. It is conceivable that herdsmen guarded growing crops. However, it is more likely that much if indeed not all of the first fence was in place around the fields that were cultivated that year.

Joe Tippecanoe and his brother helped build the fence. They cut, hauled, and set cedar posts. Tippecanoe also cut "the never small pine trees to go around on top of the fence" and hauled "them out." (Figures 68-69.) Interestingly, the sequence of his narrative has this happening before he worked on Hubbell's irrigation ditch which carried water for the 1904 season. Tippecanoe does not mention wire, but some wire must have been strung that year. In cedar country, ripgut brush fences were often made. Although they varied from outright jumbles of brush to interwoven cedar poles, less pains were taken with them than with the jacal or stockaded corrals or buildings which were crude enough themselves. Navajos had used brush fences since "the very earliest times" as had whites since at least the mid-1870s. In Hubbell's time the ripgut fences were especially useful along irrigation

ditches where the line of the ditch itself was an added obstacle. Mud shoveled out of the ditch accumulated over the years to become a "wattle" that tied the tangle of cedar branches together in an almost indestructable barrier. With plenty of brush available as trees were cleared from his land, it seems Hubbell would have been in an ideal situation to utilize this pioneer expedient. He may have done so, but only on a temporary basis. The ripgut fence was effective. But it was also an eyesore. Hubbell always utilized local resources in his building, but, in this period at least, he built to project his own image of order and permanence. Then, too, the better made ripgut fences were labor intensive, involving eight or ten times as many posts as barbed wire fences. In a time of development, the cash outlay for wire may have made better sense than added work.[1]

Barbed Wire Fences

As it now stands, the Hubbell farm is fenced with eight strands of galvanized wire of a relatively recent vintage. Part of it is made of four-point barbed wire and is a formidable barrier indeed.

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[1]Joe Tippecanoe Oral History 1971, p. 4, WPHPT. Navajo use of brush fences in "trap corrals" for hunting purposes dated to prehistoric times, see David M. Brugge to C. S. Peterson, June 5, 1985. The ripgut fences were common in Little Colorado farm towns although possibly less so in St. Johns than others because cedar was less abundant. Hubbell is sometimes said to have let Indians burn his fences for firewood in particularly bad winters. Dorothy Hubbell Oral History 1969, p. 50, WPHTP. If he ever used ripgut fences, the tendency to burn fences for firewood during bad winters may account for the fact no evidence of them is found now.

The rest is made of two-point barbed wire, but because of the four-or five-inch spacing of strands is nearly as impenetrable. Posts are relatively large and are about a rod apart. Almost all of them are sawed off at about four-and-a-half feet height. Many show evidence of previous use, most where earlier strands of wire were stapled on the reverse side. A few have been turned bottom side up, revealing some rot where they were previously set in the ground. Most posts likely predate the "restoration" of the fence when the Park Service took over.

In addition to Tippecanoe's statement, contemporary records and photographs give some sense for early fence development. In 1905 Hubbell corresponded with the Indiana Steel and Wire Company about the merits of their "Coiled Spring Fence" and the possibility of being their agent in northern Arizona. Correspondence from Indian agents indicated that Ganado Indians were building fences by 1907. The Peter Paquette census also reported that a large acreage of Indian land was under fence by 1915. Indeed, according to his enumerators, 5,506 acres were fenced by 265 householders. No attempt was made in the Paquette census to define types of fences, but record of barbed wire's distribution earlier suggests it as the primary fencing material. The assignment of Indian farms on the Ganado Project in 1921 and 1922 was accompanied by additional Indian fencing.[2]

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[2]See Indiana Steel and Wire Co. to J. L. Hubbell, August 15, 1905 and October 1905; also W. H. Harrison to J. L. Hubbell March 25 and March 29, 1907 about "eight bales of wire" sold to Hubbell's

Although specific evidence is lacking, the Hubbells probably fenced with barbed wire from the first. Elsewhere in northern Arizona smooth wire was sometimes used. It seems possible, too, that in a sheep country that woven or mesh wire or field fence would have made sense. However, only a photograph from the 1950s suggests that woven wire was ever used. This photo, which was made available by Mrs. Hubbell in response to specific inquiry about fences, showed what is apparently a 24" woven wire fence near a gate into the north part of the field where the Trailer Court is now situated. Otherwise careful observation yields no evidence whatever that woven wire was used.[3]

The first years of the twentieth century were a time of great experimentation with barbed wire. In the decades since, two-strand twisted galvanized wire with either two-point or four-point barbs has become standard. Different weights or gauges of wire are still on the market, and wire has long been sold in eighty-rod spools. In 1905, however, fencing wire was an open and experimental market. Literally thousands of patents were registered, ranging from vicious crimped metal strips to single-strand black-painted smooth wire. Walking the Hubbell fence rows in the summer of 1984 yielded two

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friend and employee, Loco, Indian Folders 1905-1908, Box 43, HPUAL; Gallup Mercantile Company and Charles Ilfeld Company correspondence on wire in the 1920s, Gallup Merc. Folder, Box 31, HPUAL; and on land fenced also see Robert S. McPherson, "Ricos and Pobres: Wealth Distribution on the Navajo Reservation in 1915," New Mexico Historical Review 60 (October 1985), pp. 412-423.

[3]Dorothy Hubbell to C. S. Peterson, January 25, 1985.

samples of early wire which may be assumed to have been used by the Hubbells. (Figures 70-71.) The earlier of the two was a light gauge two-strand twisted wire that was apparently painted. Wire and barbs alike were about the same size as early baling wire and are badly rusted. The barbs formed an offset turn with one side being perhaps three times as long as the other. No description of this wire has been located in finding guides, but its light weight and unconventional character place it in the period of experimentation. It may well have been the wire first used by Hubbell and was certainly one of the earliest wires used. It was found along the fence that adjoins the arroyo which is not common to anyone else's property.

A second "deposit" of old wire was found along the south fence near the holding pond. It was of a standard gauge galvanized two-strand twist. The two-point barbs were made of flattened wire and were fairly conventional in size and character. Yet no sample was found in catalogs that utilized both flattened wire barbs and the simple overhand twist by which barbs were attached, making it impossible to identify this wire by manufacture or date. It was clearly galvanized, but oxidation has discolored it generally and buried parts were somewhat pitted with rust. Locating these two samples suggested that a careful examination of the Hubbell premises could well yield significant information about the character of fences.[4]

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[4]See Robert T. Clifton, Barbs, Prongs, Points, Prickers, & Stickers: A Complete and Illustrated Catalogue of Antique Barbed

Cedar Posts and Pine Poles

Photographs from the early part of the century showed the Hubbell fences in place. Dating on the photographs is imprecise, but fences were around the entire south and east part of the farm before 1910 and probably by 1905. Posts look to be of substantial size and were placed relatively close together and either had Joe Tippecanoe's "never small pine tree" poles around the top or were cut off at a regular height to facilitate future placement of top poles. The top poles were a nice touch visually and may have been added for cosmetic purposes. They also kept horses from reaching over and "riding" the fences as they tried for the foliage in the Hubbell fields. The photos tell a somewhat unsure story, some showing the poles in front of the Trading Post and along the lane and some showing fence without the poles. None, however, show top poles on distant parts of the fence, suggesting that the poles were were at least partially for decoration.[5] (Figures 72-73.)

The heavy, well-set cedar posts near the Trading Post may also have been used partially for window dressing. This is suggested midway along the Pueblo Colorado by an abandoned line of posts which were apparently ignored by Park Service fencers when the fences were

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Wire (Norman: University of Oklahoma Press, 1970); Jack Glover, "Bobbed" Wire: An Illustrated Guide to the Identification and Classification of Barbed Wire (Wichita Falls: Terry Bros. Printers, 1966); and Shirley Glidden Jones, The Thorny Cage: Poking through History, Heritage & Hearsay (n.p.: 1981).

[5]Joe Tippecanoe Oral History 1971, p. 4.

redone because they were obscured by a very dense stand of cedars which over the years had grown in the blow sand that collected along the fence. These posts are spindly, about three inches in diameter, and are not sawed off at the top. They are presently well set, perhaps because of blow sand. However, the presence of a hundred or so posts of similar size with bottoms decayed up about fifteen inches which have been used in patching the stockade work of the corral hint that the standing posts in the cedars may originally have not been well set in the ground. What all of this raises is the likelihood that much of the early Hubbell fence was done in haste and that, like other pioneering ventures, it lacked finish and substance.

Photographs show several types of fences around the yards and big house. Among these are a pole fence that ran between the early jacal structure and the stone Trading Post. Evident in another picture is a picket fence at the front of the jacal building. At the rear (a little northwest of the jacal building) near the arroyo, photograph HTP-PP-20, which is said to be from about 1915, shows a pole fence extending to the southwest and a large pole gate, suggesting that wagon traffic moved in and out of the Trading Post by this route. The pole fence around the Trading Post buildings provides a nice tie-in to the pole-topped barbed-wire field fences. Pole fences may also be seen along the west side of the barnyard enclosure in photo RP-201. In addition, one or two pictures show sections of slab or other rough-sawed lumber fencing about six feet high, adapting parts of the yard for specific uses. In the 1920s

the present stone fence north of the Trading Post was built or another very much like it as shown in HTP-PM-30.[6] Thomas Keam had constructed upwards of two miles of stone fences by the 1880s, according to his own report. Perhaps the limited use of stone as a fencing material at the Hubbell homestead until the 1920s is evidence, after all, that their farm is a good bit removed from supplies of building stone and that, before the days of trucks, transportation was a problem even for an outfit with many horses and wagons. Another thing suggested by the photographs is the frequency of change and adaptation in space utilization and fencing material.[7]

Gates

There is little evidence that reflects on field gates. Probably they were the ubiquitous wire gate closed with a wire loop or, if tautness were desired, with a cedar-come-along-stick or a discarded hame of which there would have been an abundance. At the corral the Hubbells had about sixteen wooden gates of varying size. The

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[6]Photographs HTP-PAV-21, 2140 and HTP-PAV-2 are particularly useful in studying fences. The first which is dated "ca. 1900" shows no fencing whatever. The second, dated "1905," shows fences clearly including the top poles. The third, also from "ca. 1900," shows fences but no top poles.

[7]T. V. Keam to Herbert Welsh, November 24, 1888, Keam-Welsh Correspondence, IRAA; on the construction of the stone wall see Dorothy Hubbell Oral History 1969, p. 7 which indicates that an Indian mason built the stone wall in the 1930s. Photo HTP-PAV-21, which is dated to 1925 clearly shows a stone wall which, however, does not appear to be set in masonry.

present corral, as well as photogaphs from earlier times, show at least the larger pens to have been well built. Huge, deeply set, and well-braced cedar posts enabled them to make use of big gates. Probably because use of the corral included cattle and particularly horses and mules, gates are high. Large gates turned on stone sockets or, as photo HTP-RP-3 shows, in abandoned hubs from wagon wheels set in the ground. Hinges for lesser gates are various in their design, and many were clearly fabricated on the place. Catch chains and lumber bolts for latching the gates were also of local manufacture. Perhaps the highest achievement along this line was the great iron gate made in the Hubbell blacksmith shop sometime after Dorothy Hubbell arrived in 1920. Much later it was damaged by truckers delivering tribal grain to the barn and was not used for many years. Small gates are of lumber construction with ready-made strap hinges of various sorts, and like the corral fences now show generations of jerry-built repairs. However, photograph 4427 suggests these gates were originally well built indeed. It shows a barn door built of lumber with a mature John Lorenzo walking in front of it in the winter sun, as suggested by his shadow. The materials are rough and unpainted, but the door is well conceived and carefully and strongly constructed. The barn was actually a stable or livery barn, as is borne out by the fact that the door which hinged on both sides was made with independent top sections to allow light and ventilation in the barn when the weather permitted.[8] (Figures 74-76.)

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[8]Dorothy Hubbell Oral History 1969, p. 84.

Sheds and Corrals

The corrals and sheds are built of poles and posts. Most of them were probably built around the turn of the century. (Figures 77-78.) Time has taken its toll and they now appear ramshackle indeed. However, contemporary photographs show them to have been well made, almost works of beauty and in their finish and strength fully appropriate extensions of the Trading Post and barn. Two undated photographs (RP-254 and RP-63) show this particularly well. (Figures 79-80.) The former shows a well-made shed running east and west in the area southwest of the barn that is now an unroofed enclosure or corral. It is clear that this shed had a lumber roof, one of the few if indeed not the only non-dirt roof on the premises except for two gabled privies that stood west of the Hubbell house. Photo RP-63 shows the same shed from the corral or east side. This picture, like the other, displays the careful structural work and effective integration of what was probably a wagon and machine yard. A row of tall posts and the nature of the existing sheds and fences suggest Hubbells may have planned to roof even more of it. Light showing through from the west side in this last photo also indicates 1"x12" boards were used for siding. Elsewhere, this wagon yard was constructed of horizontal pine poles apparently laid eight tiers high.

The big corral consisted of three parts. (Figures 80-81.) In addition to the wagon and machine yard described above was what might be called a general or central corral used for holding horses

Fig. 68: Ranch Before Fences, Dipping Vat to the Left Center

Fig. 69: Ranch After Fences with Terraced Fields Visible ca. 1905. (HPT PAV-21.)

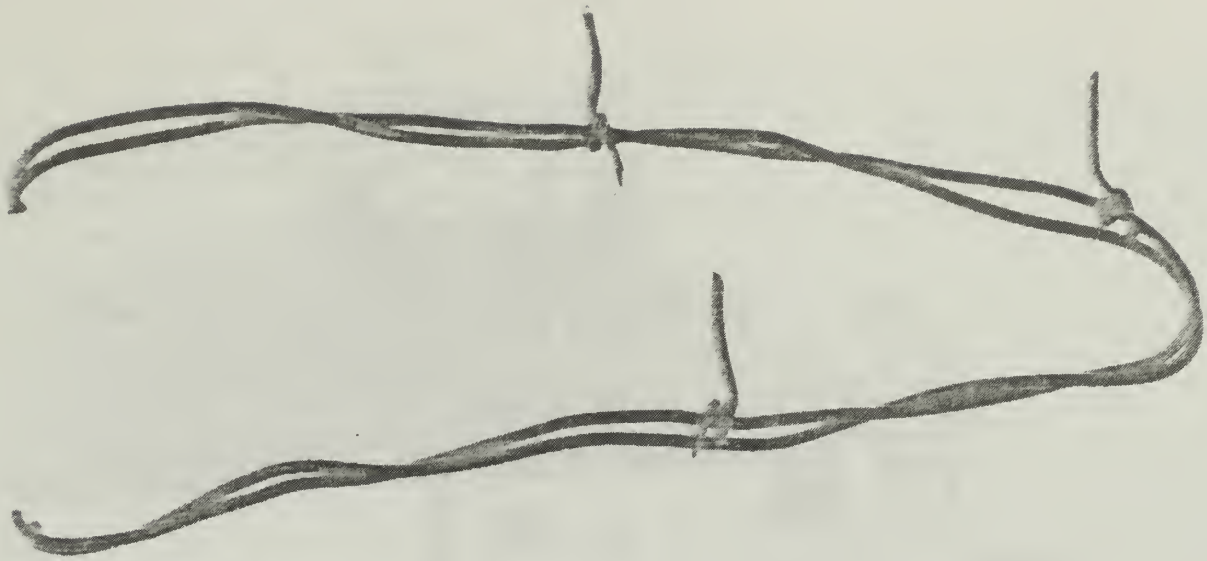

Fig. 70: Painted Barbed Wire from Hubbell Farm ca. 1905.

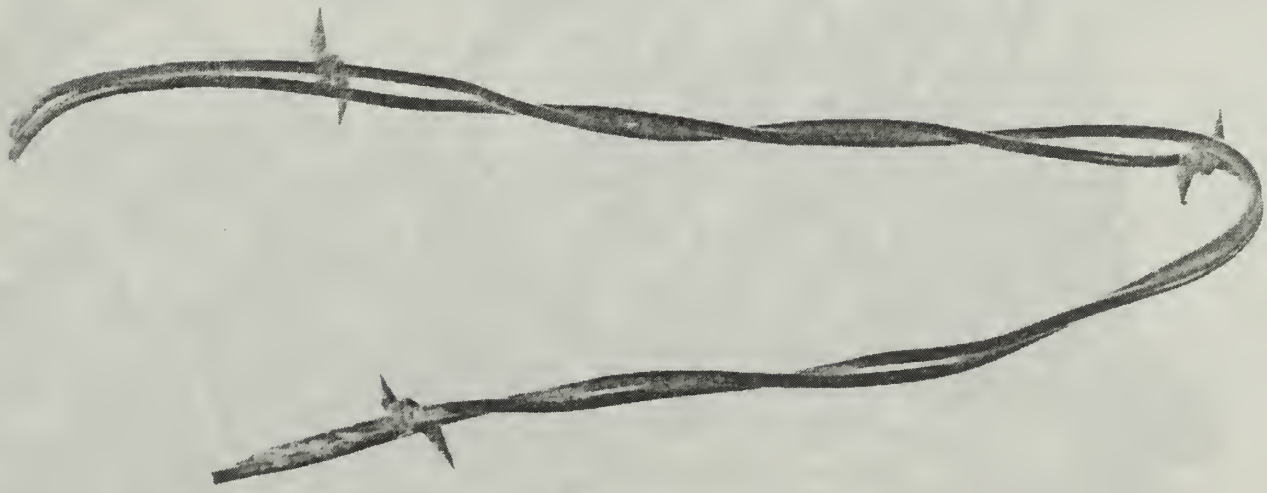

Fig. 71: Galvanized Barbed Wire from Hubbell Farm ca. 1920 (?).

Fig. 72: Hubbell Fields with Pole-topped Fences ca. 1920. (HTP #4398.)

Fig. 73: Southern Utah Ripgut Fence. (Fife Folklore Archives Utah State University.)

Fig. 74: Wagon Hub Corral Gate at Hubbell Farm ca. 1915. (HTP #4558.)

Fig. 75: J. L. Hubbell & Barn Door. (HTP #4427.)

Fig. 76: Trading Post, Gate, Barn & Car under Repairs ca. 1920. (HTP PP-3.)

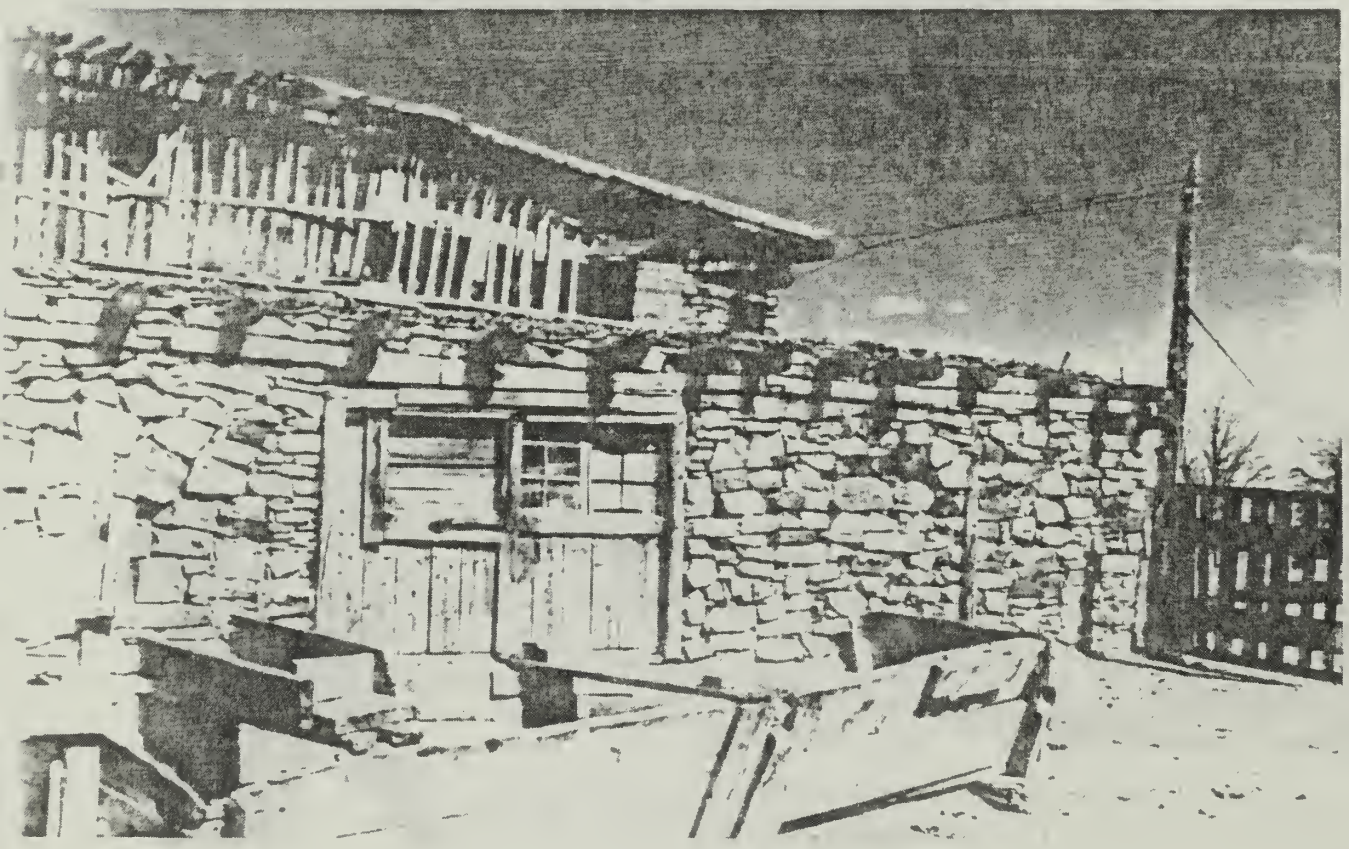

Fig. 77: Hubell Corral & Barn ca. 1956. (HTP #4428.)

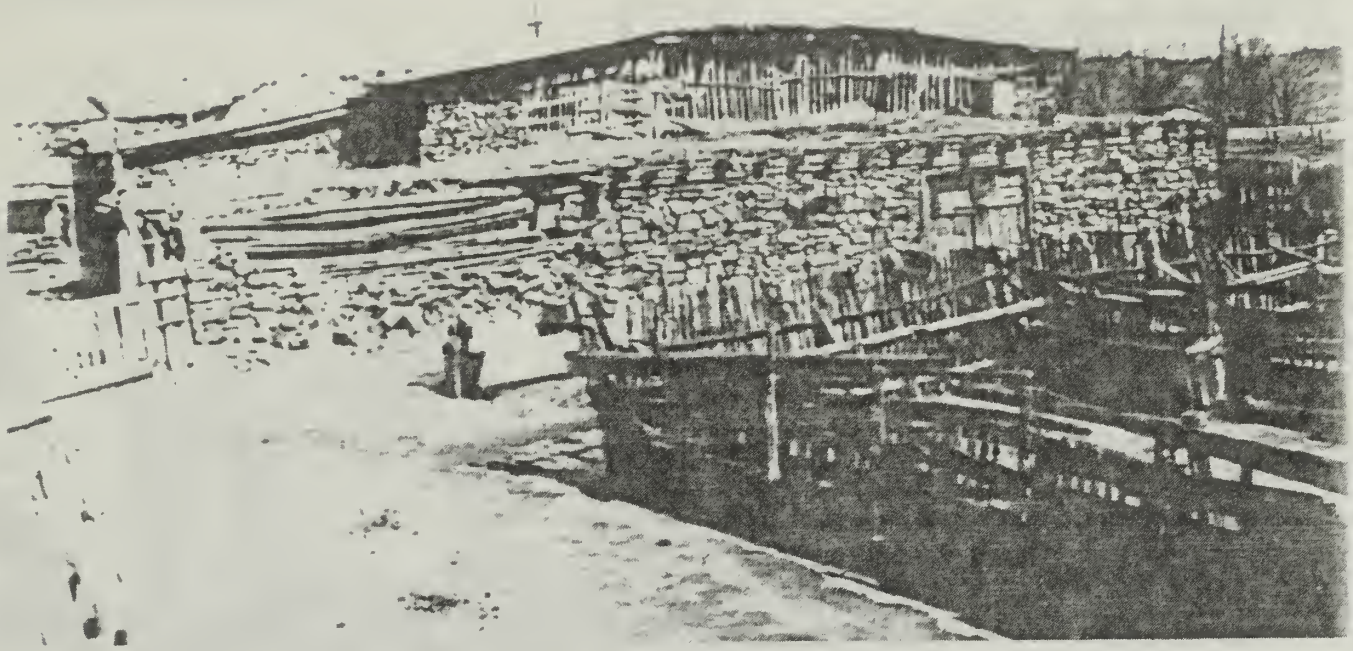

Fig. 78: Detail of Hubbell Corral & Barn
Showing Feed Bunk for Horses. (HTP #4429.)

Fig. 79: Back of Machine Shed, Slaughter Hoist
& Hay Wagon Are Visible in Background.
(HTP RP-254.)

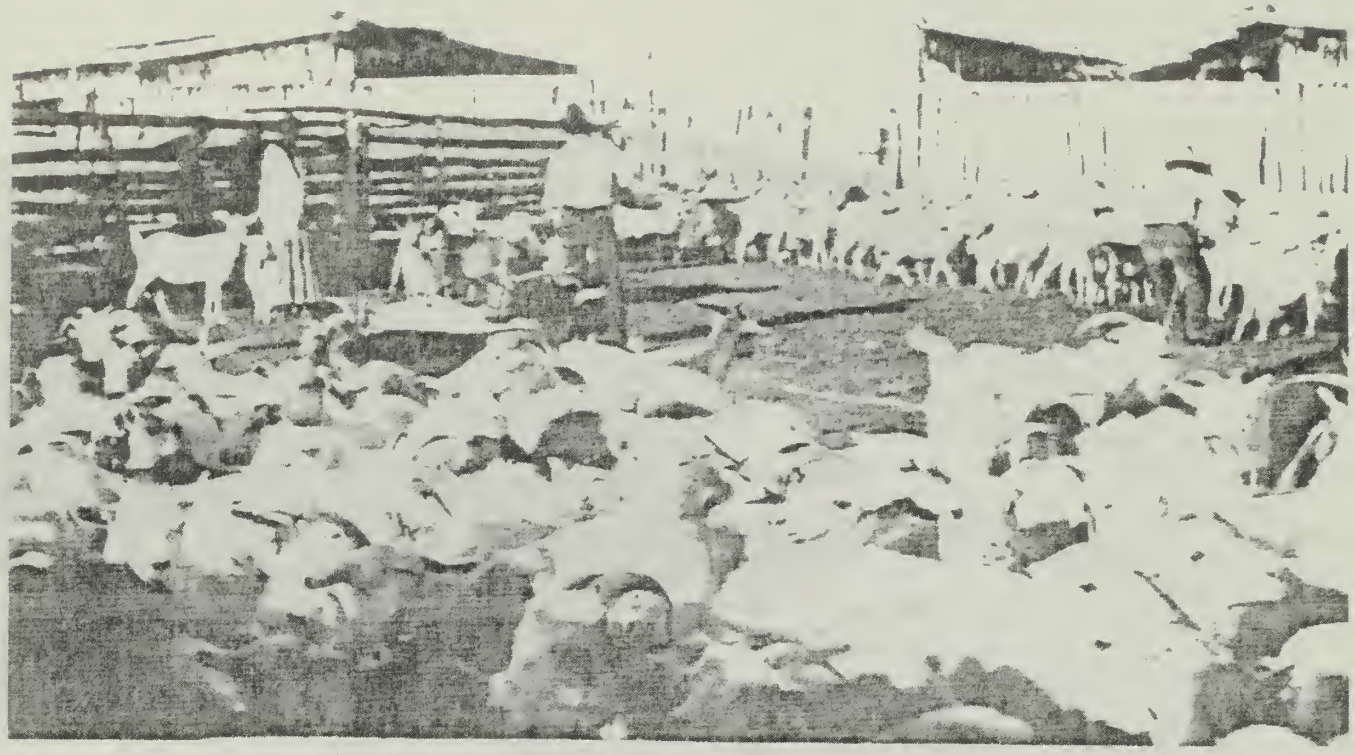

Fig. 80: Central Corral with East View of Machine Shed & Wagon Yard Visible Beyond Animals. ca. 1905 (?). (HTP RP-63.)

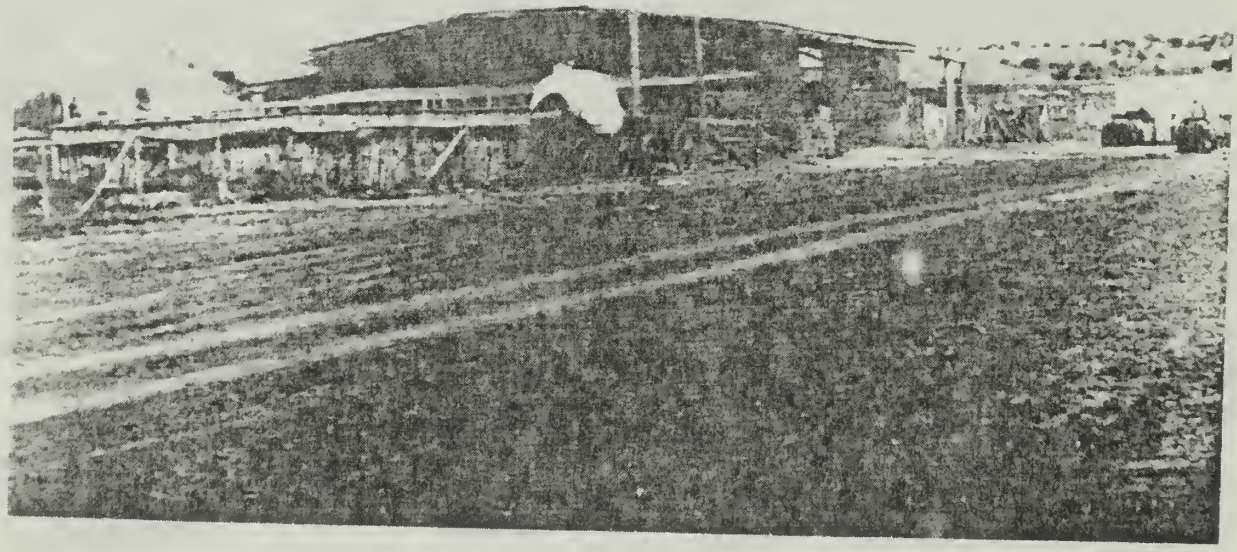

Fig. 81: Corral, Gates & Barn without East Door ca. 1909. (RP-190.)

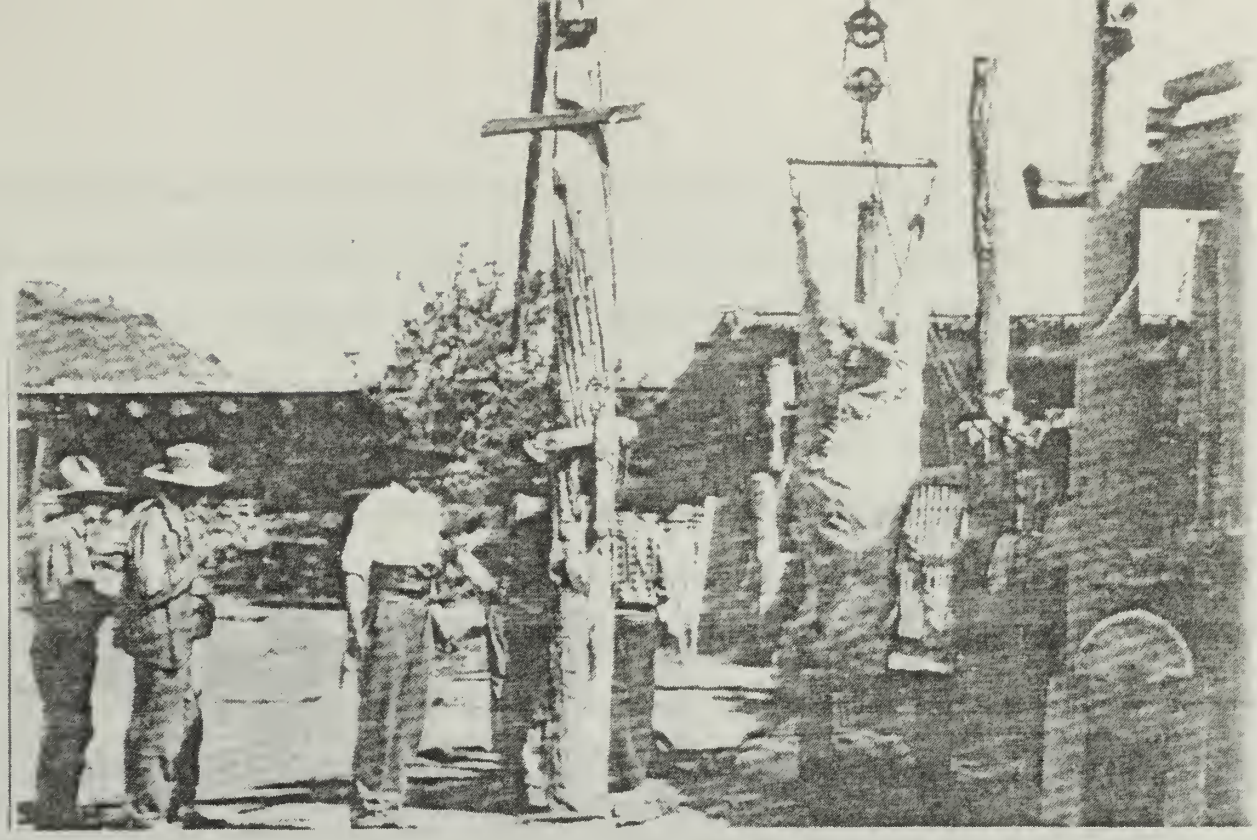

Fig. 82: Slaughter Hoist with Grindstone & Sheds ca. 1927. (HTP RP-236.)

Fig. 83: Slaughter Hoist in 1984. (Liz Bauer, HTP, 1984).

Fig. 84: Branding in the Roundup Corral. (HTP PM-152.)

and mules and working sheep and cattle. This articulated to the lane, to the blacksmith shop, the stackyards, the wagon and machine yard and through an alley to the fields. Adjacent to the big corral and connected with the alley were the sheep pens. In time, a loading chute was added as automotive transporation became important. Closely articulated to the sheds and corrals was a hoist for slaughtering. Set on two large, upright cedar posts, the hoist had enough height to lift a large beef animal clear of the ground. It was located originally near the house and was moved once or perhaps twice, possibly because of flies. No attempt was ever made to enclose it. It was used until near the end of the Hubbell period, and in its last years was equipped with a hydraulic pulley. At times a fair amount of slaughtering was done, and keeping the area under the hoist clean would have been difficult. Nothing is known about how state, BIA or tribal inspection regulations effected it.[9] (Figures 79 and 82-83.)

In addition Hubbells had a circular roundup corral for working cattle and horses. This was southwest of Hubbell Hill and north of the Rio Pueblo Colorado. The chicken pulls for which the Hubbells were famous were held close by, a custom perpetuated in the rodeo corrals a half-mile farther west today.[10] This roundup corral was

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[9]Dorothy Hubbell Oral History 1979, pp. 190-191, WPHTP.

[10]For many years during John Lorenzo Hubbell's life, annual chicken pulls were a major social event at the Trading Post. Hundreds of Navajos and scores of white guests and tourists attended. This event was apparently of Hispanic origin. Riders leaned from galloping horses to yank partially buried chickens from the ground and then as they made their way from the field defended

made of high quality straight cedar posts set upright in the ground. It would appear to have been perhaps seven or eight feet high. At about the five-foot level it was reinforced both inside and out with horizontal poles that apparently made the entire loop. In this corral cattle were worked and inspected as well as held at night during periods when they were herded on adjacent grazing grounds. Gene Haldeman, a long-time employee of the mission, recalled that during one cold winter "around '33" the "corral disappeared across the wash there 'cause we burned it up." Trucks were unable to get through to the coal mines and to keep "the hospital and the kids from freezing . . . we had to cut [it] down." (Figure 84.) Gone now for more than fifty years, the importance of this corral to the Hubbell homestead can only be understood in light of the cattle operation they carried on in the years before 1925.[11]

In some respects the corrals and sheds belonged to the trading functions of the Hubbell operation. In other important respects they served the farm and should be seen as part of the farm. Indeed they were the physical link at which the two functions met and became one. Photograph HTP-PAV-2, referred to above, which is from about 1900 bears this out. (Figure 68.) The barn is there but

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their prize from a crowd of contending horsemen. Whether Hubbells introduced the chicken pull or Navajos acquired it from earlier contact with Spanish-Americans is not known, although the former is certainly possible.

[11]Gene Haldeman Oral History 1972, p. 31, WPHTP; also see Chapter VIII.

there were no fields and there were no corrals, sheds or fences. The fields came into existence and with them came the full appurtenances of farming. The horse corral and sheep pens would have been useful without the farm. This is true of the roundup corral as well. But all of them were given added meaning by the farming operations and should rightfully be regarded as part of the farm. Like the farm machinery, the irrigation system, and the farm itself, their history attests the style of a one man's vision and the losing effort of his family to sustain it as conditions changed.

CHAPTER XIV:

CONCLUSION

The ultimate reality of the Hubbell farm is encompassed in the fact that it is 160 acres, a mere pinprick in the desert and mountain expanses of the West. By other measures, it is also small and unimportant and the lives of the people connected with it were ordinary in most respects. Yet close examination of life in a grass roots situation provides its insights. Life is, after all, filled with quiet values and petty routines that often fall beneath the broad sweep of history. When examined closely, it is apparent that the cultivation of 160 acres involved such matters as economics, religion, politics, aesthetics, social values and habit.

Looked at in this broad context, the history of the Hubbell farm falls into four overlapping chronological divisions. A period of establishment began in 1876 when Hubbell bought the original Charles Crary squatter's claim and ended about 1913 when the Ganado Project was formally initiated by the Indian Irrigation Service. The farm functioned actively for the next twenty-five years as horse freighting, livestock trade, family needs, government policy, and a successful Navajo irrigating community contributed to its well-being. Beginning about 1928 and lasting until 1967, when the property was turned over to the National Park Service, was a period of recession. During those years, farming

gradually lost ground due to hard times, adverse weather, soil exhaustion, and weed infestation as well as changing circumstances in the Hubbell family and business and in the Navajo community at Ganado. Always sustained partly for intangible reasons, the farm's situation as a National Historic Site has projected its history into a fourth and final period in which agricultural production has played no part. Although this period lies largely beyond the limits of this study, factors relating to tourism, education and sentiment may well make this period, and the future, the most important phase of the Hubbell farm's long and varied career.

In very real ways the history of the Hubbell farm symbolizes the course of agricultural history in the arid West generally. Like it, the farmer's frontier moved beyond man's capacity to cope with the environment in a sustained way. This was particularly true of the "dry- farm" movement but true also for homesteading generally. During good times and periods of high moisture farming districts were developed. Economic cycles, changing family needs, and other opportunity forced people from the land. Farm districts flourished briefly, struggled as things fell apart, and closed down. As time has progressed, this process has repeated itself in family farms throughout America, including, in its finest farming localities.

Ganado, on the other hand, was in a region where natural conditions were not just submarginal but nearly impossible. The wonder is not that the Hubbell farm failed in the long run but that it succeeded at all. Blessed with good soil and favorable late summer moisture, it confronted major problems in its short growing

season, flooding and erosion, limited annual precipitation, and in its remoteness. Also a major problem was the utter lack of dependable spring runoff and oasis conditions under which ranches flourished on Nevada's high deserts and Mormon towns found limited prosperity along the upper Little Colorado and its affluents.

Human relations also contributed to the marginality of Ganado agriculture. Three cultures interacted. While their experience was not marked with friction, each in its way contributed to the ultimate failure of Ganado's irrigated farming. Navajo influences were fundamental and, where farming was concerned, more longlasting than the values and practices of irrigating. Hispanic influences were important when the farm was established and during the years when the Hubbell family gathered at Ganado but of passing significance later. Anglo-American qualities, including the profit factor, assumptions of ethnic superiortiy, and a penchant for rampant and destabilizing change also acted on the farm, modifying attitudes, doing away with local markets, and creating new opportunities and challenges. All told, farming seemed not to be worth the effort by the 1960s. The major point here is that the Hubbell farm was even more vulnerable than agriculture was generally. One of agriculture's weakest appendages it finally collapsed, a symbol of the process by which natural and social conditions assail farming in modern America.

Reversing the coin, it is well to note also that like the farmer's frontier generally the Hubbell farm eptomized much of what was important and best about the "westering" experience of America.

As farm development lies at the very heart of the West's tradition the Hubbell homestead and farm lay at the very heart of the Hubbell family's story, doing much to enhance it and making it more worthy of the dignity given it by creating a National Historic Site at the Hubbell Trading Post.

The farm enhanced the stature of the entire family, but like so many other things this showed up most dramatically in the person of John Lorenzo Hubbell. Like his interest in promoting the Navajo rug trade, his farm led him off the deserts of northern Arizona and into a consciousness that was national in breadth. For decades he lobbied in Washington, D.C. He came to know publishers and engineers as well as bureaucrats and politicians. Nothing did more to develop the image he enjoyed than promoting and establishing his farm. In addition to contacts, his farm gave him a position among a class of gentlemen farmers common in the era. It was a manifestation of his stability and the condition of importance he hoped to project.

In much the same way that it enhanced the reputation of the man and the family, the Hubbell farm contributed to the success of the Ganado Project and Indian irrigation there. In view of defunct irrigation projects in even less promising spots throughout the Navajo Reservation there can be little doubt that a project would have been undertaken at Ganado with or without the Hubbell family. But for thirty years the Ganado Project was almost certainly the most successful Navajo irrigation endeavor in Arizona. The presence of the Hubbell and the Presbyterian Mission farms contributed to

this. For many years Indians farmed with pride. Although little farming and no irrigation is now practiced on what were Project lands, its impact is still felt. For example, Howard Gorman, former tribal councilman, and Arthur Hubbard, Navajo member of the Arizona legislature in 1984, both recalled the high tide of Navajo farming with great enthusiasm. Both asserted that the Ganado Valley Farmers Association, which was organized during the 1920s to represent the community's irrigators, became the Ganado Chapter of tribal government after 1935 and that its influence was still felt.[1] Of course, white neigbors have often had an adverse impact on Indian farming, but in this case there can be not doubt the example and stability of the mission and Hubbell farms contributed to the Project's general success.

Perhaps this point can be better understood in light of rural projects undertaken as part of the New Deal's Resettlement Administration. These projects which were established throughout America succeeded in a few widely publicized instances but failed significantly in scores or perhaps hundreds of cases. The vast Rio Grande land project bought about 1,000,000 acres of land at seven sites including one at Gallup-Two Wells, which was to be turned over to the Navajos, but infighting between Indian groups, Hisapnics, and bureaucrats limited its utility. The Casa Grande project in Arizona has been judged an almost total failure and three highly touted

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[1]Howard Gorman Conversation August 1983; and Arthur Hubbard Conversation August 1983.

resettlement programs in Utah, the Widstoe, the Green River and Benmore, relocated almost no one in spite of careful planning and heavy expenditures. There are important differences, but by comparison it is evident that the elements on which the Ganado Project was based worked reasonably well.[2]

Behind this entire study lies the question of the farm's potential for historical interpretation as part of the Hubbell Trading Post's presentation. Park Service officals have been aware of the farm from the time the Historic Site was established but have focused on the Trading Post and the personality and trading activities of the Hubbells. Many factors contributed to this including the flambouyant reputation of John Lorenzo Hubbell and the location of the Trading Post. Also contributing is the low profile of the farm in the Hubbell Papers which grows from the Hubbells' tendency to enter the farm routines and transactions into their accounts in a limited and incidental fashion.

However, careful examination dispels any idea that the farm was an incidental part of the Hubbell experience. It reflected

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[2]David H. Dinwoodie, "Indians, Hispanos, and Land Reform: A New Deal Struggle in New Mexico," Western Historican Quarterly XVII (July 1986); Sidney Baldwin, Poverty and Politics: The Rise & Decline of the Farm Security Administration (Chapel Hill: University of North Carolina Press, 1968); Edward Banfield, Government Project (Glencoe, Ill.: Free Press, 1951); Paul K. Conkin, Tomorrow a New World: The New Deal Community Program (Ithaca: Cornell University Press, 1959); Donald Halley, Uncle Sam's Farmers: The New Deal Communities in the Lower Mississippi Valley (Urbana: University of Illinois Press, 1975); and Brian Q. Cannon, "Remaking the Agraian Dream: The New Deal's Rural Resettlement Program in Utah," Master's Thesis Utah State University, (1986).

their deepest aspirations and involved their strongest loyalties. While there were undoubtedly self-serving elements in what they hoped irrigated agriculture would do for Ganado's Indians there was also much idealism. The farm occupied their time, modified their relationship with their Navajo neighbors, contributed to their business, and sapped their economic resources. It also symbolized their preoccupation with attitudes and practices common to their own time and heritage. In the beginning, it focused their dreams. Later it became a triumph of organization and production. Finally it failed. Clearly it was an integral part of the Hubbell experience.

The farm is a cultural resource of the first importance. Its development and operation carry much of the Hubbell story factually. Its continuing presences carries an even more important part of the story impresssionistically. It has a great potential for interpretation. To the romance and color of the trader-promoter in Navajo country it adds elements of homestead America, the Hispanic Southwest and the saga of water in an arid land. As a cultural resource, the farm will have different meanings for different viewers, but the interpretive efforts of the Park Service can and should direct and mold response.

To no small degree the impact of the farm at this point is emotional and sentimental. It is essential to realize that emotion and sentiment depend upon experience and association. People for whom the farming and ranching Southwest has been home will respond. As knowledge of an agrarian past diminishes, the emotional message

of the defunct farm will decrease. Thus as America moves away from the land, a major opportunity of the Park Service will be to create a bond of knowledge and emotion that will help tie us both to the past and to the soil.

The farm's prospects for development as a living history presentation are sharply limited. The same natural conditions that ultimately defeated the Hubbells and their irrigating Navajo neighbors stand in the way. The environment is unchanged. Human problems remain as both opportunities and challenges multiply for Ganado Navajos and resource managers of all varieties. Short of a major project, water will not be available. Even in this unlikely eventuality there is every reason to believe that the Hubbell farm's water right will be questioned. Beyond this, the cost of rehabilitating the farm will be heavy indeed.

However, at least two less ambitious prospects exist. First the defunct farm has great value as a historic site. It reflects thousands like it throughout the Southwest. For the time being, it provides opportunity to study at close hand what is more vaguely realized by all who view the landscape of the receding ranching frontier. As the frontier recessional continues and abandoned ranching homesteads fall into complete and unrecognizable ruin a place stablized at something like the Hubbell farm's current state of decay will have an even greater cultural potential.

A second possibility would be the development of a limited kind of living history program on a few acres. Something of the role of the irrigation system could be shown as well as the routines

and ryhthms of farm life in this setting. Water development and cost would still be a major factor, but, with modern facilities, pumping might well hold some prospects. If done at all, this would have to be carried out in close concert with the Navajo Tribe and should include the holding reservoir and one of the pieces to the east of the Trading Post. Creating such a limited restoration would jeopardize any interpretive value of the unrestored parts of the farm if not handled with extreme sensitivity.

Of the two prospects, the former seems much more attractive. Living history is a controlled medium, simulated and artifical in important respects. By contrast, the decaying farms of the West are not staged. They are in no way shows or artifical.

It is in this context that perhaps the most important point of this entire study may be made. Partially stablized, the farm and the appurtenant corrals, fences, and irrigation system represent a phase in the history of the Hubbell farm and indeed in the entire ranching and agricultural history of the arid West. It possesses a charm and value of its own that reflects the much broader story of the farming frontier. Because of its particular location, it is also a commentary on what the white man has made of the land he has taken from Indians. In this context, especially, stablizing the farm as part of the interpretive treatment of the Hubbell Trading Post seems to have great potential indeed.

APPENDIX I

WATER RIGHTS AGREEMENT WITH
THE DEPARTMENT OF THE INTERIOR 1913

WHEREAS, J. L. Hubbell, of Ganado, Apache County, Arizona is the owner of the following described land, to wit:

S 1/2 of SW 1/4, Sec. 27, NE 1/4 Sec. 38, and NW 1/4 of Sec. 34, in T. 27 N., R. 26 E., Gila and Salt River B. and M., in said county and state, and the said Hubbell has heretofore built a canal or water ditch having its headgate on the south bank of the Rio Pueblo Colorado, at a point approximately 2 1/4 miles distant in a northerly and easterly direction from said land and running thence in a general southerly and westerly direction about 2 1/2 miles, for the purposes of irrigating said land, and has irrigated said land for several seasons and has acquired for said irrigation water rights under the laws of Arizona, and

WHEREAS, the lands adjoining the lands of the said Hubbell is a portion of the Navajo Indian reservation set aside for the use of the Navajo Indians by executive order dated January 6, 1880, and that certain of the lands of the valley of the Rio Pueblo Colorado are susceptible of cultivation when irrigated, and may be irrigated from the said Rio Pueblo Colorado at such times as there is sufficient water flowing in the stream, and there is a certain reservoir site in which it is possible to store the surplus and flood waters of the said stream, and the land can best be served by carrying the water for a portion of the distance in the ditch owned by the said Hubbell, and

WHEREAS, The United States of America proposes to build such reservoir and convey the water to lands on the Navajo Indian Reservation, now, therefore,

THIS AGREEMENT, made and entered into this sixth day of February, 1913, by the United States of America, acting in this behalf by the Assistant Secretary of the Interior, party of the first part, and the said J. L. Hubbell, party of the second part,

WITNESSETH, that for and in consideration of the stipulations of the party of the first part hereinafter contained, the party of the second part has remised, released and quit-claim forever, unto the party of the first part, all that particular canal or water ditch hereinbefore described, and all other ditches, flumes, and other appurtenances heretofore used in the delivery of water to his said above described land, together with all easements or rights of way for the same, and all his right to the use of water from said Rio Pueblo Colorado for irrigation of said lands.

The party of the second part agrees to perform a proportionate share of the labor, and to pay a proportionate share of the cost of materials and supplies incident to or necessary for the proper operation and maintenance of the Ganado irrigation system of the

party of the first part, or, in lieu thereof at the option of the party of the first part, to pay such proportionate charge as may be fixed for the annual maintenance and operation of said system.

In consideration of faithful performance of the preceding stipulations of the party of the second part and of the conveyance of the property hereinbefore mentioned, the party of the first part agrees that the party of the second part shall have the right to sufficient water from said system for the proper irrigation of his above described land, not to exceed two and one-half acre feet of water for each acre of land, and not to exceed four hundred acre feet of water in each year, or so much thereof as shall constitute the proportionate share, per acre from the water supply actually available for the lands under the project.

It is mutually understood and agreed that, in the performance of labor or the use of material and supplies, or the fixing of the annual charge for maintenance and operation of the system, the users of water therefrom shall contribute as the area of the land of each irrigated is to the total area served thereby.

IN WITNESS WHEREOF, the party of the second part has hereunto set his hand and seal this sixth day of February, 1913, and the party of the first part has caused this agreement to be executed by its duly authorized representatives, this 31st day of May, 1913.

_____

_____

Assistant Secretary of the Interior

APPENDIX II

PAUL BRIZZARD DEPOSITION
BEFORE THE REGISTER AND RECEIVER, UNITED STATES LAND OFFICE, PHOENIX, ARIZONA

IN THE MATTER OF THE HOMESTEAD)
ENTRY OF JOHN LORENZO HUBBELL,)
NO. 811 F. C. NO. 157)
Territory of Arizona,)
: ss.
Maricopa County.)

Paul Brizzard, first having been duly sworn, upon his oath deposes and says that he is a resident of Phoenix, in Maricopa

County, Arizona, and that he is well acquainted with John Lorenzo Hubbell and with the land embraced in his homestead entry No. .811; that he has visited said land and is familiar with the improvements thereon and with the developments that have been made; that affiant knows of his own knowledge that the store upon said land and the warehouse connected therewith are used exclusively by Mr. Hubbell in carrying on his trade with the Navajo Indians; that Mr. Hubbell in carrying on said trade purchases from said Indians wool, pelts, silverware and Navajo blankets and sells to the Indians such general merchandise as they desire; that he disposes of the articles and products he purchases from said Indians in the markets and to any one who desires to purchase such things; that Mr. Hubbell is the exclusive owner of said store and warehouse and of the business conducted therein. That the blacksmith shop upon said tract is used exclusively by him and his employees as a convenience in carrying on said farm and store; that there is no blacksmith employed therein but that the tools and appliances therein are used only by Mr. Hubbell's employees for their own private convenience; that Mr. Hubbell has constructed an irrigating ditch about two and one-half miles in length from Pueblo Colorado Creek to a reservoir covering about five acres, and that from this reservoir he has built laterals, by means of which he is able to irrigate every part of his farm, consisting of about one hundred and forty acres; that he has upon said farm an orchard and vineyard and raises crops of rye, alfalfa and garden truck generally; that in the judgment of the affiant said irrigating system must have cost about fifteen thousand dollars and that the leveling and planting of said farm must have cost about ten thousand dollars more: that said irrigating ditch is substantial and well built, being upon an average five feet wide at the bottom and about seven feet wide at the top.

Affaint further says that all of the buildings upon said tract of land are owned and occupied exclusively by Mr. Hubbell and his employees and not by any other person or persons, and that none of said buildings are leased or rented for any purpose or to any person whomsoever.

_____

Subscribed in my presence and sworn to before me this ___day of April,
1908.

APPENDIX III

E. S. CLARK DEPOSITION
BEFORE THE REGISTER AND RECEIVER, UNITED STATES LAND OFFICE, PHOENIX, ARIZONA.

IN THE MATTER OF THE HOMESTEAD)
ENTRY OF JOHN LORENZO HUBBELL,)
NO. 811 F. C. NO. 157.)
Territory of Arizona,)
: ss,
Maricopa County.)

E. S. Clark, first having been duly sworn, upon his oath deposes and says that he has resided in the Terriotry of Arizona since the year 1882 and that he has known John Lorenzo Hubbell and the land embraced in his homestead entry No. 811, situated at Ganado, Arizona, ever since said date; that when he first visited said tract in 1882 Mr. Hubbell was living there and had made extensive improvements thereon, consisting of a dwelling house, store building, warehouse, stable, wells, enclosures and other improvements of a substantial nature; that at that time Mr. Hubbell was carrying on a trading business with the Navajo Indians at said place and he has carried on said business ever since, to affiant's personal knowledge, and exclusively in his own name and right, excepting during a period of about ten years, from 1885 until about 1895 or 1896, when Mr. C. N. Cotton was associated with him. That during all of said time since 1882 Mr. Hubbell has used and occupied said place and the buildings thereon for himself and his employees exclusively. Affiant has also known and is familiar with the manner in which Mr. Hubbell has dealt with the Indians at his said store and knows that his treatment of them has been fair and liberal and that he is held in high esteem and friendship by all of the Indians with whom he has come in contact and that Mr. Hubbell's reputation all over Arizona as a business man and a citizen is of the very best.

_____

Subscribed in my presence and sworn to before me this ____day of April 1908.

APPENDIX IV

MATHEW HOWELL DEPOSITION 1908
BEFORE THE REGISTER AND RECEIVER, UNITED STATES LAND OFFICE, PHOENIX, ARIZONA.

IN THE MATTER OF THE HOMESTEAD)
ENTRY OF JOHN LORENZO HUBBELL,)
NO. 811 F. C. NO. 157.)
Territory of Arizona,)
) ss.
County of Maricopa.)

Mathew Howell, first having been duly sworn, upon his oath deposes and says that his legal residence is in Long Beach, California, but that he is now and for many years last past has been a great deal in Arizona; that he is well acquainted with John Lorenzo Hubbell, who made homestead entry No. 811, and with the land embraced in his claim; that he first visited said land about ten years ago, although he has known the claimant, John Lorenzo Hubbell, for many years prior to that time; that affiant is acquainted with the improvements upon said land, which consist generally of a dwelling house, store building and warehouse, stable, employees' buildings, blacksmith shop and out-buildings generally; that all of said buildings are substantial and well kept and must have cost a great deal of money; that Mr. Hubbell has established an irrigating system upon said land and has thereby brought under cultivation about one hundred and forty acres of land, upon which he has an orchard and vineyard and raises crops of rye and alfalfa; that said irrigating system consists of a main irrigating ditch about two and one-half miles in length, terminating in a reservoir, through which all of said land is irrigated by means of laterals. This irrigation system has been gradually developed during the last five years.

Affiant is familiar with the business conducted by Mr. Hubbell upon said tract of land and knows that it consists of trade with the Navajo Indians in wool, pelts, silver-ware, blankets, etc., which he has carried on during the period of at least ten years past; that affiant would estimate the volume of business done by Mr. Hubbell during the last year at about eighty thousand dollars; that the warehouse is used only by Mr. Hubbell in conducting said store, and not otherwise, and affiant knows that no one except Mr. Hubbell is interested in or has any control or management over said business; that the blacksmith shop upon said land is a private institution and is used only as a convenience to Mr. Hubbell and his employees in carrying on the store and farm and that no public work is done there; that all of the buidlings upon said tract are used and occupied by Mr. Hubbell and his employees exclusively and that none of said buildings or any part of said land is rented or leased.

Affiant states that he has frequently bought goods from Mr. Hubbell and has paid him for them and no one else, and that he has sold goods to Mr. Hubbell, who has paid for them himself, and that no one else has had any interest or connection with said transactions, or any of them, and affiant knows him to be the sole owner of said store and farm.

Affiant further says that Mr. Hubbell is a man of the highest reputation and character and is known everywhere in the Territory of Arizona for his integrity as a citizen and a business man and that his treatment of the Navajo Indians has always been fair and liberal and that he is highly esteemed by the Indians upon the reservation who know him.

BIBLIOGRAPHIC STATEMENT AND LISTING

THE HUBBELL PAPERS

Primary records were essential to this study. Clearly the most important of these were the Hubbell Papers. Located at the Special Collections of the University of Arizona Library, these consist of 573 boxes of correspondence, business records, and various materials relating to the family's legal, financial and personal affairs. In 1978 Special Collections Librarian Clint Colby organized and cataloged the collection into nine separate groups. The largest of these is Group III: Business Books and Records. Divided into Daily Records, Summary Records, and Indian Records, this Group consists of 209 boxes. Also large and important are Groups I and II, Correspondence and Vendor Files, which respectively occupy 125 and 192 boxes. Less imposing in sheer bulk but equally important are Groups under the headings of Legal, Banking, Personal and Post Office materials, while two small Groups, Sales Books and Advertisements and Catalogs, finish out the Hubbell Papers. It is important to note that this vast collection deals with the entire period of the Hubbell Indian Trading enterprise. It is strong not only for John Lorenzo Hubbell's nineteenth century ventures but for the doings of the entire family until 1967. It is only less useful for the role of C. N. Cotton, John Lorenzo Hubbell's business partner during the 1880s and 1890s.

Although the sheer mass of this collection made examination of each item impossible, every box was considered and more than 100 of them looked at in detail for the purposes of this study. Unfortunately no single box in the entire collection is addressed specifically to the farm and related questions. On the other hand, much farm-related data is intermixed throughout, and a large amount of specific information was gleaned. Correspondence, Business Records, and Legal, Banking and Personal materials all contained numerous references to land, irrigation, crops, work force, machinery, and life on the farm. Farm related materials on livestock and freighting were found throughout the entire collection. Also surprisingly productive were advertisements and catalogs.

The Hubbell Papers are a major historical resource and add significantly to the importance of the Hubbell Trading Post National Historic Site. In addition to their direct utility in a "site specific" study of this type, they have wide potential for studies relating to irrigation, family life, commerce, transportation, Indian relations, and numerous other topics. They will doubtlessly be heavily used over the years.

WORKING PAPERS AT THE HUBBELL TRADING POST NATIONAL HISTORIC SITE

Closely related to the Hubbell Papers is a collection of materials at the Hubbell Trading Post which I have called "Working Papers." They relate to various aspects of the National Park Service's interpretive interests at the Trading Post and come from a wide variety of sources. By all odds, the largest grouping in this collection has been "high-graded" or copied from originals in the Hubbell Papers at the University of Arizona Library. These come from the Correspondence and from the Legal, Financial, and Personal groupings in the Hubbell Papers more than they do from the Business Books and Records. Like the Hubbell Papers themselves, the Working Papers relate to land and farming only indirectly but nevertheless contain much agricultural information.

In addition to copies taken from the Hubbell Papers, the Working Papers include many items drawn from the National Archives and from widely scattered sources. Most of these appear to have been collected by David M. Brugge, one-time Superintendent, and reflect a high degree of intelligence and sophistication in their selection. Also included in the working collections at the Hubbell Trading Post National Historic Site is a first-rate phototraphic collection that was used heavily in this study. Nearly as important are research papers and studies and a small library of published works that relate more or less directly to the Trading Post and the interpretive themes developed there. Not to be ignored as part of the Trading Post's working collections are the books in John Lorenzo Hubbell's personal library. These are housed in the Trading Post and in the Hubbell home itself rather than in the Site Headquarters. They number several hundred volumes and include a large number of agricultural and irrigation books. They are more important as evidence of what the Hubbells were reading and thinking than as unique items, as almost all of them can be found in university libraries throughout the Southwest.

A major part of the Working Papers is devoted to oral histories collected by administrators and interpreters at the Site. Most of these date to the late 1960s and early 1970s and were taken from people no longer living. They include fifty or more statements from Navajo respondents, some of which run to more than one hundred pages but many of which are from twenty-five to fifty typescript pages in length. Also included are oral histories from whites connected with the Trading Post, the most important of which are histories taken from daughter-in-law Dorothy Smith Hubbell in 1969 and 1979 and from granddaughter LaCharles Goodman Eckel in 1979. The primary forces behind the oral histories were David M. Brugge and Roberta Tso, who pursued the project energetically from 1969 to 1972. Also making a significant contribution were Lawrence C.

Kelly, who took long interviews from Mrs. Hubbell and Mrs. Eckel in 1979 and historian Frank McNitt, whose interviews with the Barth brothers of St. Johns and Philip Hubbell of Albuquerque proved to be very useful. Although none of the oral histories focuses directly upon agricultural questions they proved to be extremely important sources of information about the role of the family and Ganado's Navajos.

Related to the oral histories but existing only in my possession are penciled notes of conversations with a dozen or so individuals. The most important of these are notes from a series of interviews with Dorothy Hubbell at Sun City, Arizona in August of 1983 and June of 1984. Nearly as useful were conversations with a number of Navajos at Ganado including Friday Kinlichinee, Howard Gorman, Arthur Hubbard, Chester Hubbard, Roberta Tso and Abraham Lincoln.

NATIONAL ARCHIVES AND LESSER COLLECTIONS

Extensive use was also made of papers at the National Archives and the Denver Records Center and a few lesser collections in Arizona and New Mexico. Public records were particularly important for the chapters dealing with land and water claims, irrigation development, and Indian farming. While not truly extensive, papers generated by the Division of Navajo Irrigation (District 5) in Record Group 75 at the National Archives included several cubic feet of material on the Ganado Irrigation Project and related topics. These included drawings, proposals, reports, and general correspondence and were particularly rich for 1905 to 1930. Under the same headings, the Denver Record Center has a much smaller volume of materials which run more heavily to crop reports and demographic information, providing a dimension not available in the National Archives.

In addition isolated collections provided valuable material on narrow phases of the study. Worthy of special mention among these were the Richard Van Valkenburgh Papers at the Arizona Historical Society Library in Tucson. Similar in usefulness are the Thomas V. Keam Papers in the Indian Rights Association Archives in Philadelphia. Microfilm copies of many Indian Rights Association papers are available at libraries throughout the country although my access to the Keam Papers was at the Philadelphia Archives.

MATERIAL CULTURE RESOURCES

In recent years much has been made of material culture as a source of historical knowledge. The Hubbell farm historical project was tailor-made for the application of a particular material culture resource to historical analysis. The farm's study required that history be applied in what may be termed a microcosm. It also posed certain research and historiographic characteristics which were at the same time problematic and advantageous. The Hubbell Farm was an isolated phenomenon, both distant from any general farming community and beyond the ravages of rapid development. At the time of the study most of the people directly involved were dead. The extensive records kept by the Hubbell family did not single out the farm or focus upon it in any way. Similarly, farming was peripheral to the Park Service interest during the first fifteen years of the Trading Post's life as a Historic Site. All of these features combined to make the physical remnants of the Hubbell farm of particular importance as historical evidence. More than a month was spent at the Site during 1983 and 1984 during which observation was a primary purpose. The irrigation system, including the natural drainage from which it drew, was carefully surveyed. The farm was examined repeatedly and its remains noted and considered in light of the written record. In addition to physical facts, an effort was made to respond to impressions and to make note of those impressions. Neighboring Indian farms at Ganado, Cornfields, and Kinlichee, were gone over with nearly equal care. Maps and aerial photographs as well as the historical photographs mentioned above were considered in their relationship to the physical remains of the buildings, irrigation system, fences and machinery. After intensive use of the material remains of the farm at both the research and the writing stages of the project, it can only be concluded that they are a historical resource of great value.

However, in placing the farm in its larger context both the primary materials described in the foregoing paragraphs and a variety of published sources were useful. In the sections that follow appear lists of books, periodicals, and published public documents that were referred to.

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ABBREVIATIONS

The following abbreviations are used in the footnotes to the text, in the illustration captions, and in the bibliographic entries.

AHS	Arizona Historical Society
BIA	Bureau of Indian Affairs
BYU	Brigham Young University
DRC	Denver Records Center
GPO	Government Printing Office
HTP	Hubbell Trading Post
HPUAL	Hubbell Papers at the University of Arizona Library
IRAA	Indian Rights Association Archives
NA	The National Archives
NMRCA	The New Mexico Records Center and Archives
UA	The University of Arizona
USDA	The United States Department of Agriculture
USGS	The United States Geological Survey
WPHTP	Working Papers at the Hubbell Trading Post National Historic Site