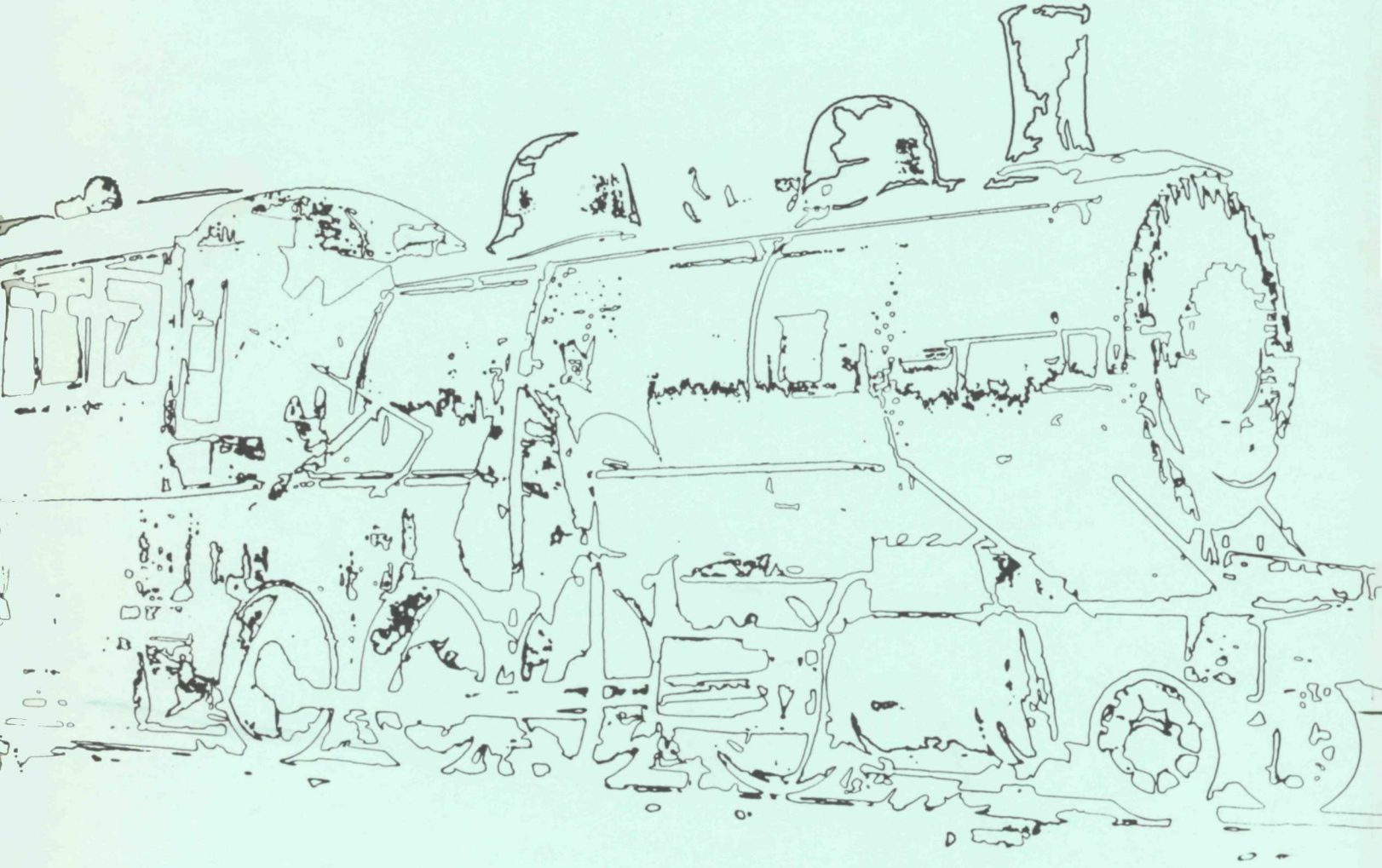
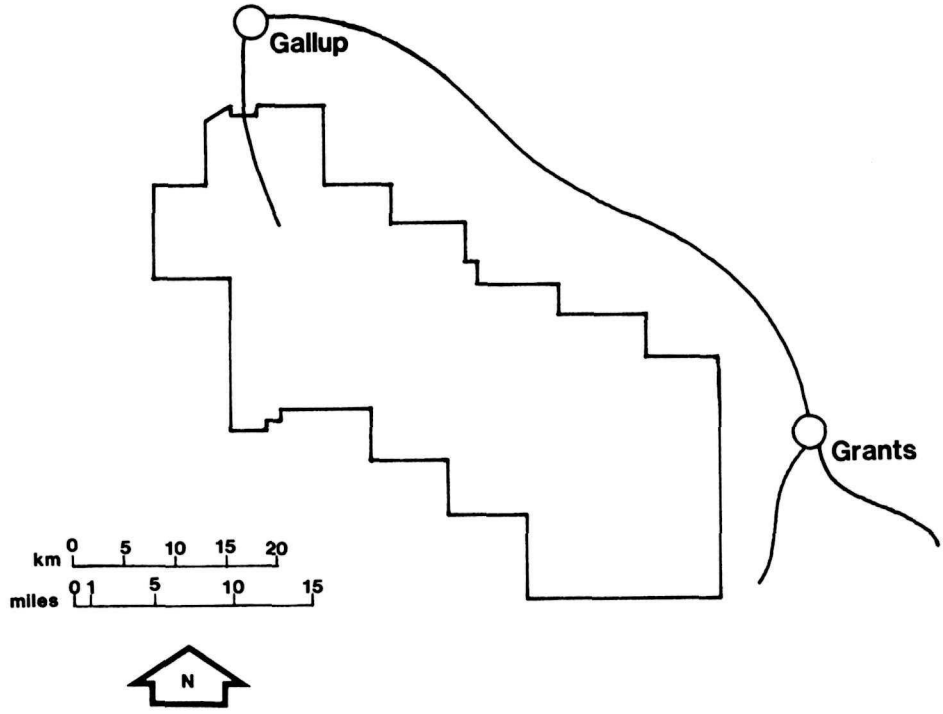
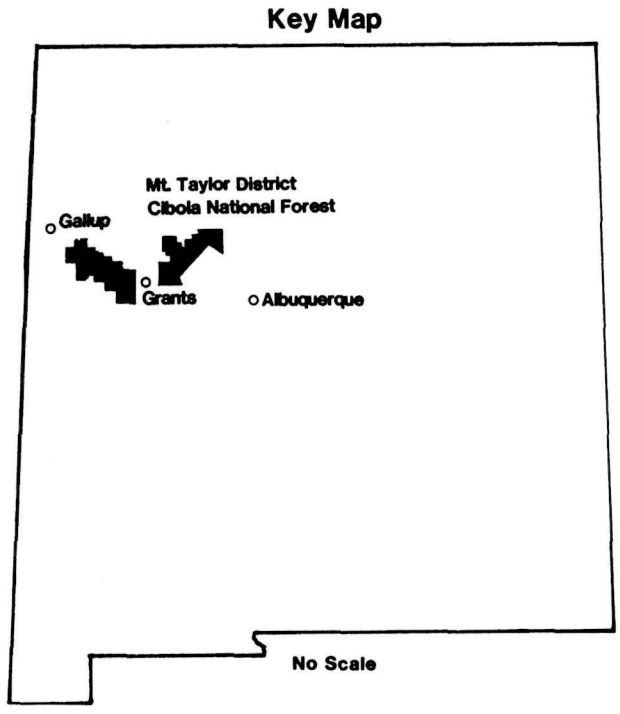
Zuni Mountain Railroads
Cibola National Forest, New Mexico

Vernon J. Glover and Joseph P. Hereford, Jr.







Locational maps showing the Grants - Gallup vicinity and some units of the Cibola National Forest.

ZUNI MOUNTAIN RAILROADS

CIBOLA NATIONAL FOREST, NEW MEXICO

by

Vernon J. Glover

and

Joseph P. Hereford, Jr.

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This book is the second in a series on logging railroads of New Mexico. Other books were entitled Logging Railroads of the Lincoln National Forest, New Mexico, by Vernon J. Glover and Jemez Mountain Railroads, Santa Fe National Forest, New Mexico by Vernon J. Glover. You may order reprints of all three of these books from the Historical Society. Details are on the inside back cover.

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In a work of this nature, local people contribute much to the research effort. Ernie Roberts performed much of the study leading to the maps. Judy Nickell of the Albuquerque Tribune "Fix It" column publicized the need for information and caused a flurry of calls and contributions. John B. Moore, Jr. was a source of photographs as well as Santa Fe Railway material. From Gallup, Ron Welch and August Berger provided essential information on the McGaffey Company. Octavia Fellin of the Gallup Public Library offered numerous photographs and additional information. Ray Thompson, District Ranger for the Cibola National Forest's Mount Taylor Ranger District, contributed a fine collection of photographs and documents.

This work owes much to the editorial assistance of David "A" Gillio of the Southwestern Regional Office, USDA - Forest Service. Dave provided not only the incentive to begin the task in the first place, but also constant and invaluable information about matters of organization, additional sources, and ways to improve the results.

HISTORIC OVERVIEW

Introduction

The time of the steam logging railroad in the Zuni Mountains of western New Mexico was very brief, not much over thirty years. The logging railroads represented a series of attempts to develop a capital-intensive, organized lumber industry in the area. The railroads in the woods carried logs to sawmills, which in turn shipped lumber and wood products to markets as distant as California, Colorado and Missouri. For a variety of reasons, the industry did not develop into a permanent one. Once all the trees were gone, the lumbermen closed their mills, pulled up their railroad tracks, and moved elsewhere.

Among the reasons for the rapid demise of industrialized lumbering were the complexities of land and timber ownership, the excessive distances logs were hauled from the woods to the sawmill, and a lack of well-identified stable markets. During their short life, however, the logging railroads made their mark on the woods in the form of clear-cut areas, remains of roadbeds and bridges, and the sites of several towns.

The purpose of this study, which was requested by the Southwestern Region of the USDA - Forest Service, is to provide a history and description of the logging railroads that ran in the Zuni Mountains. In addition, descriptions of typical artifacts and engineering features of the logging railroads are included where appropriate to aid those responsible for subsequent studies and surveys of the cultural resources in the Cibola National Forest.

The numerous railroad lines built in the mountains have left behind many signs of their existence. In the dry climate of the high country, significant mileages of roadbed have survived well enough to be readily followed on the ground or detected on aerial photographs. In many places, culverts, small bridges and earth fills remain nearly intact. And, in a number of locations, major structures -- rock cuts, large fills, and cribbed log trestles -- remain much as they were when last used. All around these vestiges of the railroad era may be found random artifacts ranging from common track spikes to a car body part or two left following an accident.

Three examples of railroad construction, recently examined by one co-author in company with Forest Service archeologist David Gillio, vividly demonstrate the nature of logging railroad remains to be found in the Zuni Mountains. The Pine Canyon railroad exemplifies upland construction with a minimal roadbed connecting substantial cribbed log bridges or fills across shallow watercourses. The Valle Largo railroad is of heavy construction with rock cuts and earth fills of substantial dimensions. The third line, the McGaffey Company main line in Six Mile Canyon, represents a carefully engineered line laid out by the engineering staff of a main line railroad to the peculiar requirements of the logging industry. Each line is discussed fully in the appropriate section of the report.

Part of the activity of logging railroads in the Zuni Mountains predates the formation of the National Forest. Fortunately, some key business and engineering records have survived, which form the basis for this history. Beyond that, the information has been gathered by several people over a period of years as an effort of historical interest rather than a formal history. Nevertheless, material presented here is believed to be a reasonably comprehensive picture of the business and technical history of the logging railroads.

The history of the lumbering industry in the Zuni Mountains is closely related to that of the main line railroad that runs north of the mountains, originally built as the Atlantic and Pacific Railroad (A&P) and now known as the Atchison, Topeka and Santa Fe Railway (AT&SF). The relationship had several facets. Initially, the A&P was the source of the land on which the pine timber grew. The land was part of a Federal land grant earned when the A&P was initially built. Next, the main line was one of the larger customers for lumber and timber, especially in the form of cross ties and bridge timbers. And last, the main line was an integral part of the transportation system which carried the logs from woods to mill, and the finished products from mill to distant markets.

ATLANTIC & PACIFIC RAILROAD

The possibility of a railroad north of the Zuni

Mountains was first explored in 1851-1853, when Lt. A.W. Whipple ran a survey from Ft. Smith, Arkansas, west to Tehachapi Pass in California. Called the Thirty Fifth Parallel route, the line crossed the Rio Grande in the vicinity of Isleta Pueblo, and followed the Rio San Jose past Laguna and north of Acoma. Crossing the lava beds in the vicinity of Fort Wingate, the line swung northward to avoid the heavily timbered Zuni Mountains, and then continued westward into Arizona (Greever 1954:2,3).

The importance of the Thirty Fifth Parallel route was confirmed when, in 1866, Congress approved an Act chartering the Atlantic and Pacific Railroad. The Act authorized construction of a railroad from Springfield, Missouri, through Albuquerque, and along the Thirty Fifth Parallel to the Colorado River and on to the Pacific by the most practicable route (Greever 1954:20).

Congress encouraged the company with aid in the form of land. The provisions under which this aid was to be granted were complex:

> To aid contruction the United States gave the railroad a right of way one hundred feet wide, with additional space where stations or shops proved necessary, all exempt from taxation in the territories. More important, it authorized the company to earn a land grant, justified as necessary to encourage a route for the mail and the military, of the alternate, odd-numbered sections for twenty miles on either side of the line in the states and forty miles in the territories. Since it had previously disposed of some acreage in these so-called place limits to homesteaders and others, as replacement for acreage so lost it established an additional strip ten miles on either side of the place limits in which the railroad could pick so-called indemnity land from the odd-numbered sections. It would not allow the company to select any mineral property, with the customary exception of coal or iron. It stipulated that the railroad must earn the land by actually building its line, with the right received from three inspecting federal commissioners to additional property with each twenty-five miles of road accepted as finished (Greever 1954:20,21).

Although the provisions of the land grant itself remained in force, the affairs of the Atlantic and Pacific Railroad through the 1870s were very unsettled. By April 1880, when the AT&SF reached Albuquerque, the A&P had been reorganized as the St. Louis and San Francisco Railway (SLSF) or "Frisco" as it was commonly called. The SLSF at this time extended only from St. Louis to Vinita, Indian Territory, a distance of 361 miles. And this effort had earned the railroad 510,497.86 acres of land (Greever 1954:22-28).

In order to build a railroad from Albuquerque to California, the AT&SF and SLSF joined forces in 1880. The A&P was revived under joint ownership, and began to build a railroad west from a junction with the AT&SF at Isleta, New Mexico, during the summer of 1880 (Greever 1954:29). As construction was pushed across New Mexico and on into Arizona during 1880 and 1881, the timber resources of the Zuni Mountains became very important. No other timber was available near the route of the railroad in New Mexico, and it became the source of cross ties for the A&P in that area. J.M. Latta had the contract to provide ties for the A&P. Latta subcontracted an order for a half-million ties, enough for 200 miles of single track, to John W. Young in late 1880 with delivery required by September 1881. Young established a tie-cutting camp at Bacon Springs near the continental divide (Peterson 1973:131). Bacon Springs was close to the site along the track called Cranes's Station until March 1882, when it was renamed Coolidge, after T. Jefferson Coolidge, a director of the company. The railroad station name was changed to Dewey in 1898 and then to Guam in 1900 (Figure 1) (Telling 1954:214-218).

During the 1880s, three additional lumbering enterprises operated in the mountains south of Coolidge. The first was owned by James and Gregory Page, who set up a sawmill and lumber yard at Coolidge. Later, in 1889, Henry Hart and W.S. Bliss operated mills south of Coolidge. And soon afterward, Bliss joined forces with J.M. Dennis in another lumbering operation nearby (Telling 1954:214-215).

By this time, the A&P had extended its service into California, and had helped open up a very active lumber industry around Flagstaff, Arizona, as well

(Bryant 1974:93-94). The stage was set for the expansion of lumbering in the Zuni Mountains.

Figure 1. The Santa Fe Railway station at Guam, New Mexico. Originally called Crane's Station, the site was named Coolidge in 1882, Dewey in 1898, and finally Guam in 1900. The station was the shipping point for railroad timber during the construction period of the 1880s. Cibola National Forest collection.

THE LOGGING COMPANIES

Mitchell Brothers

The A&P land grant was valuable to the railroad only if it could be sold outright for much needed cash or somehow transformed into a source of revenue. In spite of the enormously cumbersome checkerboard arrangement in which railroad sections alternated with federal or private sections (one section being a surveyed square mile of 640 acres), a number of large areas of railroad land had been sold. Timbered sections had been sold to several lumbermen at Flagstaff and Williams, Arizona, and over a million acres of grazing land between Flagstaff and Holbrook went to the Aztec Land and Cattle Company, the famous Hashknife outfit (Greever 1954:46-52).

In contrast to the activity in Arizona land, only one large sale of forest land took place in New Mexico. On June 30, 1890, some 314,668.37 acres of land and the timber on it were sold to William W. and Austin W. Mitchell of Cadillac, Michigan. The property was mortgaged at the time for $478,002.48, secured by notes in varying amounts and maturing at different dates. The Mitchell Brothers, as they were sometimes styled, also purchased 2,720.44 acres of homestead and other lands in the same district (McKinley Land and Lumber Co. n.d.:8).

William W. Mitchell was the most active member in the firm of Mitchell Brothers. Born in Hillsdale, Michigan, in 1854, he had entered the lumber trade with an uncle as a young man. In 1877 he formed a partnership with J. W. Cobbs, with whom he purchased timberlands in the vicinity of Cadillac, Michigan. The partnership owned and operated a number of sawmills in connection with the timber. By 1892, the partnership, known as Cobbs & Mitchell, was operating a mill at Cadillac with a capacity of eighty thousand board feet a day, and about a five years' supply of pine and hardwood timber. W. W. Mitchell was also associated with his brother, Austin W. Mitchell, in other enterprises, such as the Cadillac Handle Factory (Hotchkiss 1898:342-345).

At the time of the New Mexico timberland purchase, the Mitchell brothers were mature lumbermen, experienced at running sawmills and the narrow gauge railroads used to haul logs to the mills. Records indicate that the brothers had operated several narrow gauge railroads in connection with their various enterprises (Koch 1971:383-463).

During January 1891, William and Austin Mitchell both visited Albuquerque. At that time they made it clear that they intended to erect sawmills on their property and to enter into the manufacture of lumber on a large scale (Albuquerque Journal 1941 [January 27] "Fifty Years Ago"). The Mitchells inspected their holdings during May for the purpose of selecting sawmill and planing mill sites. It was at this time that the first mention was made of a railroad "to connect the mills with the Atlantic & Pacific Railroad" (Albuquerque Journal 1941 [May 28] "Fifty Years Ago"). Tangible steps toward building a railroad occurred later when, on August 29, 1891, the Zuni Mountain Railway (ZMRy) Company was incorporated in the New Mexico Territory, and during December 1891, when an agreement was made with the A&P regarding construction of the Zuni Mountain Railway (New Mexico Corporation Commission n.d.:125; Albuquerque Journal 1941 [January 25] "Fifty Years Ago"). The agreement evidently provided that the A&P would construct the ZMRy in return for an unknown arrangement of payments.

Work began on the new sawmill during February 1892, and shortly thereafter H.O. Bursum loaded his grading outfit on the cars at Albuquerque for the trip west to the work site. Work on the new railroad began immediately upon his arrival. By this time, the mill site on the A&P was known as Mitchell. It was located 112.5 miles west of the beginning of the A&P track at Isleta. A well was drilled at Mitchell, and work was begun on a large dam and reservoir about seven miles to the south in Cottonwood Canyon (Telling 1954:219; Albuquerque Morning Democrat 1892 [February 26]).

The A&P was more than an interested bystander in the Mitchell Brothers project. The main line railroad assumed a number of roles in the enterprise. S.M. Rowe, one of A&P's civil engineers, laid out and surveyed the route of the ZMRy (Figure 2). A&P crews evidently took part in the construction of the ZMRy, for which the A&P also provided the rails. In return for providing 550 tons of second-hand steel rails, the A&P took a mortgage on the entire railroad for $19,200 (Zuni Mountain Railway 1892; Engineering News 1891 [May 9]; Albuquerque Journal 1941 [January 25] "Fifty

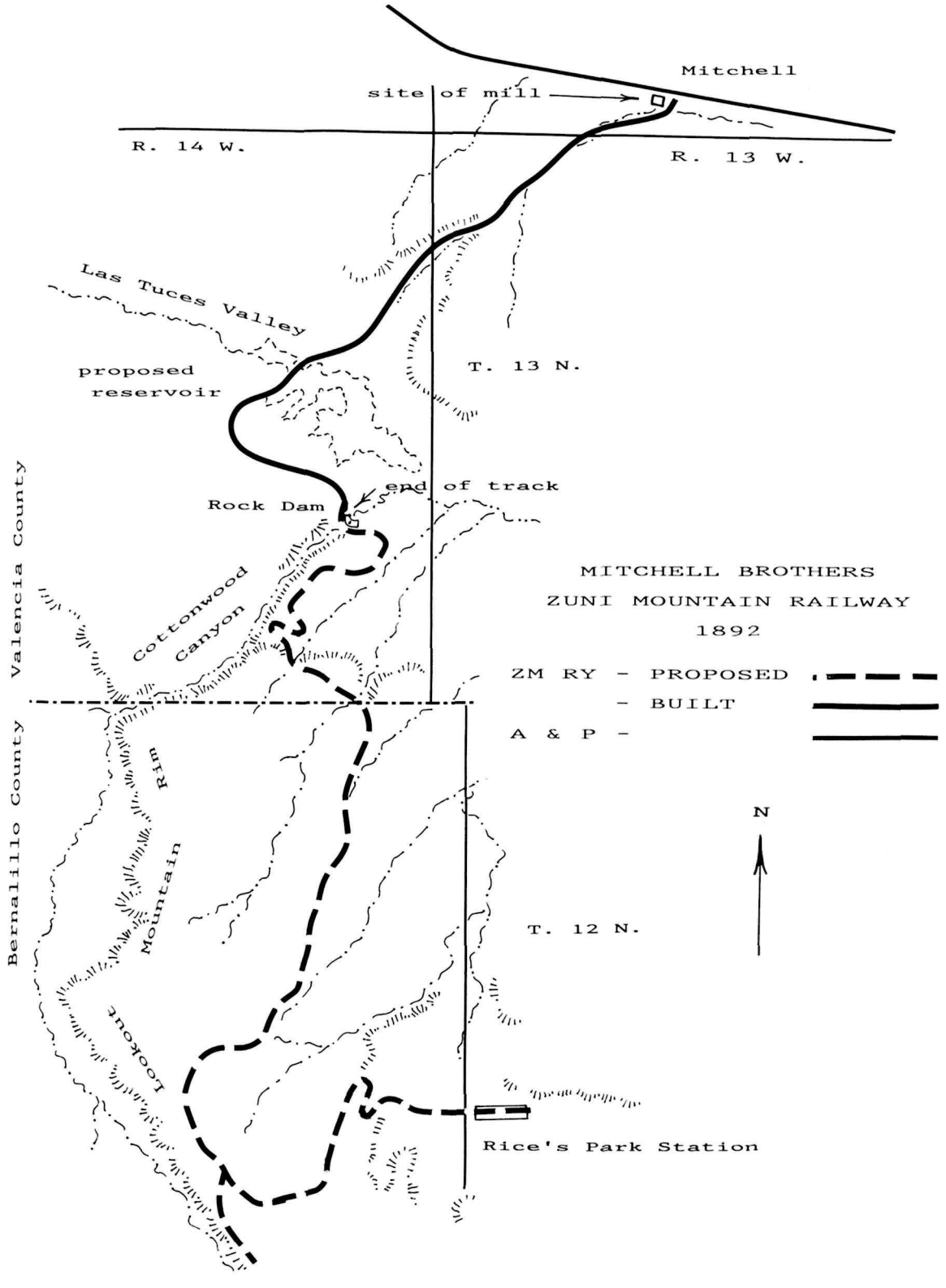


Figure 2. Map of the route of the Zuni Mountain Railway as laid out and surveyed by S.M. Rowe.

Years Ago"). The A&P was also reported to have made some freight rate concessions, and to have agreed to purchase ties and timbers from the Mitchell Brothers (Telling 1954:219).

By the end of May, most of the construction work was well along. Sawmill No. 1 was newly completed and ready to go to work. The roadbed for the 36-inch gauge railroad extended to the site of the immense dam at Cottonwood Canyon, and a start had been made on the tracklaying. A narrow-gauge locomotive arrived at Mitchell on May 21, and was placed on its own rails the following day (Albuquerque Daily Citizen 1892 [May 23 and May 24]). The locomotive was apparently a Shay-patent gear-drive type built at Lima, Ohio. It went right to work, and soon track was being laid at the rate of one-half mile per day (Albuquerque Daily Citizen 1892 [May 24 and June 21]).

The sawmill began turning out lumber during the last week in June. The reservoir at Cottonwood Canyon was completed about the same time and began feeding water to the mill boiler through a pipeline paralleling the railroad. The locomotive began its regular duties of hauling logs, and T.J. Fitzgerald from Michigan was appointed general manager of the whole operation (Albuquerque Daily Citizen 1892 [June 26 and July 1]). The further development of the lumbering operation continued. Included were plans to add a second section to the sawmill, to add a planing mill and a sash-and-door factory, and to extend the railroad from the reservoir to Rice Park (Albuquerque Daily Citizen 1892 [May 24, June 21 and July 1]). It looked as if the Mitchell Brothers were in New Mexico to stay. The citizens of Mitchell even petitioned the Valencia County Board of Commissioners to establish a new voting precinct in their budding community (Albuquerque Daily Citizen 1892 [July 16]).

The logging in the woods had barely begun to run smoothly when the only locomotive the company owned was destroyed in a wreck in the woods. The Albuquerque paper told the story in considerable detail:

> THE MITCHELL ACCIDENT -- Dr. Wroth who was called to Mitchell on professional business returned home last night and gives an account of an accident which occurred at the Mitchell Brothers logging camp, seven miles from the town, on the Zuni Mountain railway, from the results of which the mill will be forced to suspend operations until a new engine (now ordered) can arrive.... The accident happened on a temporary spur, at a point where a very steep grade, a sharp curve and a wet track combined to cause the derailment of the locomotive, which was pulling down from above three cars loaded with logs. The engineer, R.W. Ryan, a corpulent man, was seriously hurt by being thrown under the locomotive, which is a complete wreck. The three cars of logs were thrown on top of the engine and tender. The fireman was thrown under a part of the tender and received some bruises. The locomotive, the only one of its kind on the road at present, cannot be rebuilt or repaired in New Mexico. A. C. Corneil, timber superintendent, who was on the engine at the time the accident occurred, had a narrow escape, being thrown clear from the wreck, receiving only a badly peeled nose. The doctor dressed the wounds of the unfortunates and left them in a fair way to recover" (Albuquerque Daily Citizen 1892 [August 10]).

It was not until August 18, 1892, that another narrow-gauge locomotive arrived at Mitchell on a broad gauge flatcar. This one was definitely a Shay geared type of approximately 28 tons weight. It had been built at Lima, Ohio, in May 1888 for another Michigan lumber firm (Koch 1971:390; Albuquerque Daily Citizen 1892 [August 19]).

The Mitchell Brothers had just gotten everything running smoothly once more, when, in mid-September 1892, they abruptly shut down and returned to Michigan. This move seemed to catch everyone by surprise, and many in the district expected operations to resume the next spring. But they never did. At this late date, it is very difficult to determine the precise reasons for the shut-down. Accounts published a few years after the shut-down suggest that the reasons were a combination of the failing national economy during 1893, and the inability of the A&P, itself near bankruptcy, to provide the lower freight rates promised to the lumber markets. It is certainly possible, too, that competition from the Arizona pine region was a factor (Telling 1954:221).

The very few surviving business records strongly suggest that the brothers made an orderly withdrawal from their New Mexico enterprise. The big $478,000 mortgage held by the A&P was released by them on February 28, 1893, upon an unknown arrangement. And some 22,565.88 acres of land was conveyed back to the A&P, as well (McKinley Land and Lumber Company n.d.:9; Mitchell Brothers 1902).

From time to time there was an expression of hope, but Mitchell remained a ghost town. The facilities were removed, one piece at a time. Some of the mill machinery may have gone to J. M. Dennis, who was moving his logging operation from a point south of Coolidge, New Mexico, to Williams, Arizona. (Fuchs 1955:62). Of the railroad, no record remains. The rails no doubt were repossessed by the A&P, and one of the locomotives turned up years later in old Mexico (Koch 1971:390). Nevertheless, Mitchell Brothers retained a clear title to an impressive empire of 292,625.63 acres of well-timbered land, which was to become the foundation of another lumbering enterprise.

AMERICAN LUMBER COMPANY

After the Mitchell Brothers debacle, many years passed before railroad logging came again to the Zuni Mountains. The key factor remained the Atlantic and Pacific Railroad, which became increasingly antiquated during the 1890s. Following a receivership instituted in 1893, the railroad was reorganized as the Santa Fe Pacific Railroad (SFP) in 1895. Its long single track from Isleta Junction below Albuquerque to California was destined to assume a key role in transcontinental railroading (Bryant 1974:170).

In 1897, the AT&SF, parent company of the SFP, concluded a trade with the Southern Pacific in which the Needles to Mojave, California, line was acquired by the AT&SF. This completed their rail line into California and permitted the long needed modernization of the SFP to proceed. Work began immediately, to rebuild the roadbed, track and rolling stock (Bryant 1974:170-171). During 1903, the railroad operations of the SFP were consolidated with those of the AT&SF. A revitalized main line connection, especially one extending from Chicago to Los Angeles, was certainly an important element in the rebirth of the lumber business in the Zuni Mountains (Greever 1954:55).

It was another group of midwestern businessmen who brought large scale lumbering to the Zuni Mountains for a second time. The preparatory work of investigation and making the necessary contacts must have occurred during 1901. The first tangible sign of activity was the incorporation of the American Lumber Company on December 20, 1901, under the laws of New Jersey. Shortly thereafter, on December 30, the American Lumber Company purchased their remaining New Mexico timber lands from Austin W. Mitchell and William W. Mitchell. The total area was something over 292,000 acres. The relationship to the larger purchase was as follows:

Original Mitchell purchase from A&P	314,668.37 acres
Other purchases	2,720.44
Total	317,388.81
Reconveyed to A&P	(25,565.88)
Conveyed to Bluewater Land & Improvement Co.	(2,197.30)
Net sale to American Lumber Company	292,625.63 acres

The price recorded for the sale was $1,100,000 and at least two mortgages were held on the property by the Mitchells (McKinley Land and Lumber Company n.d.; Mitchell Brothers 1902).

With the timber purchase firmly settled, the organizers of the American Lumber Company began to put together the rest of the business. There was a myriad of details to attend to. A good mill site was essential, one convenient to the AT&SF main line and with a good water supply. A location in or near a town with a supply of labor would be very helpful. There must have been a lengthy negotiation with the AT&SF concerning freight rates for both logs and finished lumber. And, last, there were the arrangements for constructing the logging railroad and woods camps for the loggers. The year following the land purchase must have been a very busy time. By early 1903 the results were becoming apparent.

The selection of a sawmill site was the first order of business. The choice was a 110 acre site in northwest Albuquerque, evidently donated to the company (New Mexican 1903 [January 13]). Albuquerque, as a mill site, offered a number of advantages. The water supply was abundant and of good quality, a necessity for the steam boilers which powered the mill machinery.

Albuquerque also offered a good supply of labor, along with the necessary housing and amenities of civilization. In contrast, the woods crews in the Zuni Mountains would be living in a very remote area under extremely primitive and lawless conditions. And, too, Albuquerque offered excellent transportation for finished lumber products with main line railroads extending north and east, west, and south.

Construction of the sawmill must have begun early in 1903, for it was reported as nearly complete in July of that year. The mill complex was an imposing collection of sturdy buildings (Figure 3). The central structure was the sawmill, a wooden building 208 feet long and 66 feet wide. It was three stories in height and very heavily built with 14 inch square hard pine timbers supporting the first level and 12 inch square timbers for the second and third levels. Power for the saws was transmitted by shafts and wide leather belts. The main drive shaft was 6 7/8 inches in diameter, and it was rotated by a 48-inch wide double leather belt from the adjacent power house. The belt was 190 feet long (New Mexican 1903 [July 11]).

The powerhouse itself was a brick building, 93 feet by 50 feet, with walls 21 feet high and a galvanized iron roof. Steam was generated in four boilers, each 18 feet in diameter and 72 feet long, with an output of 225 horsepower. The main engine

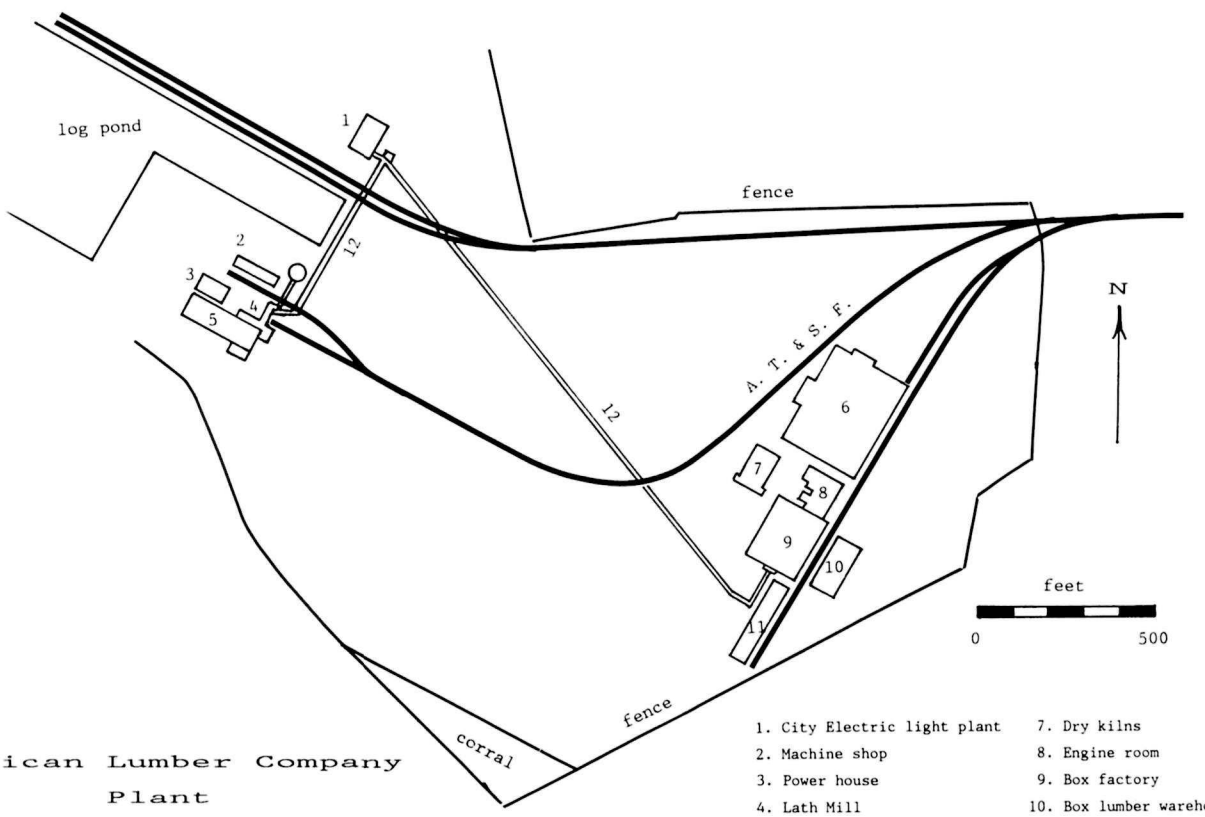


Figure 3. Plan of the American Lumber Company plant in Albuquerque, New Mexico. Note the sawdust conveyor system feeding the City Electric light plant.

was of the Corliss reciprocating pattern with a heavy 20 foot diameter flywheel to even out the power flow (New Mexican 1903 [July 11]).

A refuse or sawdust burner 32 feet in diameter and fully 100 feet high was the last major structure in the complex, although plans were prepared as well for a planing mill, box factory, dry shed, and drying kilns. Near the buildings were open spaces for drying and storing lumber and there was a large timber dock, 100 feet by 80 feet (Figure 4) (New Mexican 1903 [July 11]). Harry Badstubner of Texarkana, Arkansas, was the designer and builder of the sawmill (Albuquerque Journal-Democrat 1903 [October 26]).

The AT&SF became an integral part of the business of the American Lumber Company. The logs would be loaded on the lumber company railroad in the woods and turned over to the AT&SF in trainload quantities for movement to Albuquerque. To bring the logs to the mill and to take out loads of lumber, the AT&SF built a mile-long spur line just north of the still small town of Albuquerque. The AT&SF yard engine would add the mill switching to its regular daily routine. Returning empty log

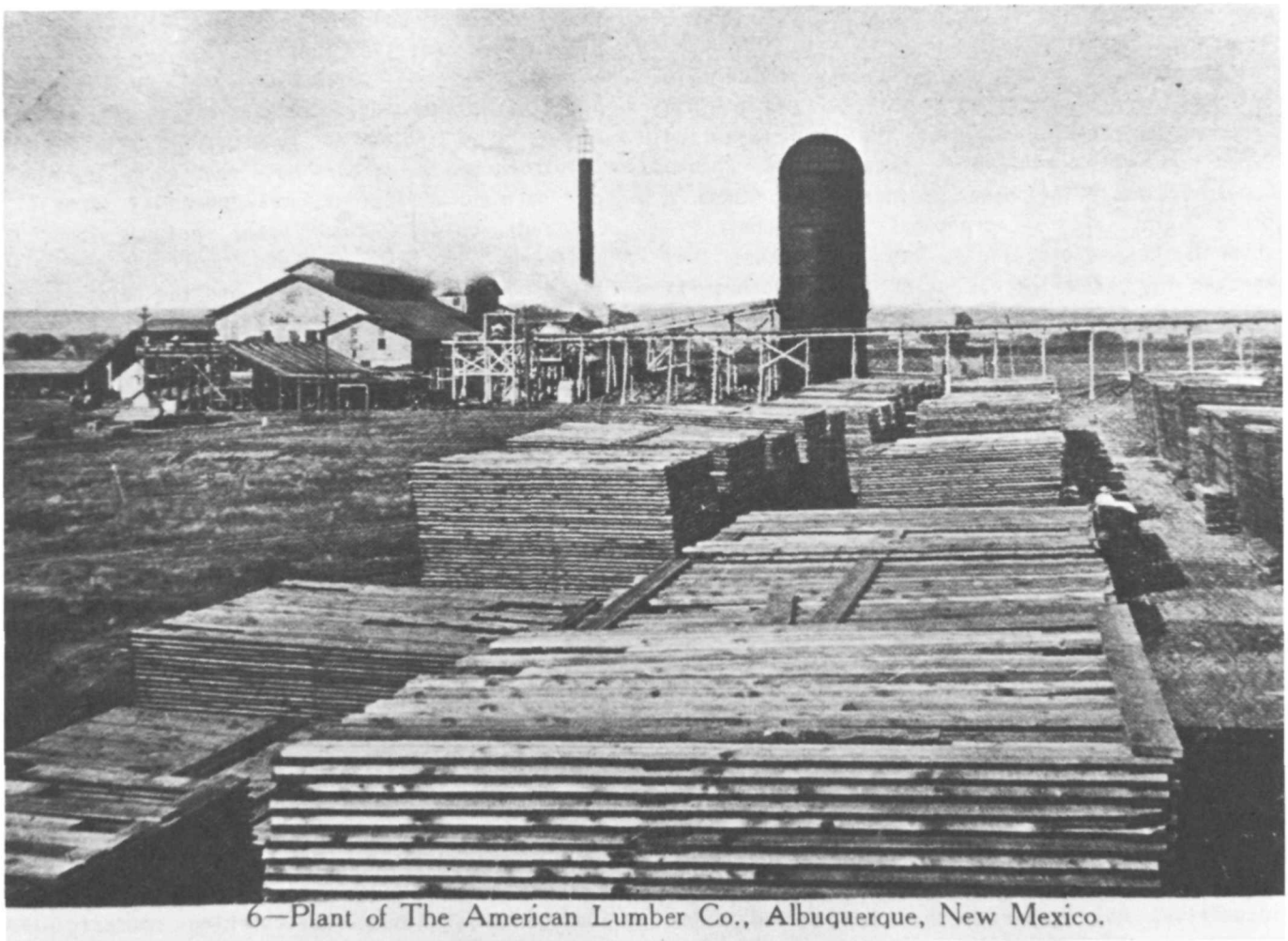


Figure 4. Sawmill, sawdust burner, and lumber storage yard of the American Lumber Company at Albuquerque, New Mexico, in the early years, circa 1903 - 1904. V. J. Glover collection.

cars to the woods and providing empties for lumber shipments were important AT&SF responsibilities (Atchison, Topeka and Santa Fe Railway 1903a, 1903b).

A long way west of Albuquerque, 125.2 rail miles to be precise, the American Lumber Company was building the other half of its lumber business in the Zuni Mountains (Figure 5). From a junction on the SFP main line named Thoreau, the company was pushing south a new standard gauge logging railroad which had assumed the old name of the Zuni Mountain Railway (ZM). Work on this line must have begun during the late spring or early summer of 1903, after the snow melted in the mountain valleys (Albuquerque Journal-Democrat 1903 [July 23]; New Mexican 1903 [May 27]).

The junction at Thoreau was precisely at the site of the short-lived town of Mitchell which had returned to life. In 1896, the Hyde Exploring Expedition was organized to uncover the Pueblo Bonito ruins. The Hyde brothers established a store with several warehouses at Mitchell to support their explorations. In the process they renamed the place Thoreau after the Massachusetts philosopher (Telling 1954:221-222). The local pronunciation of the name, however, is more like "Th-rew," suggesting a possibly different source.

The railroad was built southwest from Thoreau into the Las Tuces Valley and beyond into Cottonwood Canyon. The initial length of the railroad was approximately 14 miles, with several miles of spur lines feeding the main line. Total trackage was about 21 miles (New Mexican 1903 [May 27]; Governor of New Mexico 1903). It appears that completion of the railroad took up most of 1903 (Albuquerque Journal-Democrat 1903 [October 7]).

Rolling stock for the Zuni Montain Railway was not neglected. Two locomotives were purchased, presumably from used railroad equipment dealers. Locomotive No. 2 was the first on the line. (The ZM had an unusual numbering system in which only the even numerals were used, so No. 2 was the first locomotive, No. 4 the second, and so on. See Appendix A for detailed locomotive rosters and descriptions.) No. 2 was a small locomotive, about which little is known. It spent some time in the Albuquerque shops during July 1903 being repaired and then was painted before it was shipped west (Albuquerque Journal-Democrat 1903 [July 9, July 23]). One hundred wooden log cars were built for the Zuni Mountain Railway at the American Car Company, Mt. Vernon, Illinois. These cars were equipped for main line operation over the AT&SF between Thoreau and Albuquerque (Albuquerque Journal-Democrat 1903 [September 13]). The second locomotive was ZM No. 4 (Figure 6). It was a small and ancient 4-6-0 or ten-wheeler type. Two log loaders were purchased during 1903. They were the steam slide-back type. Essentially they were simply a light steam donkey engine on a sturdy wooden sled with a rigid boom at one end. A wooden plank housing covered the boiler and donkey engine. The loader was slid along from car to car using a cable and winch (Figure 7) (Albuquerque Journal-Democrat 1903 [October 27]).

The link between the woods and the sawmill was the AT&SF. The trains of loaded log cars and the returning empty log cars were handled by the AT&SF, not as regular freight, but under the terms of a contract between the lumber company and the railroad. Specific terms and conditions of the log train movements were defined, and the rates charged the lumber company were set in the contract (Figure 8) (Atchison, Topeka and Santa Fe Railway 1903b).

The new sawmill was a big boost to Albuquerque's economy, and interest among its citizens ran high. To show off its new plant, the American Lumber Company hosted a reception and dance on the night of July 23, 1903. The festivities took place on the second floor of the mill, where the First Regiment Band provided music and refreshments were served (Albuquerque Journal-Democrat 1903 [July 24]).

By October, all was in readiness. The company had 1500 men at work and timber was piling up in the mountains. The first train of logs was loaded up and sent down the track to the junction. It arrived in Albuquerque on October 25, 1903, and was immediately switched to the sawmill. Sawing began the next day (Albuquerque Journal-Democrat 1903 [October 7]; Albuquerque Morning Journal, 1923 [October 26]).

It was obvious at this point that the American Lumber Company was no transitory scheme. Now two

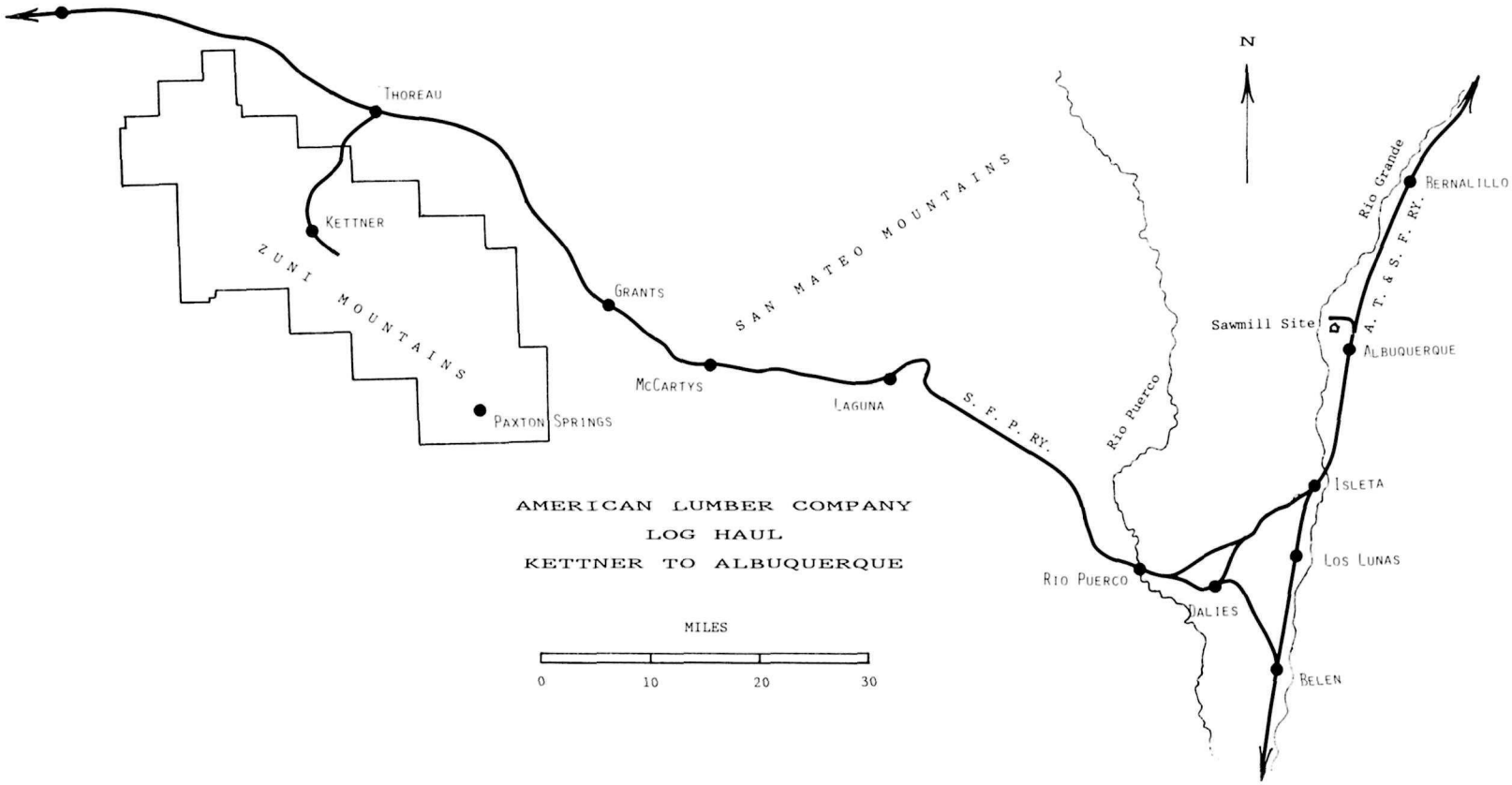


Figure 5. From a junction on the SFP main line named Thoreau, the American Lumber Company built to the south. This standard guage logging railroad assumed the old name of the Zuni Mountain Railway. Work on this line began in 1903 and, when completed, allowed for economical shipment of logs from the Zuni Mountain area to Albuquerque over the SFP. The irregular outline which encloses both Kettner and Paxton Springs is the approximate boundary of current administration by the USDA - Forest Service (Cibola National Forest).

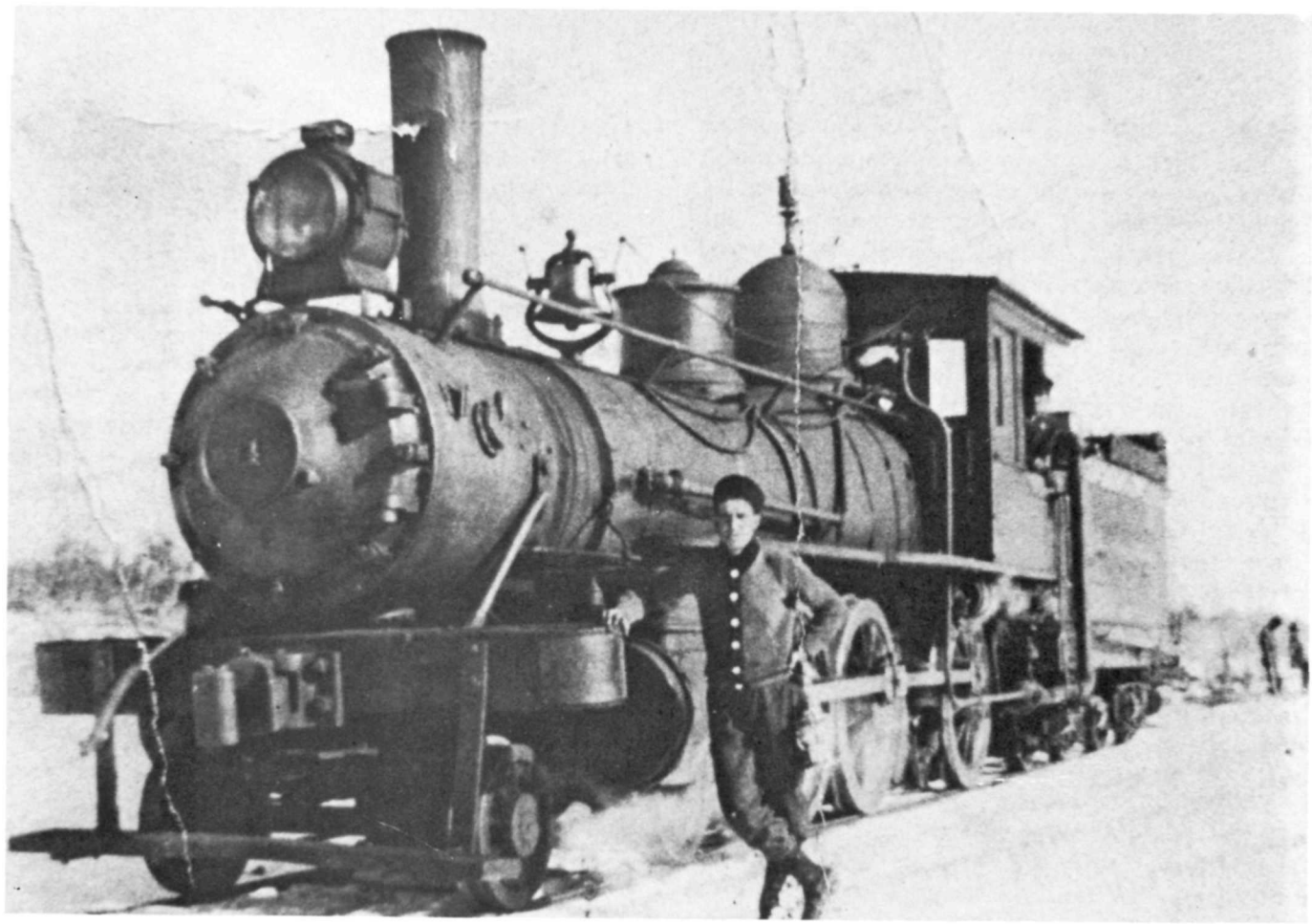


Figure 6. Seen here in the snow at Kettner in 1908, locomotive Number 4 was already an obsolete type when it was purchased by the Zuni Mountain Railway in 1903. Nevertheless, it was used for many years in the mountains, mostly on maintenance and track laying duties. John Bigley collection.

million dollars had been invested in real estate and facilities, and construction had been pushed through rapidly. A solid collection of lumbermen and businessmen was in charge:

Officers:
C. A. Ward, Chicago, President
T. E. Terrepin, Chicago, Vice President
A. M. Trumbull, Grand Rapids, Secretary and Treasurer

Executive Committee:
C. A. Ward, Chicago
D. W. C. Merriam, Cleveland (later in Albuquerque)
D. F. Allen, Cleveland
W. H. Sawyer, Hillsdale, Michigan
Ira B. Bennett, Detroit (later in Albuquerque)

Operating Personnel:
Ira B. Bennett, Albuquerque, General Manager
F. W. Decker, Detroit, Sales Manager
T. W. Tiest, Chief Bookkeeper
G. A. Welch, Bay City, Michigan, Superintendent of Sawmills
J. E. Brayton, Bay City, Chief Engineer
Robert Nichols, Rice Lake, Wisconsin, Superintendent of Lumber Yard
George K. Davis, Grand Rapids, Superintendent of Woods and Railroad

Figure 7. One of the American Lumber Company's steam loaders at work. The skids on which the loader rides and the construction of the stiff-leg boom can be clearly seen. The log cars are the wooden type owned by the Zuni Mountain Railway. Note that the chains used to secure the logs to the cars are wrapped around the first two layers of logs, then tightened by the upper two or three logs laid on top. Cibola National Forest collection.

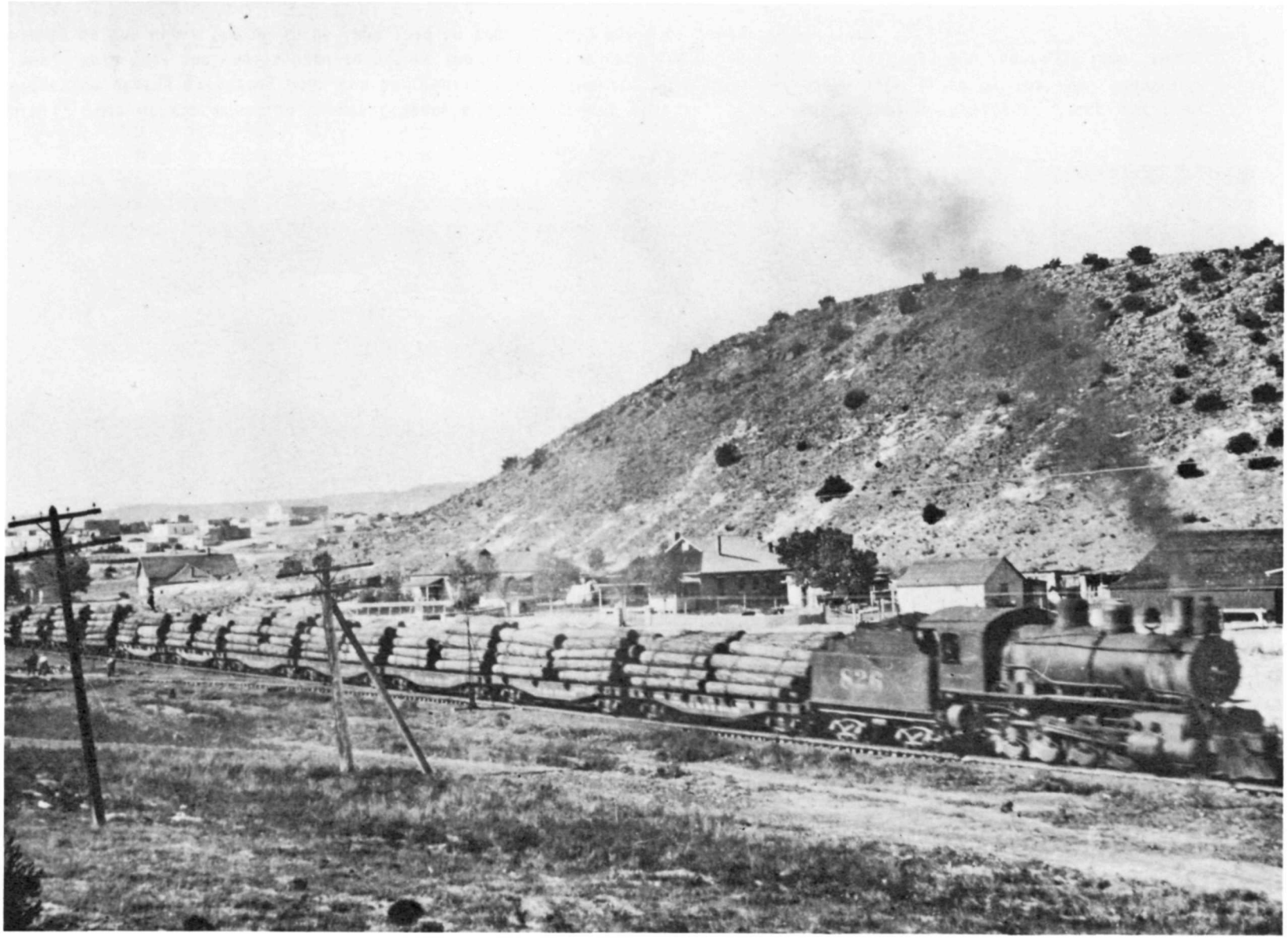


Figure 8. Santa Fe Railway locomotive Number 826 hauling a string of log cars through Laguna, New Mexico, in 1912. By this time, the train included a substantial number of Santa Fe Railway steel log cars, although several of the older Zuni Mountain Railway wooden log cars may be seen back in the train. John B. Moore, Jr., collection.

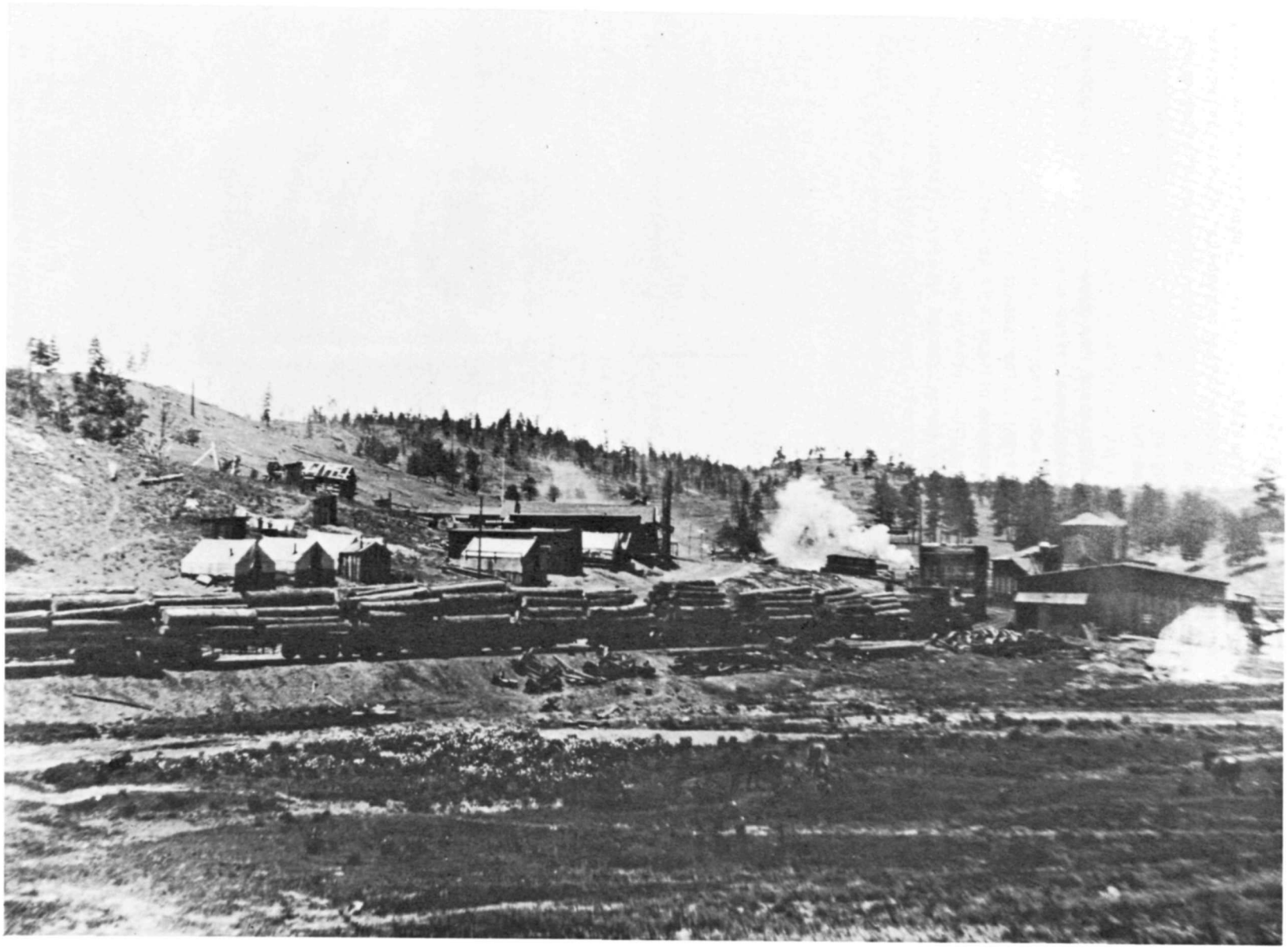


Figure 9. An overall view of the main logging camp at Kettner. This was the area devoted to railroad and mechanical matters, with workshops and maintenance facilities of all kinds. Cibola National Forest collection.

During 1904, the company continued to expand its operations. At Albuquerque, the mill complex grew to include a planing mill, which produced mouldings and fed a box factory and a sash-and-door factory. Additional rail sidings were built to ship the new products to market (Governor of New Mexico 1906; Atchison, Topeka and Santa Fe Railway 1904).

In the woods, a town was growing at the logging camp at Kettner (Figure 9). As the population grew, services and facilities grew apace. A post office opened for business at Kettner on January 23, 1904, with Stanleigh A. Horabin as postmaster (Dike 1958). Horabin evidently ran the commissary or company store as well. He was in partnership with A. B. McGaffey, who would later enter the logging business in the Zuni Mountains (Tietjen 1969:91).

A note about the name of Kettner is appropriate. It was named after a homesteader in the district, but was frequently misspelled "Ketner" (Tietjen 1969:89). The surviving American Lumber Company documents all spell it Kettner.

At an early period in their timber cutting, the

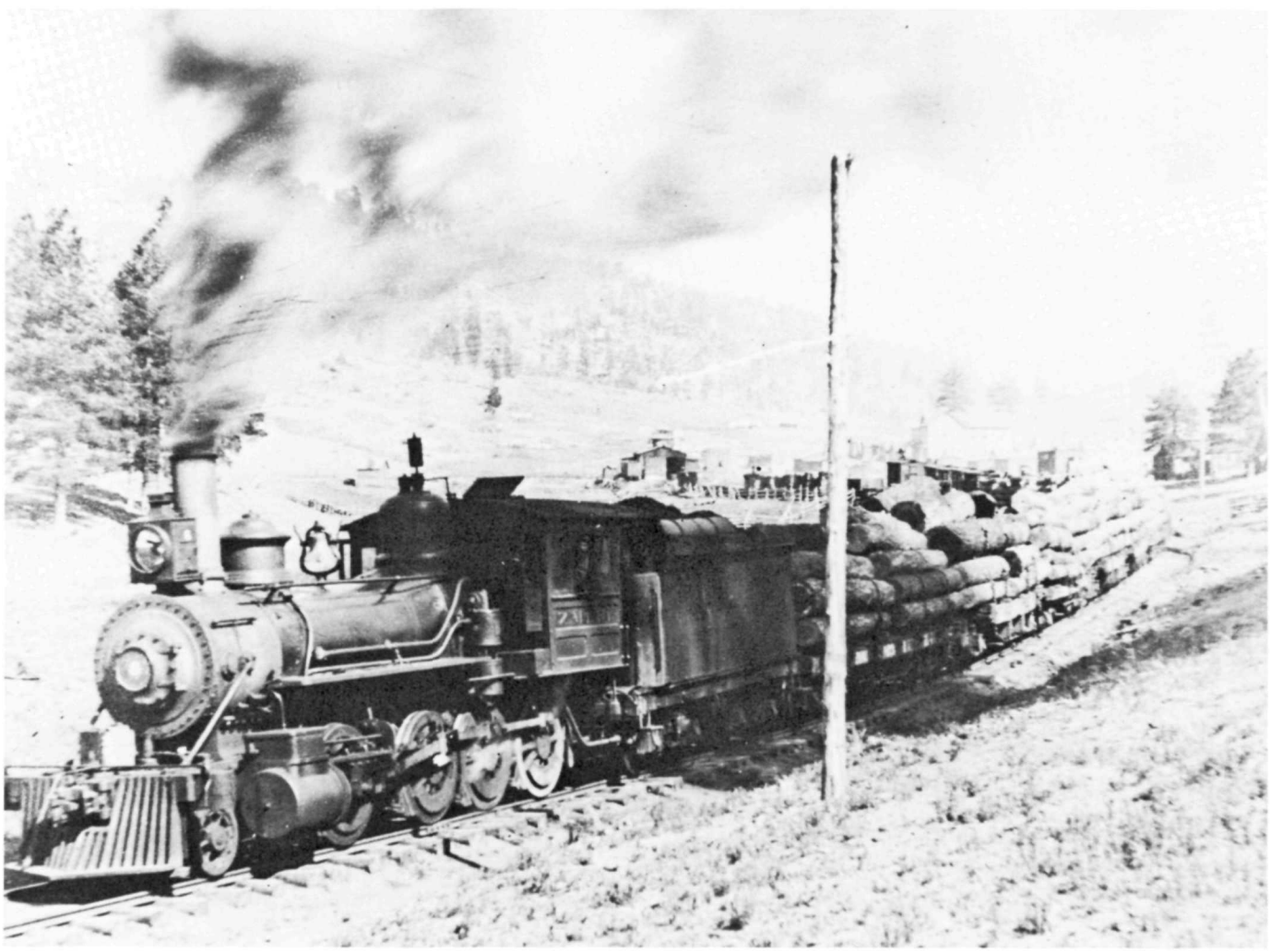


Figure 10. Zuni Mountain Railway Number 6 leaving Kettner for Thoreau with a train of logs. An obsolete freight locomotive purchased from a Chicago dealer, Number 6 worked out its last years on this duty. Cibola National Forest collection.

American Lumber Company found it difficult to limit cutting to their odd-numbered sections. Survey lines were not always clearly marked and there was a temptation to continue right across the line when logging a good stand of pine. Then, too, more logs could be carried by a given length of railroad if the timber on the even-numbered sections could be harvested. Accordingly, in November and December 1904, the company entered into several contracts with the Territory of New Mexico, paying $2.50 per acre for the right to cut trees on the even-numbered sections (Albuquerque Morning Journal 1923 [August 11]). These contracts covered about 34,000 acres or over 53 sections (Governor of New Mexico 1906).

Because of the remote location of the logging activity and the dearth of business records, it is very difficult to determine when a particular logging railroad line was built. Fortunately, periodic reports of the company's overall activities appeared from time to time, which reported changes from the preceding period. One such report in August 1905 indicates that the railroad operations had grown by one locomotive and 30 log cars, for a total of 3 locomotives and 130 log cars (Sunshine Magazine 1905:8).

The new locomotive obtained during the summer of 1905 was another old-timer, a 2-8-0 type, purchased from an equipment dealer in Chicago. As ZM Number 6, it assumed the role of "main line" lokey, hauling trains of logs from Kettner to Thoreau and returning with the empties (Figure 10). This regular run also included a caboose, used for carrying passengers and supplies as well as the train crew (Kennedy 1970:19; Sunshine Magazine 1905:8).

The woods railroads must have been built into rougher country, for early in 1906 the company ordered a new 50-ton Climax-type gear drive locomotive from the Climax Manufacturing Company, Corry, Pennsylvania (Railway Age 1906). This locomotive became ZM Number 8 (Figure 11).

The annual report of the Governor of New Mexico for the year ending June 30, 1906, included a detailed report from the American Lumber Company, which follows in its entirety:

We own in fee approximately 300,000 acres of land in Valencia and McKinley counties. We have also purchased from the Territory of New Mexico the standing timber on some 34,000 acres of Territorial lands, the same being even-numbered sections lying between the sections which we own in fee.

We have built and are operating, approximately, 35 miles of logging railroad into this tract, the road branching from the Atchison, Topeka and Santa Fe Railway right of way at Thoreau. The equipment of this railway consists of 4 locomotives and 200 logging cars.

During the years 1904 and 1905 we cut approximately 35,000,000 feet each year. This year our operations are somewhat larger and we will probably reach a total of some 50,000,000 feet.

In our operations in the woods we employ as loggers and railroad operatives an average of about 250 men. At times when we are doing railroad construction work we employ a great many Navajo Indians and we find that they make excellent laborers for this kind of work. In connection with our logging and railroad operations in the woods we have established machine shops, and at our headquarters camp have established quite a settlement of married men. Largely through our endeavor, and with our financial assistance, there has been a public school established at our headquarters camp (Ketner), at which there is an average attendance of from 35 to 40 pupils, made up of children of our employees and of the children of neighboring ranchers.

We have had under consideration and investigation the matter of reforesting and have decided to experiment by planting hardy Catalpa trees and are expecting to plant some several hundred thousands of trees this fall, putting them out in the draws and valleys where there is the best soil and where the experimental tracts can be fenced for protection against cattle and sheep.

> Our logs are brought from Thoreau to Albuquerque on our own cars. At Albuquerque we have a thoroughly modern sawmill, equipped with two band saws and a band resaw. At the present time we are running the sawmill double turn (twenty hours) and are cutting an average of about 325,000 feet of lumber per day. Owing to the character of the timber (an excellent quality of white pine, absolutely without shake, but with a large percentage of knots, owing to the short body of the timber below branches) and of the long freight haul to market, we are manufacturing approximately 75 per cent of our cut into finished product of sash, doors, moldings, and boxes. Our sash and door factory is one of the largest in the country and we are producing on an average 1,100 doors and 1,800 windows per day of ten hours. Our box factory produces on an average 5 to 6 carloads of box shook per day of ten hours.
>
> In our operations at Albuquerque, including sawmills and factories, we employ on an average 850 men and boys. About 65 per cent of the employees at Albuquerque are native Mexicans. At first we found some difficulty in getting satisfactory work from this class of employees, but we find that they are learning rapidly and seem to appreciate the opportunity of steady employment at good wages, and a great many of the boys and younger men are proving themselves apt at learning the operation of machines and are anxious for advancement. The community seems pleased at this source of educating the natives to habits of industry and saving (Governor of New Mexico 1906).

Lumber production continued at a high rate into 1907. Early in the year the American Lumber Company entered into a three-cornered agreement with the AT&SF and A. B. McGaffey for a large number of new cross ties. The American Lumber Company contracted to provide the timber and to transport it via the ZM line to Thoreau; McGaffey was to cut the ties and deliver them to the ZM track for conveyance to the AT&SF (Atchison, Topeka and Santa Fe Railway 1907a, 1907b). This was McGaffey's entry into large scale lumbering, and his further career is chronicled in the section entitled The McGaffey Company.

Another one of the periodic reports on the company's progress appeared in the press during March 1907. By this time, the railroad had grown to a length of 50 miles with four locomotives, 200 log cars and 2 log loaders in use. The Albuquerque plant capacity remained the same, and some new names appeared among the company officials:

> W. P. Johnson, President
> Dr. W. H. Sawyer, Vice-President
> D. E. Wright, Secretary-Treasurer
> John N. Coffin, Business Manager
> George C. Cowles, General Superintendent
> I. B. Koch, Superintendent of Sales
> J. T. Sawyer, Purchasing Agent
> (Albuquerque Morning Journal 1907 [March 17])

As if lumbering wasn't enough to keep everyone busy, the American Lumber Company Band was organized early in 1907. It was directed by R. W. Reynolds and presented a number of concerts later in the year (Albuquerque Morning Journal 1907 [January 3, April 6]).

Life in the woods, however, was not concerned with band concerts. A serious problem with illicit saloons was growing in the areas surrounding the logging camps. Although the company prohibited liquor on its own lands, the odd-numbered sections, it was evidently easy for others to sell liquor at saloons located nearby on the even-numbered sections. Workmen became accustomed to walking over to one of these saloons during the day and drinking all they could pay for. With the sheriff of Valencia County located over a hundred miles away at Los Lunas, the area around Kettner became known for drunken rows, shootings and occasional killings (Albuquerque Morning Journal 1907 [January 3]).

After appealing to Sheriff Baca and the County Commission, the company finally took the matter to court. In September 1907, the American Lumber Company filed suit in the McKinley County District Court asking that two saloons near Thoreau be enjoined from operating. Feelings ran high, and within a short time one of the saloon owners was arrested for allegedly assaulting a lumber company employee. The newspaper editors in Gallup and

Albuquerque waxed eloquent and the woods quieted down for a time. But the problems of boredom and liquor in the woods were never really resolved (Albuquerque Morning Journal 1907 [January 3, September 12, September 14, September 16]).

The locomotives of the ZM got a lot of attention during 1907, too. Late in August, a string of loaded log cars ran away on the steep grade at Camp 1 and headed for Kettner. The runaway cars, moving at a terrific speed, caught engine No. 2 standing on the main track. The locomotive was badly damaged and was laid up for months (Albuquerque Morning Journal 1907 [September 2]).

The antiquity and small size of most of the ZM locomotives must have given the company some problems in keeping the logs moving, for in 1907 they ordered two brand new locomotives. The first to arrive was Number 10, a big 70-ton, 3-truck Shay geared locomotive (Figure 12). Its cost was $17,000. This locomotive, in spite of being substantially heavier than its ancient predecessors, was a much better woods locomotive.

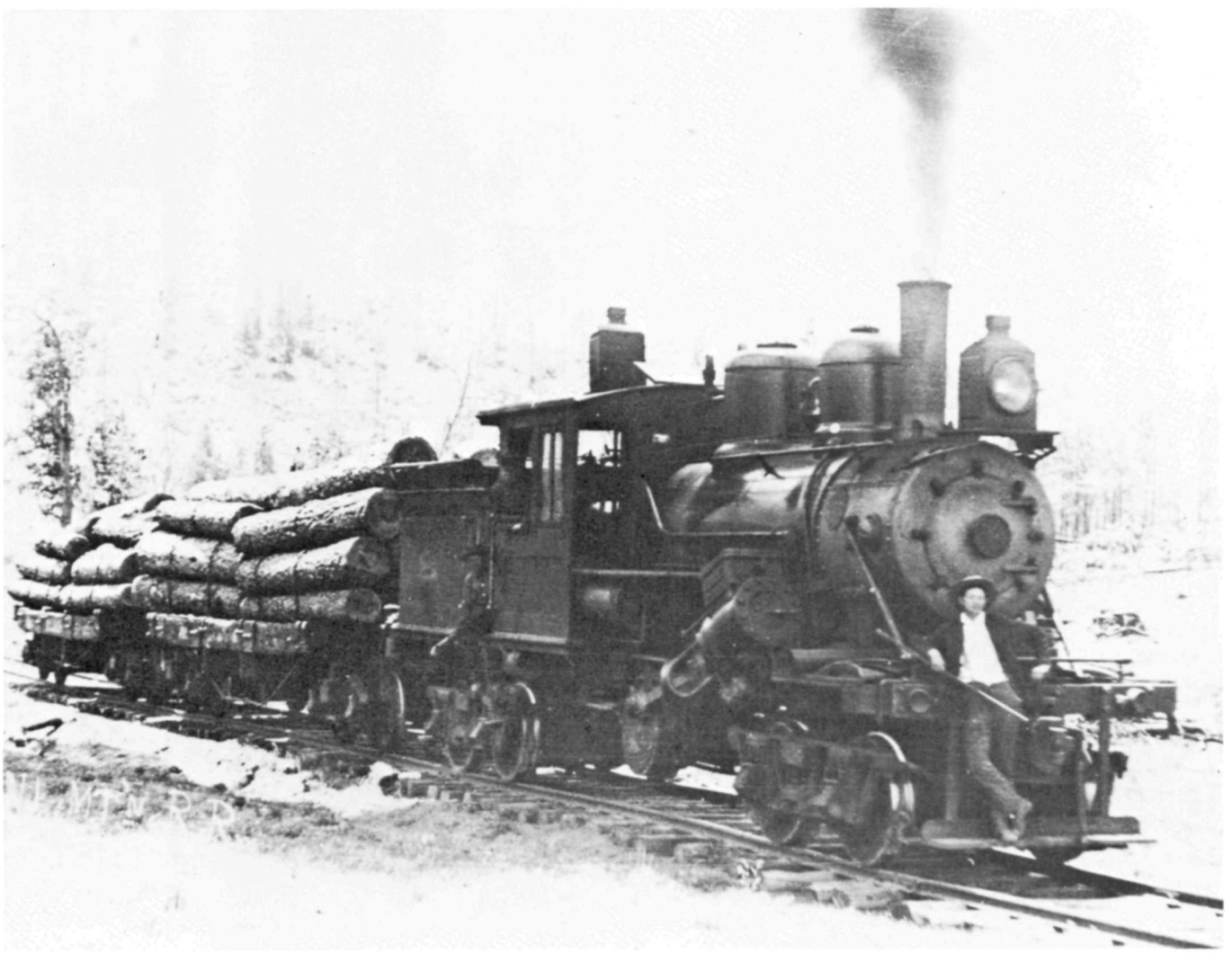


Figure 11. Climax locomotive Number 8 of the Zuni Mountain Railway bringing two carloads of logs into camp. Note the light rail and absence of ballast on this logging spur track. Cibola National Forest collection.

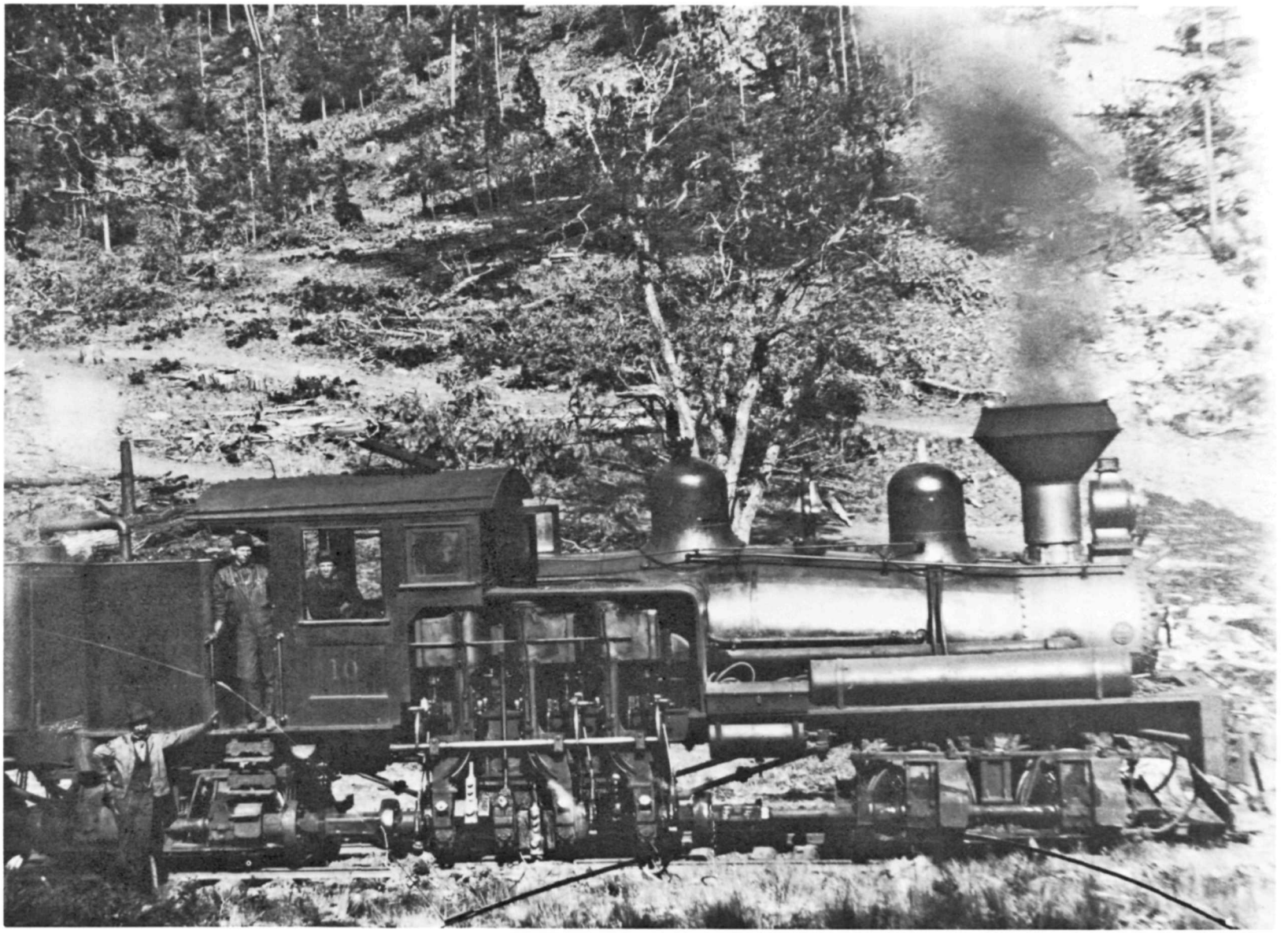


Figure 12. Zuni Mountain Railway Shay locomotive Number 10. This view clearly shows the drive system of the Shay, with the main shaft extending forward and aft from the three cylinder main engine of the locomotive. Between the engine and the trucks were universal and slip joints to allow the locomotive to round curves, and the shaft drove each axle through bevel gears. Although mechanically inefficient and noisy, the Shay was a very practical and popular logging locomotive. Cibola National Forest collection.

Figure 13. Zuni Mountain Railway's 133 ton 2-8-0 locomotive Number 12. John P. Bigley collection.

The three independent trucks rendered it much more flexible on rough track and sharp curves. And with all the weight on driving wheels, it could pull much more on the steep spur lines. These capabilities significantly reduced costs as the ZM tracks extended further into the woods (Albuquerque Morning Journal 1908 [February 15]; Koch 1971:427).

The second new locomotive was even larger than the first. Number 12 was a conventional side-rod drive consolidation or 2-8-0 type. With its tender, the locomotive weighed a whopping 133 tons (Figure 13). The locomotive alone weighed in at about 84 tons. The advent of No. 12 on the main line log run from Kettner to Thoreau must have resulted in some hurried trackwork to keep it on the rails (Albuquerque Morning Journal 1908 [February 15]; Glover 1983).

The two new locomotives went to work in mid-February 1908. Work in the woods and at the Albuquerque mill had evidently ceased around the first of November because of a "temporary lull" in the lumber business. A winter slow-down seems to have been common enough, due to the difficulty and expense of logging in the snow. During this shutdown, all the mill machinery had been repaired and overhauled, and some 35 trainloads of logs had been accumulated in the millpond at Albuquerque (Figure 14) (Albuquerque Morning Journal 1908 [January 19, February 15]).

The American Lumber Company was apparently little affected by the series of lawsuits filed by the United States Government in October 1907 alleging fraudulent purchase of timberlands from the Territory of New Mexico by several lumber companies. Although occasionally mentioned in newspaper accounts, American had acquired its lands and the timber from the territory by simple purchases, not by use of homestead laws (Albuquerque Morning Journal 1907 [October 9]).

In April 1908, the American Lumber Company was once again the subject of a comprehensive report, this one in a civic booster booklet entitled, Albuquerque. The company was at the peak of its growth during 1908, and was operating the longest and busiest railroad of its life.

The ZM reported that it was sending between 30 and 40 carloads of pine logs to the mill every day.

Figure 14. Zuni Mountain Railway log cars at the Santa Fe Railway depot in Albuquerque wait to be switched to the sawmill. On the left may be seen the Albuquerque passenger depot and the Alvarado Hotel. V. J. Glover collection.

The railroad had 55 miles of track, 6 locomotives and 160 logging cars. A "round-house" and machine shop were located at Kettner for the maintenance of the locomotives (Hening and Johnson 1908).

The drop in the number of ZM log cars from 200 to 160 probably reflects an increasing use of AT&SF steel flat cars of Class Ft-G. Five hundred of these 40-ton capacity cars had been built in late 1905 and early 1906, and a number of them were equipped with cross-bunks and chains for the logging trade. Photographs indicate that these cars were used on the ZM (Figure 15). New steel cars of high capacity would have been especially suitable for the long, fast main line haul from Thoreau to Albuquerque (Official Railway Equipment Register 1907). The 55 miles of ZM track included numerous loading spurs and, in addition, a long main line running southeast along the Aqua Fria Valley to Paxton Springs. At this time, the company was running three logging camps in addition to Kettner, the headquarters camp, and over 500 men were employed in the woods (Hening and Johnson 1908).

Building railroad roadbeds and laying track to the cutting areas was a major task, one employing many men over a long period of time. For many companies, especially those with long rail hauls, it was a big job to keep the railroad builders working efficiently and yet not delay the logging crews. To make the task easier and to obtain the maximum utilization of its limited amount of steel rail, the American Lumber Company followed the typical practice of constructing their logging grades well before the loggers reached a given area. In this way, the railroad surveyors and grading crews could work in favorable weather and at their own pace without delaying the loggers. Sometimes the railroad beds would be completed weeks or even months in advance of their need (Bryant 1923: 293).

The grading of the roadbed involved the absolute

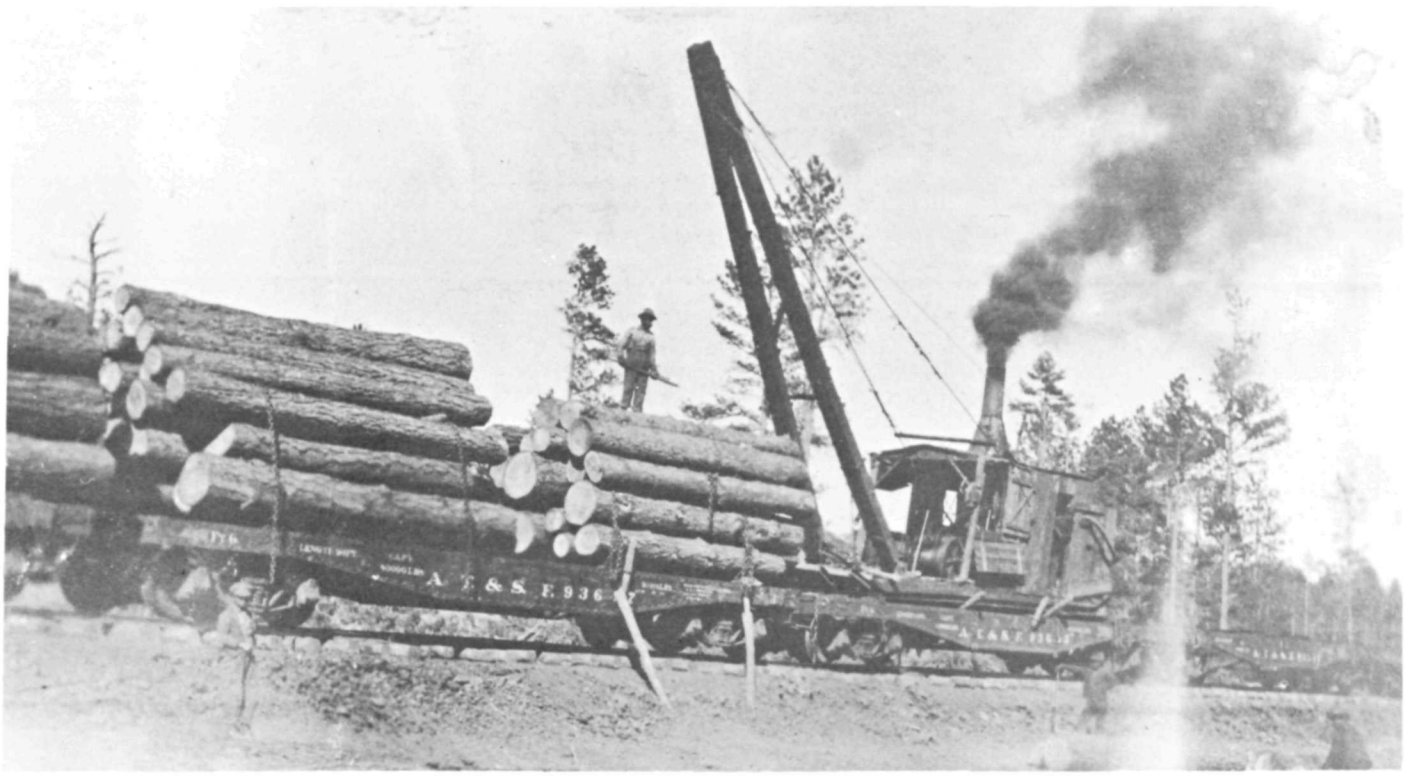


Figure 15. Loading standard 16-foot logs on Santa Fe Railway steel log cars. This steam loader is equipped with a rigid boom, and slides from car to car on steel skids. Cibola National Forest collection.

minimum of earth and rock that would result in a stable roadbed. Short-lived spurs, expected to last only one season, required little more than the clearing of the surface and the leveling of the bed itself (Figure 16). In contrast, main routes, such as the line between Kettner and Thoreau, involved more permanent construction techniques. Particularly in the canyons this meant rock embankments and the moving of a lot of fill dirt (Figure 17) (Bryant 1923: 293-312).

Photographs indicate that the American Lumber Company often logged much of an area and yarded the logs to decks along the line of the projected railroad before actually laying track into the area (Figures 18 and 19). When it was time to build the track, one of the locomotives would be assigned to the track crew, and the job would be finished fairly rapidly. Under ordinary circumstances, about a half mile of track could be laid during a day (Figures 20 and 21) (Bryant 1923: 327).

Figure 16. Typical Zuni Mountain logging spur. John Bigley collection.

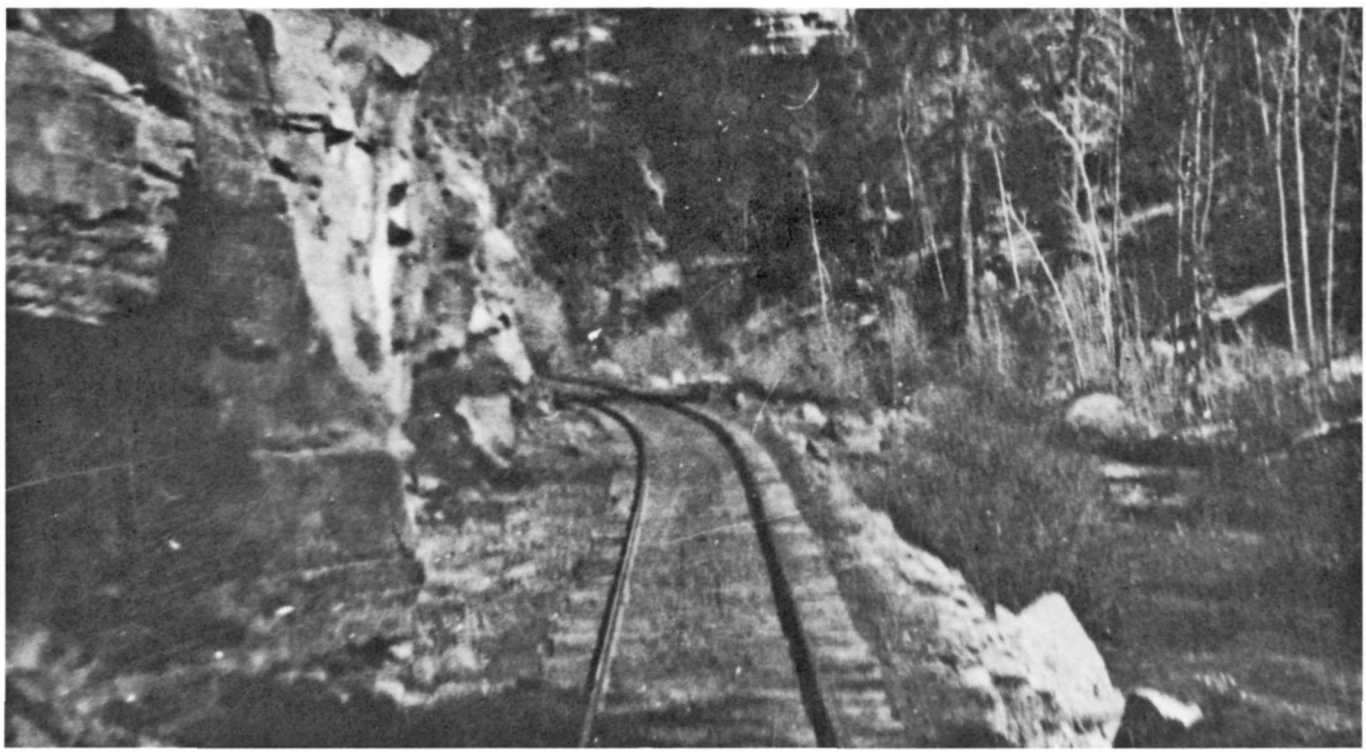


Figure 17. Zuni Mountain Railway main line in Cottonwood Canyon. This shows the heavy construction techniques used for permanent rail lines. John Bigley collection.

Figure 18. Skidding logs to the railroad with big wheels on the American Lumber Company. Cibola National Forest collection.

Figure 19. Log landing along a future spur track, American Lumber Company. These logs have been yarded in a little valley preparatory to loading on the cars when the spur track is built. It appears the roadbed has already been graded. Cibola National Forest collection.

Once the track had been laid into an area, logs could be loaded fairly rapidly using the steam loaders. The woods locomotives, usually the Climax or one of the two Shays, would make several trips out on the spurs each day to keep the loaders supplied with empty cars and to take the loads in to the main camp (Figures 22 and 23).

In less favorable country, constructing the logging spur tracks required more complex techniques. One method of quickly and cheaply building a temporary railroad was to use timber cribbing to cross streams, drainages, and minor depressions. As used in the Zuni Mountains, cribwork structures served not only as trestles over streams but as fills across side valleys and low spots in the desired grades.

Cribwork structures, sometimes called "pigpen trestles," have the advantage of using readily available local materials and of being easily built by unskilled labor. The alternatives were laboriously hand-built stone and earth fills or framed timber trestles. Although used on the main line of the ZM, both types of structure were far too expensive for the short life and light trains of the logging spurs (Bryant: 313-319).

Figure 20. Zuni Mountain Railway locomotive Number 4 on a track-laying job. On a big logging show, it was quite a job to coordinate logging and railroad construction in order to cut trees efficiently and to use the limited length of available rail effectively. In many instances, the logging was done before the rails were laid, and this view appears to be such an example. Cibola National Forest collection.

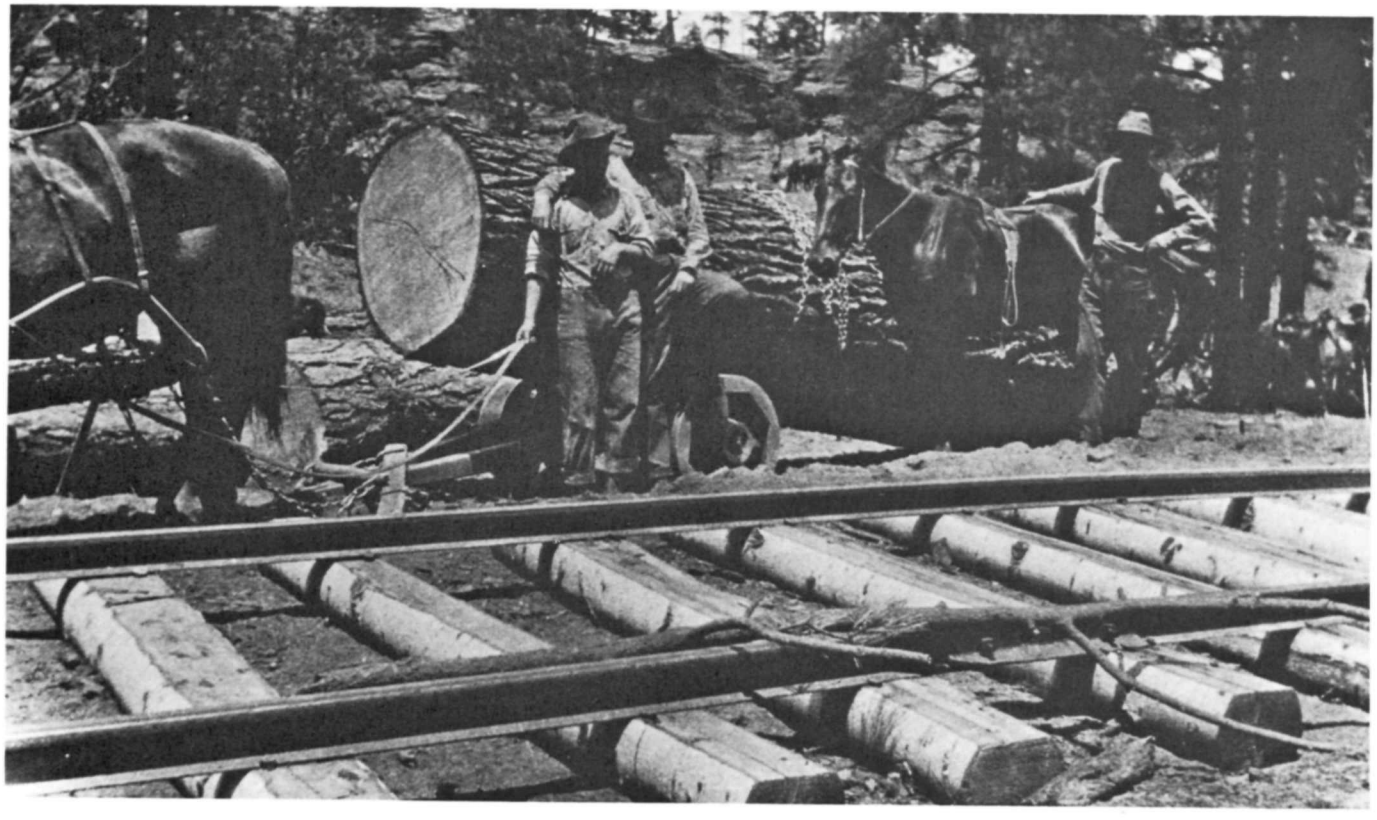


Figure 21. Some interesting details of logging practices are evident in this view. The large log was being skidded on a low-wheeled truck called a "bummer." Its small wheels required flat and relatively firm ground for its use (Bryant 1923:185). The railroad spur was laid with aspen ties, an unusual timber for the purpose. Note the spikes driven close to the sides of the ties, indicating an intention to use the ties at least once more on another spur line. The spikes were driven on the opposite sides for the second use. Cibola National Forest collection.

An interesting example of the ZM practices lies in a valley tributary to Bluewater Creek running north and west toward Rice Park. Probably built in the later years of operation, circa 1910-1913, the spur line railroad running up the valley included multiple cribwork crossings of the main stream and side valleys. Approximately 20 such log structures were built in a two mile section of the line (Popelish 1986).

The nature of the railroad spur appears to have been to carry the timber logged in the area east of Rice Park and below the prominent rim to the north. (Logging north of the rim is described in the section entitled George E. Breece Lumber Company.) Logs were apparently skidded down several valleys to points along the railroad spur for loading. The longest distance the logs were skidded was just over a mile. The railroad itself followed the stream bed, with a grade that averaged about three percent in favor of the loads. This was a relatively easy grade for the powerful gear-driven locomotives of the ZM.

The photographs in Hening and Johnson's Albuquerque pamphlet reveal something of the nature of logging in the Zuni Mountains. Cutting was done with two-man saws. Skidding and yarding was performed by crews with horse-drawn four-wheel wagons or 12-foot diameter big wheels. Logs were yarded into long rows near a railroad track for loading on log cars. The two steam loaders were used for loading, but were often supplanted by teams using lines to lift the logs up pole inclines onto the cars. It

Figure 22. A two-horse team with big wheels ready to drop its load of logs at a railroad landing. One of the American Lumber Company loaders and a string of cars waits in the background ready to go to work.

Figure 23. Shay locomotive Number 3 bringing in a train from the woods. John Bigley collection.

Figure 24. The logging camp at Sawyer on the American Lumber Company. The railroad track construction is typical of logging railroads with a minimum of grading, steep grades, and earth ballast between the ties. Locations of switches such as this one can often be determined long after the track was removed through surviving examples of the long switch ties, which ranged from 8 to 16 feet in length. Cibola National Forest collection.

was all very laborious with little mechanized help (Hening and Johnson 1908).

Kettner remained a rough and ready, temporary kind of a place. In addition to the railroad facilities, there was a hotel and a commissary. And there were numerous little houses and cabins for the married men (Hening and Johnson 1908).

The Albuquerque mill plant had grown even more by 1908. The addition of the various factories required much more power. There were two steam plants of six boilers each, and three reciprocating steam engines of 500, 750 and 850 horsepower. Annual output was typically 35 million board feet, but a rate of 50 million board feet per year was reached during 1908. This was accomplished by running two shifts in the sawmill. The company stated its capacities as follows:

Sawmill:	350,000 board feet daily (two shifts of 10 hours each)
Moulding Mill:	100,000 feet of mouldings daily
Lath:	50,000 feet daily
Shingles:	50,000 feet daily
Windows:	2,000 feet daily
Doors:	1,500 feet daily

The average stock in the drying yards was 20 million board feet (Hening and Johnson 1908; Albuquerque Morning Journal 1908 [March 10]).

By all accounts, the American Lumber Company had been a genuine success up to this time. But stability is not a characteristic of the lumber business. A number of changes were about to occur that would affect the company's ability to do business.

At the time of the Hening and Johnson pamphlet, the company had logged over 27,000 acres or something more than 42 sections. This likely represented the company and state lands tapped by the ZM in Townships R. 14 W., T. 12 N., and R. 14 W., T. 13 N. A line of the railroad extended into area to the east, down the Aqua Fria and up into Rice Park. This became the next district to be logged (Hening and Johnson 1908).

During the summer months of 1909, the main camp was moved from Kettner to a site named Sawyer, several miles further down the main track of the ZM. Sawyer was an attractive place in the heart of the pine forests. It soon grew to include some of the amenities of civilized life, notably a general store operated by the McGaffey Company, and a small school (Figures 24, 25, and 26) (Kennedy 1970:39; Dike 1958).

There is an indication that Kettner continued to exist after 1909 even though the post office was formally transferred from Kettner to Sawyer on July 16, 1909. Presumably the railroad and machinery maintenance facilities remained at Kettner (Kennedy 1970:39; Dike 1958).

Up to this point, the company had remained remarkably free of debt with only the $400,000 first mortgage secured by lands on the books. The mortgage was due on January 20, 1912. On the other hand, only two dividends had been recorded, amounting to two percent paid during 1906 (Poor's 1908).

On September 1, 1909, the American Lumber Company issued $650,000 worth of first mortgage 6 percent serial gold bonds due serially up to January 1, 1922. The company was to pay into a sinking fund to retire the bonds at the rate of $2 per thousand board feet. With this action, the financial picture of the company changed substantially. Now, hefty payments were due at regular intervals: $50,000 every January 1 from 1911 through 1920, and an increased payment of $75,000 due on January 1, 1912, and January 1, 1922. And added to this was the $400,000 mortgage due on January 20, 1912 (Poor's 1908, 1911, 1913).

Business was good during 1909. The company reported a net profit of $100,242.42 on sales of 36,356,257 board feet. Timber cut had amounted to 32,259,272 board feet. The logging railroad had shrunk to a length of 40 miles, probably through removal of the old logging spurs north of Kettner (Poor's 1911; Moodys 1912).

Early in 1910, another new logging locomotive was ordered to complete the modernization of the railroad motive power. The new locomotive, delivered in May 1910, was a 70-ton, 3-truck Shay, identical to Number 10. For some reason, it was assigned Number 3, breaking their long standing

Figure 25. The main part of the logging camp at Sawyer on the American Lumber Company. On the extreme left can be seen part of the locomotive coaling trestle; next to it is the "roundhouse," used for minor repairs to the locomotives. On the track can be seen the Climax gear-drive locomotive, Zuni Mountain Railway No. 8. Cibola National Forest collection.

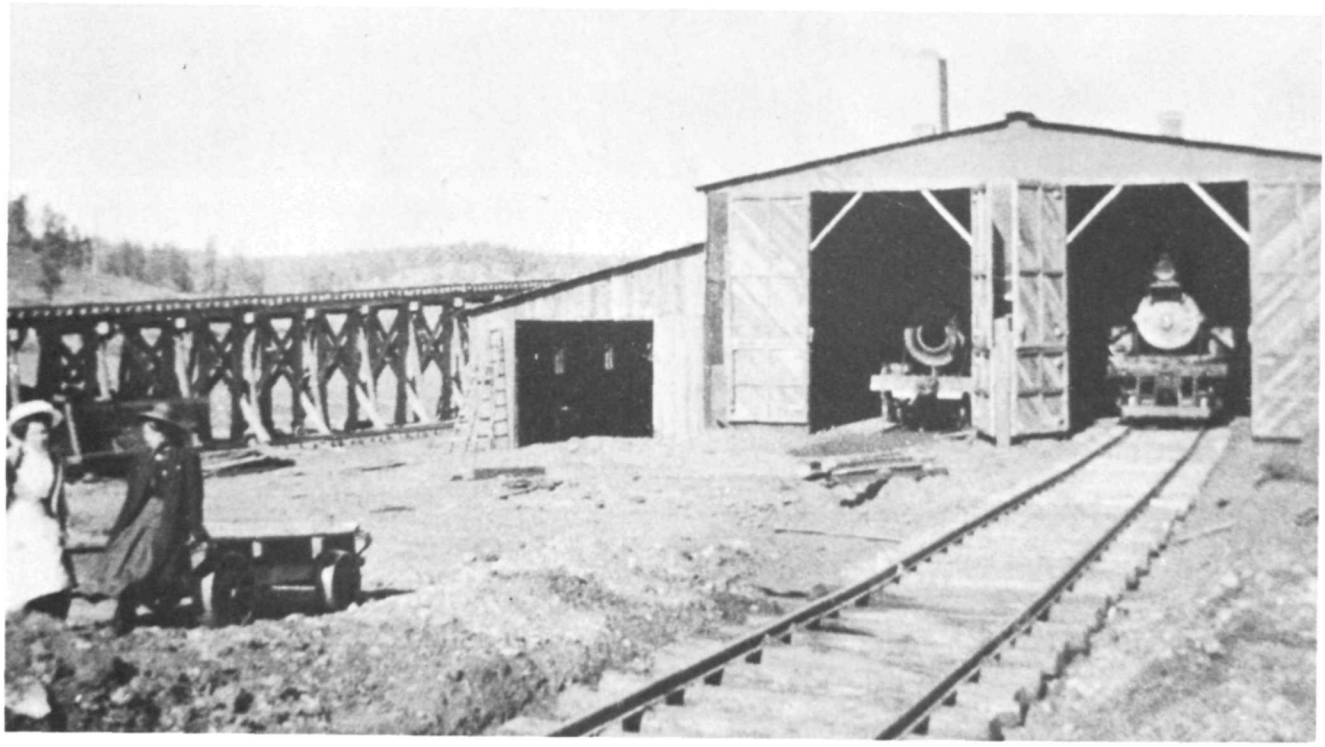


Figure 26. The "roundhouse" at Sawyer, circa 1908 - 1913. Climax locomotive Number 8 can be seen in the right-hand stall. The trestle on the left was used to elevate carloads of coal to ease the labor of transferring the locomotive fuel from the coal cars to the tenders. John Bigley collection.

Figure 27. The ancient locomotive No. 4 of the Zuni Mountain Railway crossing a framed timber trestle. The location of this view is probably along the main line between Kettner and Thoreau in Cottonwood Canyon. Cibola National Forest collection.

practice of using only even numbers on the locomotives. With this purchase, the ZM locomotive stock stood as follows:

No. 4, used for construction (Figure 27)
No. 6, used for construction and as a relief locomotive for No. 12 (Figure 28)
No. 12, main line locomotive, used between Sawyer and Thoreau (Figure 29)
Nos. 3, 8, 10, used as woods locomotives on steeply graded spurs

By this time, old Number 2 had been junked (Glover 1983; Albuquerque Morning Journal 1910 [May 17]).

The next change occurred on November 8, 1910, when the American Lumber Company was reincorporated in New Mexico. The company was capitalized at eight million dollars and the incorporators were listed as E. W. Dobson, A. A. Keen, I. B. Koch, and T. J. Sawyer. The underlying purpose of this action is not clear, but may have been to permit or enhance the sale of company stock to the public in order to raise some cash (Albuquerque Morning Journal 1910 [November 9]; Moodys 1912; Poor's 1914).

During the summer of 1910, the company had gone to a second shift at the mill to increase output to a rate of 60 million board feet per year, nearly double the 1909 rate of production.

The company's attempts to increase profits enough

Figure 28. Old "mainline" locomotive Number 6 of the Zuni Mountain Railway. This ancient eight-drivered freight locomotive was used to haul log trains from the woods camps to the connection with the Santa Fe Railway at Thoreau. Cibola National Forest collection.

to maintain the property and pay off the debts seemed to work for a time. Operations continued through 1911 and 1912 much as always. Some additional locomotives came to the ZM from the AT&SF by outright purchase or long-term lease during this period. One, AT&SF Number 096, was an old, light-weight 4-4-0, probably used only for construction or switching. It was purchased by the ZM on April 3, 1912. During the same period, two somewhat larger and more powerful AT&SF 4-6-0 locomotives were leased. They remained on the ZM for several years, being totally obsolete for use on the AT&SF itself. They were AT&SF Numbers 261 and 271 (Glover 1983; Worley 1965:95).

The old timber contracts with the Territory of New Mexico were renewed with the State of New Mexico on June 9, 1913. At the time, there was little public interest in the transaction, although it came to be questioned a decade later (Albuquerque Morning Journal 1923 [September 2]).

From the fragmentary records remaining and the dearth of reports in the press, it is difficult to determine the events that actually took place during 1913. By September of that year, the company had ceased all operations, and on January 1, 1914, the American Lumber Company failed to make the payment due on its first mortgage bonds (Poor's 1915; Albuquerque Morning Journal 1914 [June 24]). Subsequent events indicate that there was a degree of calculation behind the sequence of events that was occurring. Activities relative to the American Lumber Company took place at a certain measured

Figure 29. Log train leaving Sawyer, circa 1908 - 1913. Pulled by Zuni Mountain Railway locomotive Number 12, the train is made up of a mixture of Santa Fe Railway steel cars and ZMRy wooden cars. Two or three trains of this length went out every day. John Bigley collection.

pace, and at the end of it all, the company emerged intact with a brand new organization and a fresh infusion of capital.

Following the default of January 1, 1914, a committee of the bondholders of the American Lumber Company was formed to manage the affairs of the company. The American Lumber Company Bondholders Agreement, dated May 25, 1914, apparently provided the necessary means to control the company's business from the viewpoint of its creditors (McKinley Land and Lumber Company 1916).

On June 23, 1914, following a period of coming and going on the part of the company officers, the American Lumber Company filed a petition for receivership in District Court in Santa Fe. Evidently, this was in response to foreclosure proceedings which had been started on behalf of the Detroit Trust Company over the defaulted bonded indebtedness of $500,000. The action was quickly approved by the court. The receivers appointed were Charles F. Wade, former president of the company, and George W. York of Cleveland, Ohio. It was noted at the time that operation of the plant was not intended (Albuquerque Morning Journal 1914 [June 24]; Moodys 1914).

The following month, July 1914, the Federal Court authorized the issuance of $40,000 in receivers' certificates to pay taxes, insurance, back wages, and $500 a month for watchmen at the mill and at the woods facilities of the company (Albuquerque Morning Journal 1914 [July 14]). From this point on the American Lumber Company was essentially out of business, and its properties lay idle. The lengthy struggle to resolve its debts and reopen the lumbering business was just beginning.

McKinley Land and Lumber Company

The bondholders' committee of the American Lumber Company was in no way an idle organization. The very sketchy records surviving to this writing suggest that every move in the closing down of the old company's business and the creation of a new enterprise was well planned and managed.

The receivership was confirmed in a final court decree on July 16, 1915, which ordered that the property of the American Lumber Company be sold to cover the bonded indebtedness of $546,250 plus interest and costs. A lot of maneuvering must have taken place behind the scenes, because it was not until November 11, 1916, that the sale actually took place. The purchaser was Otis and Company, which had been the bondholder's agent from the beginning (New Mexican 1916 [September 8]; McKinley Land and Lumber Company 1916).

The primary role in reviving the company was played by the McKinley Land and Lumber Company (McKL&L) which was incorporated in New Mexico on November 13, 1916. On the same day the principals of McKL&L entered into an agreement with Otis and Company to purchase the properties of American Lumber Company, subject to confirmation in the courts. The price was simply $2,000 and 80 shares of McKL&L stock over and above the debts and obligations incurred by Otis and Company in buying the property (McKinley Land and Lumber Company 1916).

At this time, the property consisted of the 115-acre Albuquerque mill site, factories, and equipment, lands, and the Zuni Mountain Railway. The lands inventoried (American Lumber Company 1916) were as follows:

Original Mitchell Purchase	226,719.16 acres
Day or Foster Purchase	10,796.74 acres
Territorial Purchase	3,966.43 acres
Soldiers & Homestead Scrip Filings	520.38 acres
Patented Land, Mitchell Purchase	160.00 acres
Total	242,478.01 acres

At about the same time, as recorded in The Timberman (1917), the Zuni Mountain Railway was inventoried as follows:

55 miles, standard gauge
Rail, 60 to 75 pounds per yard
3 geared and 2 rod locomotives
158 logging cars
20 flat cars
2 gas speeders (motor rail cars)
2 donkey engines (loaders)

The above figures probably indicate the number of operating locomotives, for other records show the company owned at least five rod locomotives. The two old AT&SF 4-6-0 locomotives, Nos. 261 and 271 had actually been purchased by the American Lumber Company receivers on March 1, 1916. Thus the total locomotive roster included the following:

Numbers 3, 4, 8, 10, 12, 096, 261 and 271
(Glover 1983).

On January 15, 1917, the final transfer of the properties of the American Lumber Company took place. The McKinley Land & Lumber Company took possession of the property and real estate, and Otis & Company received the $445,000 still owed to the old bond holders plus interest, costs, and the agreed-upon fee (American Lumber Company 1917a).

The backers of McKL&L had become apparent by this time, in the form of George E. Breece and the West Virginia Timber Company (WVT). The West Virginia Timber Company, at the time of the sale, held most of the stock of McKL&L, and Breece was president of WVT. As the financing for the rehabilitation of the New Mexico properties was organized, the affairs of the two companies would become very closely enmeshed (Poor's 1920).

George Elmer Breece was to soon become a pivotal figure in the lumbering industry in New Mexico. Born in Roundhead, Hardin County, Ohio, in December 1864, Breece worked as a youth in a sawmill where he became a sawyer, block setter, and saw filer. As a young man, he became superintendent for the Advance Lumber Company of Cleveland, Ohio, before moving to Charleston, West Virginia. Breece became a successful lumberman during his time at Charleston, ultimately becoming president of WVT, headquartered in that city. Along about 1907, he had visited New Mexico on behalf of the Advance Lumber Company, and he apparently became familiar with the lumber business in New Mexico during the

following years (Davis 1945:470).

The advent of the World War appears to have stopped, for a while at least, the work of starting up logging in the Zuni Mountain once more. Breece himself was called upon by the U. S. Army Signal Corps to aid in the spruce logging effort in the Northwest. High quality spruce timber from the western slopes of the Coast Range was the primary structural material in airplanes, now urgently needed in Europe. Breece rose to the rank of Colonel before returning to New Mexico (Davis 1945:470; Labbe and Goe 1961:173).

Affairs in New Mexico came to life once more following the end of the World War. During May 1919, McKL&L sent two experienced men out to the woods to look things over. One of them was Noah Moore, from Charleston, West Virginia, and the other was Charles H. Wade, who had been involved with the American Lumber Company since its beginnings. Wade, however, died in a lunchroom in Albuquerque before he could get out to the mountains (Albuquerque Morning Journal 1919 [May 20, May 25]).

Moore traveled out to Thoreau, inspected the railroad, and put a crew to work repairing the track between Thoreau and Sawyer. Although overgrown and blocked by logs and trees, the railroad was in good enough condition to be ready for hauling logs within a few weeks (Albuquerque Morning Journal 1919 [May 30, June 18]).

Moore also hinted in the local press about another subject that was worrying McKL&L. And that was the freight rate charged by the AT&SF for hauling logs from Thoreau to Albuquerque. The subject remained open until Breece arrived in early June to begin negotiations with the AT&SF (Albuquerque Morning Journal 1919 [May 30, June 3]).

It was planned to have the sawmill and plant facilities in operation on September 1, 1919. Little heavy work was involved in refurbishing the mill, although improvements were made to the lumber storage arrangements. Out in the woods, 75 men were at work on the railroad, cutting ties for the railroad, or actually logging in preparation for the start of regular log shipments around August 1 (Albuquerque Morning Journal 1919 [June 18]).

Improvements to the logging equipment in the mountains promised to reduce the cost of logging. A new American Hoist & Derrick Company Model C log loader was purchased at a cost of $8,250.00 plus freight. Six Caterpillar tractors were obtained for skidding logs to the railroad (Albuquerque Morning Journal 1919 [June 18]; Mossman, Gano and Sipple 1921).

The woods railroad continued to operate out of Sawyer, using the two 70-ton Shays and the 50-ton Climax locomotive. Substantial repairs had been made to the Climax during the rehabilitation of the property. Two or three rod locomotives were fixed up for use on the main line haul from Sawyer to Thoreau. The heavy 2-8-0 Number 12, although relatively modern and little used, was sold during 1920. Its replacement, purchased at about the same time, was an old 4-6-0 from the defunct Colorado Midland (CM) (Mossman, Gano and Sipple 1921; The Timberman 1919; Glover 1983).

Acquisition of timber was a leading concern of McKL&L. Even before logging was resumed, the company bought more timberlands from the State of New Mexico. On August 6, 1918, McKL&L bought the following lands at $3.00 an acre:

State land	68,954.81 acres
State land, C. M. Carr sale	9,120.00 acres
State land, cut over under old contract	8,068.80 acres
State land, not cut over under old contract	13,770.93 acres
Total	39,974.54 acres

This purchase apparently consolidated much of the timberland in the Zuni Mountains not already owned by McKL&L (McKinley Land and Lumber Company n.d.; New Mexican 1918 [August 7, Aug 28]).

With the state lands in its possession, McKL&L owned an estimated 550 million board feet of timber on its own lands, as well as rights to timber on state lands amounting to 450 million board feet. The company agreed to pay $2.15 per thousand board feet for the state timber when cut (Poor's 1920).

Refurbishing the railroad and sawmill and purchasing more lands did not come cheaply, and McKL&L was accumulating debts in the process.

There was an early mortgage on the property in the amount of $185,000, which was apparently paid off with the proceeds of a bond issue of June 1, 1919. The bond issue was $550,000 of seven percent first mortgage bonds, to be paid from a sinking fund set aside at the rate of $2.50 per thousand board feet shipped from the mill. The bonds were guaranteed by the West Virginia Timber Company (Poors 1920; American Lumber Company 1917 [January 15]).

During 1920, McKL&L cut timber at about the old rate of 35 million board feet per year. The company continued to buy more timber and land. In one transaction during June 1920, McKL&L bought 530,000 board feet of timber in the Zuni National Forest, located on a small tract in Cottonwood Canyon south of Thoreau. Company cutters were working nearby and went to work on the new purchase immediately (Albuquerque Morning Journal 1920 [June 5]).

In yet another deal with the State of New Mexico, in July 1920, McKL&L purchased an additional 700,000 acres of land and rights to the timber on 100,000 acres. The terms were not clearly reported, but the land was priced at $3.15 an acre. Payments were made monthly on land and timber (Albuquerque Morning Journal 1920 [July 18]).

The long log haul over the AT&SF to Albuquerque continued to trouble Breece and McKL&L. During October 1920, the AT&SF announced an increase in its freight rate for the log haul from $2.50 to $3.12-1/2 per thousand board feet. Breece complained loudly in the local press, noting that McKL&L had invested $100,000 in improvements to the Albuquerque sawmill on the basis of an agreement with the AT&SF that the lower rates would be continued. And, in addition, the company filed a formal protest with the New Mexico Corporation Commission. The AT&SF, notwithstanding, put the higher rate into effect thirty days after giving notice (Albuquerque Morning Journal 1920 [October 10, October 11]).

The main logging camp was moved from Sawyer to Breece during 1920 or 1921. Breece was located in the Las Tuces Valley to the east of the earlier cutting areas. Breece served a network of steeply graded logging railroads in the slopes facing the Las Tuces Valley (The Timberman 1921).

The new logging district was generally to the north of the areas cut earlier. The topography was steeper and more broken, resulting in logging railroad spurs with more curves and generally steeper grades. The three geared locomotives were in their element, and continued to play an important role in the logging operations. On the "main line" side of Breece Camp, several rod locomotives pulled log trains to Thoreau. The former Colorado Midland 4-6-0 was one, and the others were probably survivors from the American Lumber Company. All of these locomotives were obsolete, but they were well suited to the light rails and uneven track of the logging railroad (The Timberman 1919, 1920, 1921; Glover 1983).

All of the McKL&L locomotives were well worn by this time. The decision was made to purchase new locomotives as replacements rather than rebuild the older, outdated machines. The new locomotive purchased in August 1922 was unlike any other locomotive on the railroad. It was neither an obsolete main line type nor a complex gear drive locomotive. The new locomotive was a heavy rod type locomotive built by the H. K. Porter Company of Pittsburgh, Pennsylvania. It combined small 44-inch diameter drive wheels with large cylinders to create a very powerful locomotive. The locomotive also carried its fuel and water in tanks on the main frame, thus eliminating the separate tender. The new Number 6 locomotive with the 2-6-2 wheel arrangement was at home both on the steep woods spurs and on the main line (Figure 30) (Glover 1983).

The somewhat unusual Number 6 was a success on the McKL&L lines and a nearly identical locomotive was purchased in June 1923. The new locomotive, Number 7, differed from Number 6 only in having slightly larger cylinders. Following the arrival of the second new Porter locomotive, it appears that the old 50-ton Climax and the old American Lumber Company locomotives were retired (Glover 1983; The Timberman 1921, 1923, 1924).

In another transaction, the aging Climax locomotive was retired in favor of a sturdy rod locomotive purchased from the defunct Colorado Springs & Cripple Creek District (CS&CCD) Railroad (Glover

1983).

In summary, the following locomotives were being used by McKL&L during the period from 1922 through about 1924 (Glover 1983):

Number 3	3-truck, 70-ton Shay
Number 6	2-6-2T, H. K. Porter
Number 7	2-6-2T, H. K. Porter
Number 8	2-truck, 50-ton Climax, retired 1923
Number 8	2-8-0 from CS&CCD, purchased 1923
Number 9	4-6-0 from CM, retired ca. 1923
Number 10	3-truck, 70-ton Shay

During October 1923, an interesting incident occurred which probably contributed to the retirement of the last of the old American Lumber Company rod locomotives. On October 16, C. G. Mustin and Phillip Honea, fireman and brakeman respectively, on a McKL&L log train were seriously scalded when locomotive Number 6 and four loaded log cars ran into their locomotive, near Buck Moore's logging camp. News reports indicated that the collision was the result of ill feelings between Slim Dentlin, engineer of Number 6, and the crewmen of the other train. Dentlin was said to have turned his engine and train loose to collide with the train carrying Mustin and Honea. Mustin's locomotive was said to be totally wrecked (Figure 31) (Albuquerque Morning Journal 1923 [October 17]).

Although their lumbering business continued to prosper, McKL&L was troubled by their vulnerability to freight rate increases by the AT&SF, and by some complex problems with timber contracts with the State of New Mexico. Each of these problems was resolved in a different way.

One way to reduce freight rates charged by the AT&SF was to reduce the length of the log haul. The first tangible sign of an effort by McKL&L came at the Board of Directors' Meeting held on December 26, 1922. During this meeting, it was agreed that the company would set aside $250,000 from surplus earnings for the purpose of building a new railroad from Grants, New Mexico, into the company's timber lands. The new railroad, anticipated to be about 50 miles in length, was considered as "being presently necessary to the continued successful operation of this company." By moving the rail

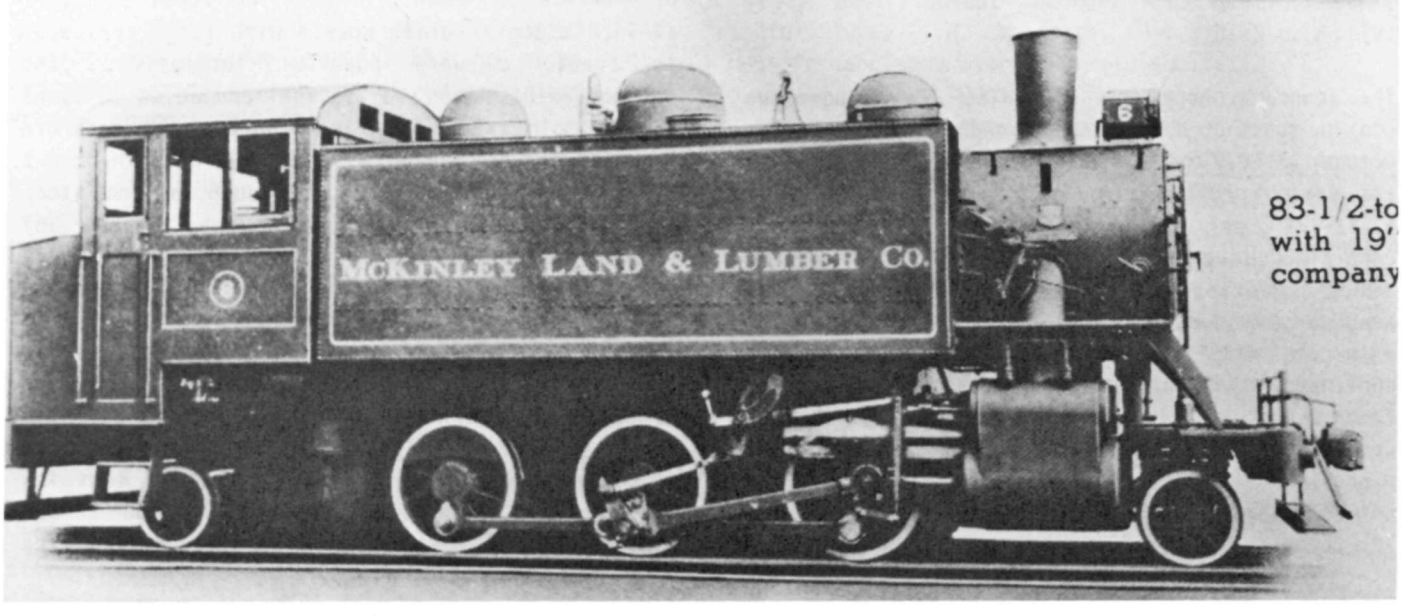


Figure 30. H. K. Porter Company catalog photograph of a new locomotive completed in August 1922 for the McKinley Land and Lumber Company. This "tank-type" locomotive carried water in two side-mounted tanks, and fuel oil in the rear tank behind the cab. Richard D. Rautio collection.

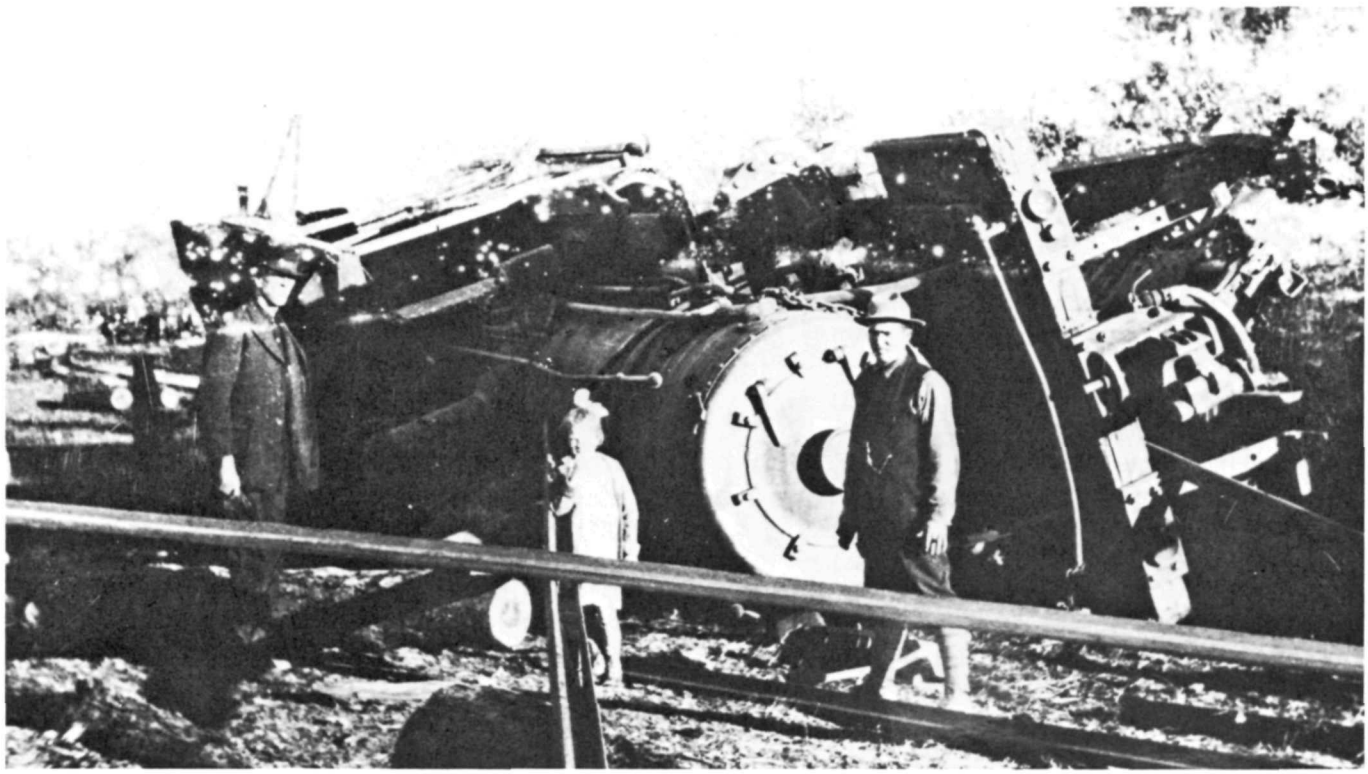


Figure 31. Climax locomotive No. 8 on its side. The loose rails suggest a major sort of accident, rather than the customary derailment. This may be the accident near Buck Moore's logging camp that took place in October 1923. Other information indicates a date of 1922. Cibola National Forest collection.

connection with the AT&SF from Thoreau to Grants, the log haul over the big carrier could be shortened by 29.2 miles. The Directors further indicated that their new railroad could, if deemed advisable, be independently incorporated and be called the "Grant and Southeastern Railroad." (Note: The town, now universally known as Grants, New Mexico, was often called Grant, New Mexico, after its founders, the Grant brothers. For years, the local paper, for example, was the Grant Review.) Although setting money aside for the new railroad clearly revealed the intentions of McKL&L, it was to be several years before further action took place (McKinley Land & Lumber Company 1922; Atchison, Topeka and Santa Fe 1910).

It was also during 1923 that the problems growing from logging on state land came to a head. During May 1922, and again in February 1923, the incumbent Land Commissioner had refused to accept payment from McKL&L for timber cut on state lands under the contract of 1904. This contract, originally between American Lumber Company and the Territory of New Mexico, had been extended on July 19, 1913, and was due to expire on June 1, 1923. Numerous questions surrounded the issue involving the old land lawsuits of 1907, fair prices, bidding methods, and the like. Finally, on September 1, 1923, the attorney general advised the land commissioner to accept the checks from McKL&L. The contracts and extensions were thus validated (Albuquerque Morning Journal 1923 [August 11, August 24, August 26, September 2]).

During the next year, George E. Breece made some substantial changes in his business structure, consolidating his holdings into one corporation, the new George E. Breece Lumber Company.

George E. Breece Lumber Company

During the years prior to 1924, George Elmer Breece had been assuming an even more powerful role in the several lumber companies with which he had invested. The list of companies in which Breece was involved had become imposing:

West Virginia Timber Company (W. Va.)
O. S. Hawes Lumber Company (Ark.)
Grayling Lumber Company (La.)
Porter Lumber Company (W. Va.)
White Pine Lumber Company (N.M.)
McKinley Land & Lumber Company (N.M.)

Breece's interests ranged from simple ownership of stock to acting as president and general manager.

During 1924, a new organization was set up to control the Breece interests. Named the George E. Breece Lumber Company (GEBLbr), the firm was incorporated in New Mexico in the month of June. On August 1, 1924, GEBLbr consolidated the operations of the West Virginia Timber Company and the McKinley Land & Lumber Company, although both companies continued to operate under their old names for some time (Moodys 1925; The Timberman 1924 [August, October]; The Timberman 1925).

As far as the logging railroads in the Zuni Mountains were concerned, the change was in name only. Operations continued on the railroad out of Thoreau, and the sawmill at Albuquerque continued to produce at the rate of something over 30 million board feet per year. The railroad itself was listed as operating five locomotives and as owning 55 miles of track, and the main logging camp continued to be located at Breece (Timberman Directory 1924, 1925).

A cultural resources survey made during 1983 in connection with the Bluewater Timber Sale revealed several trestles along a logging railroad spur built by the George E. Breece Lumber Company circa 1924 - 1925. The spur extended two miles or more across the northern portions of Sections 23 and 24, T. 12 N., R. 13 W., on an unnamed mesa east of Pine Canyon. The entire area slopes down toward the northeast in the direction of the Las Tuces Valley and Bluewater Lake.

The connecting line to the spur climbs up a shallow ravine through Sections 14 and 23. The rail bed up the ravine is an earth fill bordered with local rocks laid up as a low wall. The turnout or switch to the spur is readily identifiable through its diverging border walls in the distinctive shape of a railroad turnout. The water crossing near the turnout is a shallow culvert formed in the same manner as the roadbed, i.e., stones laid up loose on the ground. Timbers may have formed the roof of the culvert.

Three pits were dug in the slope above the switch site, one of which suggests it was used as the foundation for a small shed or tool box. This pit, the central one of the three, incorporates a level area about 12 feet square, and the sides are lined with rocks carefully laid to stabilize them. Possible activities in this area include the storage of track tools and hand cars for the use of railroad maintenance crews or the storage of fire-fighting tools and supplies. The use of portable sheds or tool boxes would have permitted the easy movement of equipment as logging progressed.

From the switch the spur line curved to the east, climbing out of the ravine and following an essentially constant elevation contour along the slope. The roadbed became shallower, formed only by a single line of rocks along the lower side. The few crossties remaining in place suggest that only a few inches of the local sandy topsoil were shoveled up to form both the roadbed and the ballast for the tract. (Ballast is the compacted material that surrounds and supports the crossties. Its function is to drain the crossties and to distribute the weight of the trains over the entire area of the roadbed.)

Spaced out along the spur were six identifiable water crossings. In the first half mile were two shallow culverts intended to handle the flow in tiny gullies. The first was laid up of rocks in a rectangular pattern, forming an opening only slightly wider and deeper than the normal spacing between crossties. The second culvert used logs to form the opening between the ties.

As the railroad progressed along the slope, four deeper gullies or ravines were crossed within about

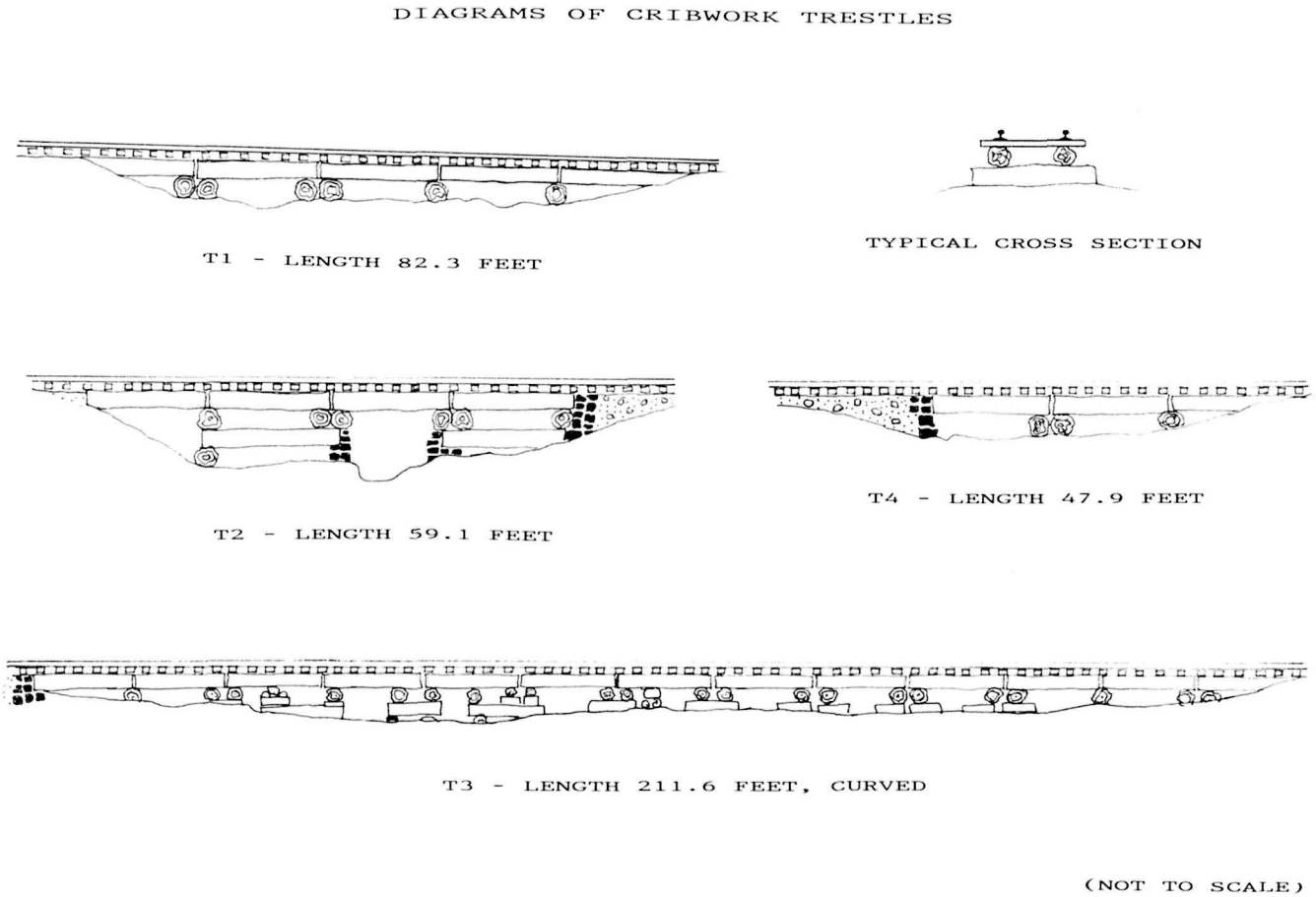


Figure 32. Diagrams of cribwork timber trestles found east of Pine Canyon near Bluewater Lake. See Table 1 for additional details.

a mile. At each depression, a cribwork timber trestle was built instead of an earth or rock fill with a culvert opening. The trestles (Figure 32) were evidently built in succession, for theyhave many details in common and may be described as a group. Table 1 lists overall dimensions and major characteristics.

Examination of the trestles reveals several points of interest. The main longitudinal stringers are all 15 to 16 feet in length, the same as typical saw logs loaded out on the railroad flat cars. Lateral spacing is very close to 56-1/2 inches, the gauge (distance between rails) of the railroad track. This dimension permitted the use of

TABLE 1. Dimensions of Cribwork Trestles:

Trestle Number	Overall Length (feet)	Number of Spans	Height (feet)	Straight/ Curved
T1	82.3	5	3	Straight
T2	59.1	4	5	Straight
T3	211.6	13	9	Curved
T4	47.9	3	3	Straight

Figure 33. Curved cribwork trestle on Pine Canyon railroad of George E. Breece Lumber Company, September 30, 1985. This structure spanned 211.6 feet with 13 spans of logs; it was built circa 1924 - 1925. By David "A" Gillio. USDA-Forest Service photograph.

standard crossties on the bridges in place of the much heavier "bridge ties" used where the stringers are set further apart (Figures 33 and 34).

At one point along the line located between the two simple culverts, was found evidence of a derailment of sufficient violence to damage at least one log car. Parts of the car were found in the vicinity: a log bunk cheese block, a truck spring, and a stirrup step hung on a tree limb. An odd length of rail and secondary growth characteristic of disturbed ground completed the picture.

At several places along its route, the roadbed of this logging spur has completely disappeared. Its path can be traced only with some difficulty by the occasional lines of rocks and a few remaining crossties. Only where more substantial grading of the roadbed occurred can the line be found with certainty.

Time did not permit tracing the full length of the Pine Canyon spur on foot. A later review of Forest Service aerial photographs indicated that the spur may have extended as far as Section 25, T. 12 N., R. 13 W.

A considerable area, perhaps as much as three or

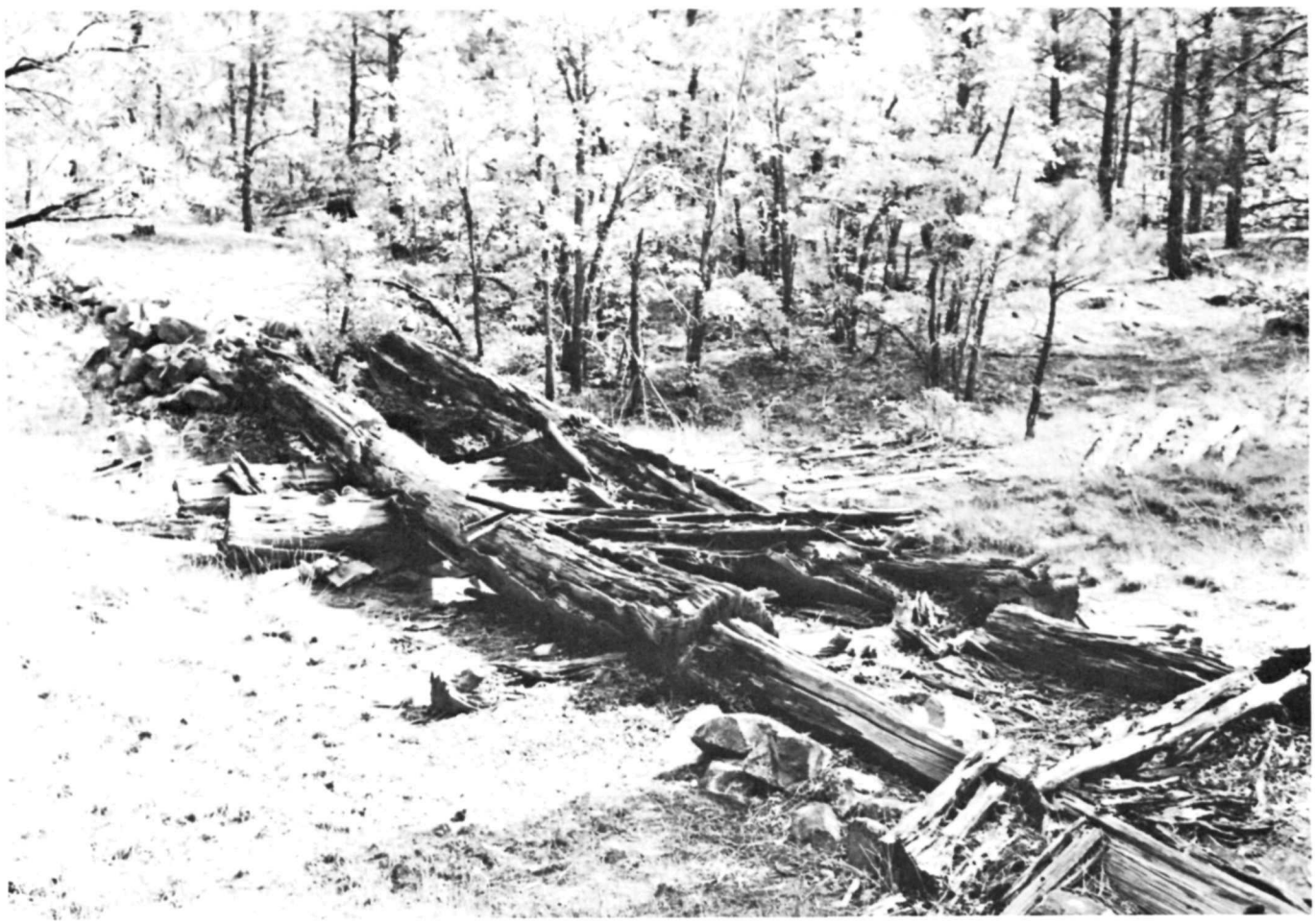


Figure 34. Three span cribwork trestle, 47.9 feet in length, on Pine Canyon railroad of George E. Breece Lumber Company, September 30, 1985. By David "A" Gillio. USDA-Forest Service photograph.

four square miles, was tributary to the railroad. Logs could have been skidded down easy open slopes to the spur line using tractors, or big wheels drawn by horses. This area extended south to the ridge line and east to Bluewater Creek.

The long planned construction of the new logging railroad westward from Grants, New Mexico, began in early 1926. The route crossed the lava country west of the town into Zuni Canyon. A winding route along the canyon floor brought the track to Malpais Spring. A further run up La Jara Canyon and over the low summit took the rails into the valley of Agua Fria Creek near Paxton Springs. A number of short branches or spurs were built, and a long line ran northwest up the Agua Fria Valley. Reports indicate that 15 or 20 miles of new railroad were built during 1926 (The Timberman, 1927; The Timberman, April 1926).

It was during the same summer that GEBLbr bought the Cloudcroft Lumber and Land Company in the Sacramento Mountains of New Mexico and began construction of a new sawmill at Alamogordo. The mill and an extension of the Cloudcroft Lumber and Land Company railroad were finished in early 1927. In another move, Breece sold his interests in the Porter Lumber Company and the White Pine Lumber Company during July 1926 (Glover 1984; Albuquerque Journal-Evening Edition 1926 [July 9]).

The George E. Breece Lumber Company had financed its expansion with bond issues. By 1927, mortgages on nearly every piece of company sawmill and timber

property secured a number of bond issues. The customary method of determining payment schedules was through the use of sinking funds, usually paid into at the rate of $2.00 or $2.50 per thousand board feet (Moodys 1925; Poor's 1927).

The new logging railroad was certainly in operation in March 1927. One Saturday late in the month saw the roof of the combined roundhouse and machine shop at Grants damaged by fire. Two locomotives were also damaged, but were quickly repaired. It appears that the Grants railroad went into full operation during 1927, and the rails were removed from all the lines out of Thoreau shortly thereafter (The Timberman 1927).

One more locomotive came to the Grants railroad; it was another hefty 2-8-0 from the CS&CCD in Colorado. The two old Shays continued in service, as did Number 7, one of the H. K. Porter locomotives. The other Porter locomotive, Number 6, had been sent down to the logging railroad at Cloudcroft (Glover 1983, 1984).

Logging in the Zuni Mountains was becoming less dependent on the railroad. Trucks were becoming more efficient and were being used to supplement the logging railroad. The railroad no longer needed to run to each logging area; trucks and tractors brought the logs to the main line railroad.

After 25 years of intensive logging activity, timber in the Zuni Mountains was becoming scarce. The more difficult and more distant logging areas were being logged as the years passed. George Breece was always looking for future timber prospects. Some of these, in the age of railroad logging, resulted in very spectacular proposals for logging railroads. One such proposal was for logging the New Mexico Division of the Apache National Forest, an area centered on the Gallo Mountains in western New Mexico. The nearest towns of any size were Quemado on the north and Reserve to the south.

The proposal, prepared by Logging Engineer D. M. Lang, considered a logging railroad extending south-southwest from the end of the Grants railroad toward Quemado, and on into the wooded area (Figure 35). To reach all the area under consideration, a total of 190 miles of track would be needed. The cost of building such a railroad, when estimated, was clearly far more than could be paid for by the relatively small amount of timber in the area. Lang concluded by recommending that the timber be cut by a series of small mill sets and hauled to the rail head by auto trucks (Lang 1928).

In spite of its economic flaws, the railroad proposal and estimates reveal something of the nature of logging railroads of the time. Portions of the proposal, including an interesting analysis of logging costs, are reproduced in Appendix C.

The hard times of 1929 and subsequent years took their toll of the George E. Breece Lumber Company. Although the Grants railroad and the Albuquerque sawmill continued to operate, reduced employment and extended shut-downs became the rule. The logging railroad at Cloudcroft was shut down permanently in June 1930 and the mill at Alamogordo closed at the same time (Glover 1984).

Activities during 1931 typified the situation. The company maintained its existence; officers were re-elected to their positions in May:

Col. George E. Breece, President
George W. York, Vice-President
P. P. Breece, Vice-President and Manager at Alamogordo
Directors: Gov. Arthur Seligman, Santa Fe
A. G. Webb, Cleveland
M. A. DeVitt, Hollywood
T. M. Stribling, Sales Manager

The company was shut down much of the year. When operations resumed in September, wages had been cut by 20 percent and only 75 men were employed at the mill, with 300 in the woods (Figure 36) (Albuquerque Journal - Evening Edition 1931 [May 4, September 12]).

It was not long, however, until GEBLbr decided that it was spending a lot of money in the woods and that it might be more efficient to lease out the logging work. An arrangement was worked out for logging operations to be taken over by two businessmen, M. R. Prestridge and Carl Seligman.

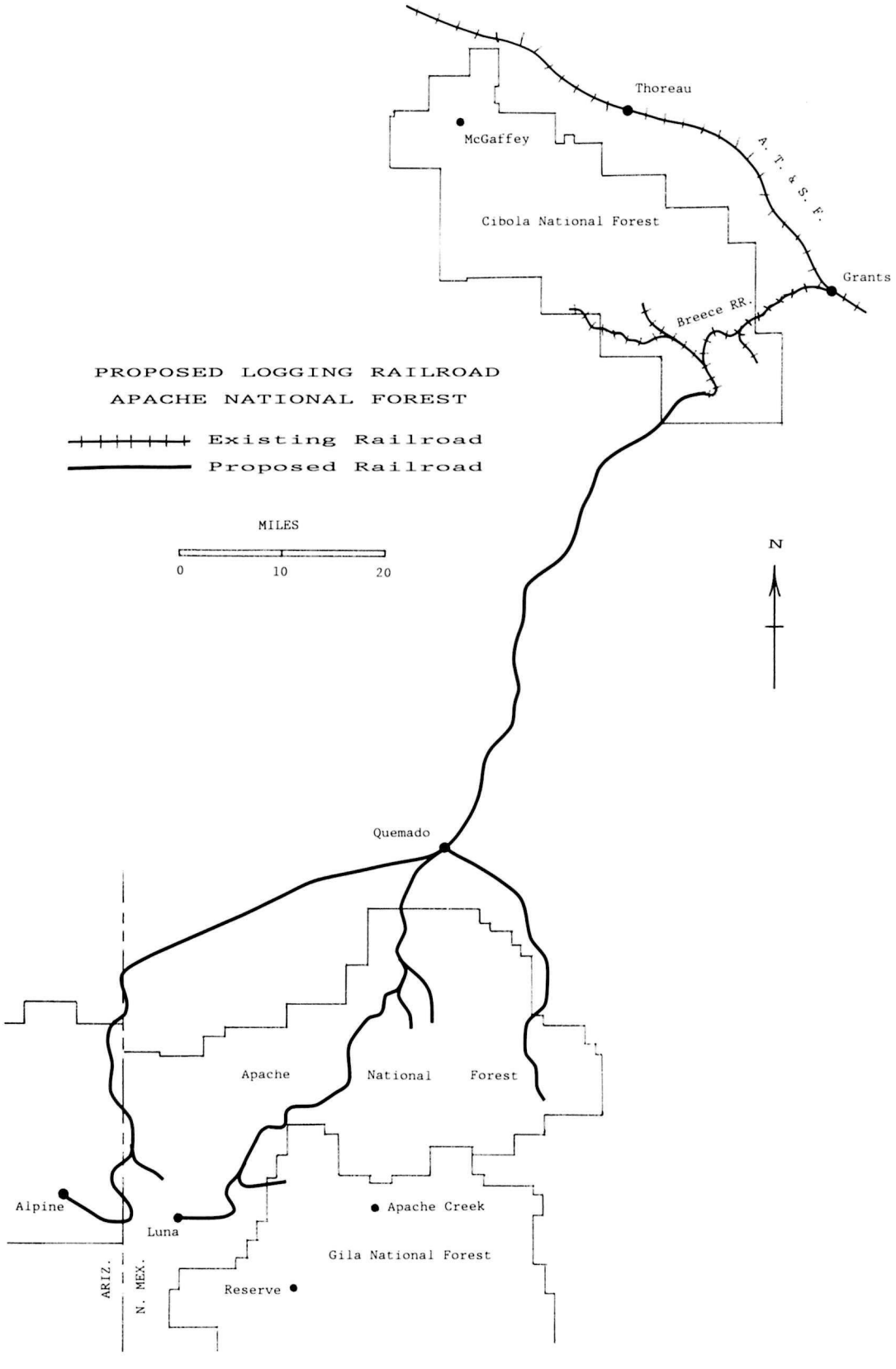


Figure 35. D. M. Lang's proposed logging railroad for the Apache National Forest.

Figure 36. George E. Breece Lumber Company sawmill in Albuquerque, New Mexico, 1932. Aerial photograph by 3 Hawks. Albuquerque Public Library collection.

Prestridge and Seligman

Carl Seligman and M. R. Prestridge were the owners and operators of the Bernalillo Mercantile Company, a general merchandise company with retail stores in the towns of Bernalillo and Grants, New Mexico. Around 1933, the two men formed a partnership, Prestridge and Seligman, for the purpose of taking over the logging operations in the Zuni Mountains formerly operated by the George E. Breece Lumber Company (R. L. Prestridge 1969).

Prestridge and Seligman (P&S) took over the GEBLbr Company railroad as it stood. They must have begun logging using the Breece rolling stock, which was getting pretty well worn. Within a matter of months, P&S bought their first locomotive, a small 2-6-0 type. It had been built by an obscure machinery builder in Marietta, Georgia, called the Glover Machine Works. This locomotive was very probably too small for the work required and it was sold in April 1935 (White 1982; Southern Iron & Equipment Co., n.d.).

The next locomotive purchased by P&S was a large 2-8-0 purchased from the AT&SF in June 1934. Number 648 was a Baldwin freight locomotive, long used in the Raton area. In April 1935, P&S acquired another large locomotive. Purchased from the Southern Iron & Equipment Company, this locomotive was a very heavy 130-ton 3-truck Shay type. These locomotives were certainly equal to their work, although they must have required that the track of the GEBLbr line be strengthened (Worley 1965:117; Southern Iron & Equipment Co., n.d.).

Prestridge and Seligman worked out of Paxton

Springs during 1934; about 100 men were employed. Horse logging was employed using teams to skid logs to the railroad. The lumber business was still uncertain, and it was reported during a brief shutdown of the GEBLbr sawmill in July 1934 that 5 million board feet of logs were stacked along the logging railroad (Grant Review 1934 [July 19]).

In spite of the softness of the business, P&S extended the logging railroad from the Agua Fria Valley up Rivera Canyon into Valle Largo. Along the way the road crossed the Oso Ridge and the Continental Divide, which ran along the crest. As much as four miles of this branch may have been built by 1934. By 1939, this line had been extended another eight or nine miles to a point beyond the little village of Tinaja south of the Oso Ridge. Logging camps were established at Valle Largo and near Tinaja (Grant Review 1934 [July 12]; Albuquerque Journal 1939 [June 25]; Valencia County 1938).

In the typical manner of rail operators, P&S picked up more equipment. Eight box cars were used for supplies and storage. P&S also installed a new diesel power plant in the old American log loader, originally steam powered. Another large locomotive was leased from the AT&SF; it was ultimately purchased. This was Number 678, a good-sized 2-8-0 type similar to the earlier Number 648 (Worley 1965:119; Prestridge & Seligman 1941).

The relatively steep four percent grade eastward out of Valle Largo, which was against the loaded log trains, severely limited the capacity of the railroad. The two former AT&SF rod locomotives were able to pull only four loaded log cars up the hill, while the big Shay could handle seven or eight (Lima 1911). The use of the heavy locomotives necessitated a solid roadbed which probably accounts for the substantial construction of the Valle Largo railroad through Rivera Canyon.

Prestridge & Seligman ceased logging out of Grants during 1941 and sold their equipment to GEBLbr Company. The inventory of equipment (Prestridge and Seligman 1941) included the following:

1 Shay locomotive
1 Rod locomotive, #648
1 Rod locomotive, #678
5 Box cars at Camp
2 Box cars at Tinaja
1 Box car at Grants
16 Cabins at Tinaja
1 Cabin shop at Landing
Approximately 10 Skidding Rigs
Approximately 10 Sets of Harness
1 Diesel power unit, installed in American Log Loader which is property of George E. Breece Lumber Company
21 Horses
2 Mules

The railroad into Valle Largo in the southern Zuni Mountains is a study in contrasts, not only within its own length, but with other logging railroads in the district. The portion of the railroad examined in detail extends across Sections 25, 26, 27, and 36 of T. 10 N., R. 13 W. At the head of Rivera Canyon the line curved across a deep ravine on a solid earth fill approximately 20 feet in depth and over 100 feet in length. The fill has remained intact except for the subsidence caused by the collapse of a wooden culvert at the fill's deepest point. Westward from the fill, the line entered a rock cut, four to five feet deep. Beyond the cut, the roadbed ran on the ground with a minimum of grading until it dropped into a long steep rock cut leading down into Valle Largo.

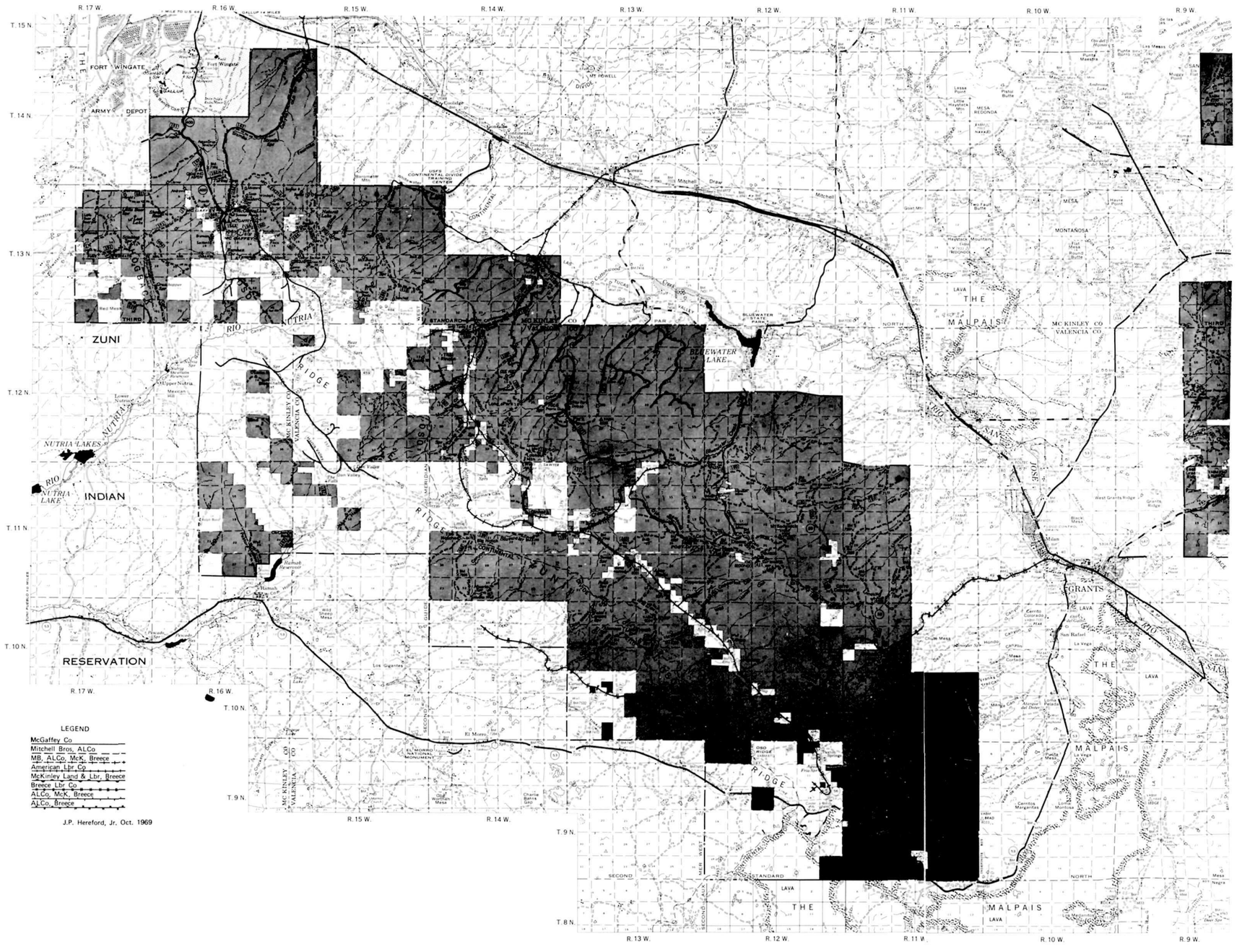
The roadbed is littered with numerous rotting crossties, many with track spikes still driven into them. Impressions of rail left on many ties indicate that the track was laid with 60 pound-per-yard rail laid directly on the pine ties without benefit of tie plates.

The cut carrying the track into Valle Largo involved considerable effort in its construction. Nearly a mile in length, the cut ranges from eight to 15 feet deep in mixed rock and earth. The gradient was almost exactly four percent for the entire length of the cut. The steep grade, which was against the loaded trains of logs, explains the use of heavy main line locomotives by Prestridge and Seligman in contrast to the much lighter locomotives used elsewhere in the district.

Beyond the long cut, Valle Largo opens out into a broad tree-rimmed valley about a mile long. The railroad bed all but disappears as it crosses the

LOGGING RAILROADS in the ZUNI MOUNTAINS

1892-1941



The map to the left shows the best known rail routes that have been traced on the ground or on aerial photos. It was originally published in the Southwestern Region's "Cultural Resources Overview: Mount Taylor Area, New Mexico." It is reproduced here as a convenient summary and illustration of the complexity of the former rail systems in the Zuni Mountains.

Additional exploration and compilation of local knowledge will undoubtedly add many more short segments to this map.

open space. Only a few rotting ties mark its route today. In the valley are the remains of a logging camp with two surviving log buildings, a cold deck for storing and loading logs, and signs of a single railroad siding.

The two log buildings were the nucleus of the logging camp which may have included a number of portable cabins and railroad car accommodations at its height of operation (Prestridge and Seligman 1941). The larger of the log buildings was 34 feet wide and 134-1/2 feet long. Its use could not be determined from a superficial examination. The other log building was about 20 feet square, and piles of ashes and slag inside suggest its use was as a blacksmith shop.

The railroad followed a stream bed westward out of Valle Largo. The roadbed was built up out of local rock, forming a ledge on the north bank of the mostly dry stream bed. West of Section 26, T. 10 N., R. 12 W., the last area observed, the railroad continued along the valley until it opens out in the vicinity of Tinaja. The railroad ended a short distance north of the village.

The construction of such a sturdy and permanent roadbed for a logging spur of obviously limited life was something of a surprise. It could have been justified to an extent by the heavy four percent grade that would have to be surmounted by the loaded log trains leaving Valle Largo. The use of heavy locomotives needed to pull reasonable trains necessitated a solid roadbed, although it could be argued that lighter locomotives making more trips up the short climb would have been equally effective. It is also possible that the line was intended to have been a heavy duty main line to gain access to the timber on the entire south side of the mountains, or possibly to have been the beginning of a long main line such as the one described in Appendix C.

Sparse records indicate that GEBLbr had turned to a truck haul about 1938 for timber cut outside the Zuni Mountains. So, when Prestridge and Seligman sold out, Breece had no further use for the Grants railroad. Attempts were made to sell the locomotives lying idle at Grants, but these came to little. The 130-ton Shay was sold to the Saginaw and Manistee Lumber Company at Flagstaff, and everything else was sold for scrap (The Timberman 1939, 1941, 1942).

The George E. Breece Lumber Company wound up its affairs during 1941 and 1942. The Alamogordo sawmill and rights to the Mescalero Apache timber were sold to Prestridge and Seligman in May 1941. The Albuquerque sawmill continued to operate but was troubled by a strike of employees beginning in May. The issue was over wages, which the company could little afford to raise. The strike continued for some time, leaving the company even less able to deal with its problems. The company continued to log and saw timber through the summer of 1941, but by 1942 the property was liquidated, and the George E. Breece Lumber Company was gone (Glover 1984; Moodys 1941, 1943; Albuquerque Journal 1941 [May 15]; U.S. Forest Service Press Release 1941).

The McGaffey Company

Crossties for the Atchison, Topeka and Santa Fe Railway were the chief reason the railroad logging show of the McGaffey Company was set up in the Zuni Mountains. By the time he built his logging railroad in the mountains south of Fort Wingate, A. B. McGaffey had gained a wealth of experience in the New Mexico timber trade and in supplying new pine ties to the railroad.

Amasa B. McGaffey was born in Lyndon, Vermont, in 1870 and was raised in the rugged woods of the Green Mountains. He was exposed at an early age to the business of timber and tie cutting. In 1891, he came west to Albuquerque and went to work. By 1903, McGaffey was able to buy out the old Hyde store at Thoreau, just as prosperity reached the district in the form of the large American Lumber Company logging operation (Twitchell 1911-1917 [Vol. 5]:230; Telling 1954:222).

An energetic as well as a capable businessman, McGaffey soon became the owner, in partnership with W. S. Horabin, of a chain of stores and commissaries in the American Lumber Company camps. In addition to the store at Thoreau, there were commissaries at Kettner, Sawyer, Cold Springs, and later on another store at Guam, a point on the AT&SF west of Thoreau. But storekeeping was not to be McGaffey's only occupation (Kennedy 1970:46;

Tietjen 1969:91-92).

McGaffey got into tie cutting in a big way in January 1907 when he took a contract with the AT&SF to cut ties on timberland belonging to the American Lumber Company, and to deliver the ties to a designated point on the Zuni Mountain Railway. For this part of his business, McGaffey used the name McGaffey Contracting Company which was initially a proprietorship or partnership. Another contract between the AT&SF and the American Lumber Company provided the timber to McGaffey (Atchison, Topeka and Santa Fe; 1907a, 1907b).

It was a good time to get into the railroad tie business. The AT&SF was busily modernizing its entire main line, making it fit to carry the big new steam locomotives needed to pull the new and heavy steel freight cars. The AT&SF was building a new pressure-treatment plant at Albuquerque for treating ties and timbers by the latest methods. This plant was intended to replace one at Bellemont, Arizona, that had burned in 1906, and the outdated plant at Las Vegas, New Mexico, dating from 1885. The railroad had been purchasing something over a million ties a year for replacements, but was planning to nearly double that quantity during 1907 (Railway Age Gazette 1917).

The next year saw McGaffey deeply involved in yet another major tie-cutting enterprise, this one concerned with floating the ties down from the high Sangre de Cristo Mountains to the Rio Grande and on down to a boom near Cochiti. The history of this enterprise, known as the Santa Barbara Tie & Pole Company, is beyond the scope of this study (Swain 1964).

It was not until 1911 that A. B. McGaffey became involved in his own independent lumbering enterprise. This one was located in the Zuni Mountains west of the Continental Divide, in an area bordering on the Fort Wingate reservation. Although it was dwarfed by the American Lumber Company holdings, the land involved, some 24,000 acres, still amounted to a sizable area.

McGaffey was still interested in the crosstie business in 1911 when some 12,000 acres of timber in the Zuni National Forest was advertised for sale. There was an estimated 42 million board feet of Ponderosa pine on the land. McGaffey was the successful bidder on the property, probably at a price not much above the minimum of $2.50 per thousand board feet. The land was west of the American Lumber Company holdings (Albuquerque Morning Journal 1911 [July 1]) and just east of the Fort Wingate reservation:

T. 13 N., R. 16 W., Sections 1-6, 8, 10, 14, 16, 18, 22, 24
T. 13 N., R. 17 W., Sections 1, 2, 12
T. 14 N., R. 15 W., Section 31
T. 14 N., R. 16 W., Sections 31-36
T. 14 N., R. 17 W., Sections 35, 36

A considerable investment would be necessary to log this large area and saw the timber for market. It appears that the incorporation of the McGaffey Contracting Company on July 6, 1911, was a major step in McGaffey's preparations to get into the lumber business in a bigger way (Albuquerque Morning Journal 1911 [July 7]). Not long afterwards, work began on a railroad south from Perea siding on the AT&SF, a point 129.0 miles west of Isleta Junction. Construction of the McGaffey railroad probably did not begin until the ground thawed in 1912.

Although the McGaffey Company's logging railroad has been gone for over 50 years, the main line between Perea and McGaffey remains easy to trace. The roadbed is paralleled for its entire length by Forest Road 547, which in places is built directly on the old railroad bed. From the junction with the Santa Fe Railway at Perea, the McGaffey line ran south over sandy ground along the bottom of Sixmile Canyon. Out in the flats, earthwork was at a minimum, simply a low mound. As the canyon climbed and narrowed, the roadbed became better defined. Increasingly deeper cuts and fills were required to keep to an even grade.

The railroad continued right up the canyon, its steepness increasing as it climbed. Near the summit at the head of the canyon, the gradient reached 320 feet per mile or over six percent. This feature alone reveals that the McGaffey railroad was originally surveyed for gear-drive locomotives. To have kept to a four percent grade, the maximum for effective rod locomotive operation,

would have necessitated the use of switchbacks or much greater earthworks to support climbing loops of track.

Beyond the summit, the line dropped down a four percent grade to Turkey Springs. A series of deep cuts in sandy, dusty soil characterized this section. From Turkey Springs, the line climbed a four percent grade to a summit at 7940 feet above sea level, and then plunged down into Train Canyon. Heavier side-hill construction and a high curving fill kept the grade to about 160 feet per mile or three percent.

Although it has been used as a forest road for over 50 years, the McGaffey Company main line retains most of its distinctive railroad engineering features. In contrast, most of the McGaffey logging lines are very difficult to locate, whether on aerial photographs or on the ground, because of their very light construction and very short life.

With those grades, it was no surprise that McGaffey's first locomotive was a big 70-ton, 3-truck Shay, outshopped in July 1912. A locomotive of this type could haul 275 tons on the 4 percent grades or 167 tons on the 6 percent grades (Lima 1911:37).

Completion of the "main line" from Perea to McGaffey probably occurred in September or October 1912. The sawmill was located on the valley floor at McGaffey (Figure 37), and it was ready for use at about the same time. Its capacity was 50,000 board feet per day. The mill may have included some machinery from an earlier mill, known as the Ketner sawmill, in the vicinity. Logging under the Forest Service contract began in mid-November (Albuquerque Morning Journal 1912 [November 13]).

McGaffey was a good site for a sawmill. A dam and reservoir was built to provide a mill pond and a water supply for the steam boilers. Broad valleys provided easy routes for the logging railroads in several directions, and the mill site was centrally located in the McGaffey timber. At the beginning of logging operations, four or five miles of logging spurs had been built in addition to the main line described above.

A second large area of good timber, located south of his present holdings, came to McGaffey through a complex series of events. Back in 1905, Clark M. Carr had purchased the tract of approximately 12,000 acres of land from the Territory of New Mexico for $2.50 an acre (Figure 38). The timber on the land was to be cut within five years, and the price was to be paid in installments. Apparently Carr was barely able to begin cutting the timber, and he paid only a fraction of the price. Then he assigned his rights in the land to a Michigan corporation. The principals in this company were John Garvin and William McFarlane of Ontonagon, Michigan, and John R. Gordon of Marquette, Michigan. These purchasers, too, were unable to develop the timber until after the expiration of the contract. Time passed until May 15, 1914, when Land Commissioner R. P. Ervein of the young State of New Mexico suddenly cancelled the old contract (Albuquerque Morning Journal 1914 [May 6, May 20, June 3]). The stage was set for McGaffey's entry.

By June 1, 1914, the Michigan parties were ready to sign a new contract with the state. They did so at a new price: $3.10 per acre for the timber and an obligation to bid at least $3.00 per acre when the land was put up for public sale on October 1, 1914 (Albuquerque Morning Journal 1914 [June 3]).

McGaffey was in an ideal position to contract for the logging of the McFarlane tract, as it became known. He had a sawmill and a logging railroad right on the edge of the tract. Although the details are not known, McGaffey apparently concluded an agreement with the Michigan owners and began logging within a matter of months. He certainly ordered and took delivery on a second locomotive. Number 2 was a duplicate of Number 1, a 3-truck 70-ton Shay (Koch 1971: 445).

With the arrival of the second locomotive, the McGaffey Contracting Company railroad assumed a major stature among local logging railroads. In addition to the two locomotives, the railroad owned a collection of skeleton-frame log cars, and a Barnhart log loader. This type of loader ran on rails installed on the log cars. As it loaded each car in succession, the loader moved under its own power to the next empty car in the train. When the entire train was loaded, the loader was left sitting on its own empty log car. Or it could be

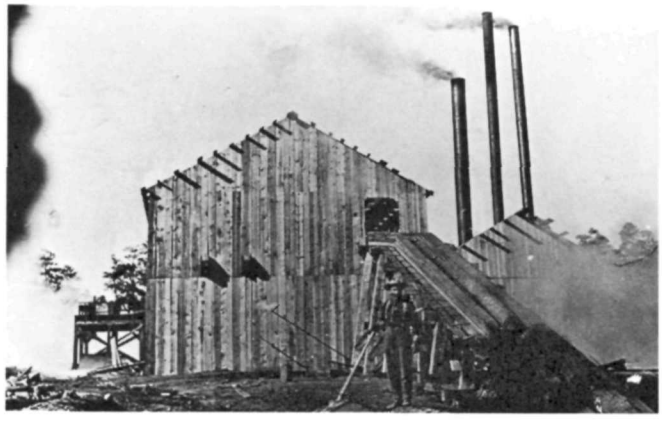


Figure 37. The original McGaffey sawmill, showing the conveyor for moving logs from the pond into the mill. The power plant, with its three stacks, is seen in the right rear. Gallup Public Library Photo Archives #416.

easily transported to another loading site (Figure 39).

Horses pulling big wheels were used as the primary method of logging. It is said that, while 25 percent of the trees were left uncut on Forest Service lands, only two "seed trees" per acre remained on the private land after the loggers were done. Logging continued all year around whenever possible. When snow prevented the use of big wheels, big oak sleds called "drays" were used (Berger 1985; Gallup Independent 1978 [January 26]).

Figure 38. An early sawmill on the Clark M. Carr sale. Cibola National Forest collection.

As the logging railroad stretched further away from the mill, both Shay locomotives were kept busy. One locomotive made a daily log run into the woods six days a week. The normal load was about 12 cars, with more being hauled during the favorable logging period of the warm months. The second locomotive made at least two round trips a week to the junction at Perea. In between trips, it would switch log cars at the mill and make short trips into the woods to pick up logs (Figures 40 and 41) (Berger 1985).

The rugged backwoods routine of life at McGaffey was broken in March 1917 when the sawmill was destroyed by fire (Figure 42). Work began immediately to build a new mill, but it was not until December that sawing resumed. The new mill machinery was purchased from Filer & Stowell, and it was installed by W. H. James. The nominal capacity of the new machinery was 75,000 board feet per day, but a flaw in the design of the mill arrangements prevented the actual output from exceeding 57,000 board feet per day. Under the direction of Stan Horabin, who was now superintendent at McGaffey, the saw carriage was rebuilt and carefully lined up by Barney Prestridge, but the "back end" or output side of the mill remained too small (Berger 1985; Gallup Independent 1978 [February 4]).

During 1917, the McGaffey operations were reorganized into a single corporation, probably as a result of the need to finance the new sawmill after the fire. The new McGaffey Company, capitalized at $50,000, was a merger of the old McGaffey Company, the McGaffey Contracting Company and the Alton Livestock Company. The latter had been formed by A. B. McGaffey, L. C. Smith, and a man named Allan, around 1910 (Tietjen 1969:92; New Mexico Corporation Commission 1917).

The McGaffey Company must have been profitable, in spite of the expense of the new sawmill, for later in 1917 A. B. McGaffey became associated with a big lumbering enterprise over in Arizona. This was the Apache Lumber Company headed by Thomas E. Pollock of Flagstaff, Arizona. The chief asset of the company was some 635 million board feet of timber on the Sitgreaves and Apache National Forests and the White Mountain Apache Reservation. McGaffey was a major investor in the new company and, in

Figure 39. Loading logs on the McGaffey Contracting Company cutting. Shay locomotive Number 1 waited while the Barnhart loader hoisted the 16 to 20 foot pine logs onto the cars. After each car was loaded, the loader moved back one car length to repeat the process. The loader rode on car-top rails. Robert Searle collection.

addition, became president of the affiliated Apache Railway (Matheny 1976).

The town of McGaffey prospered after the mill was rebuilt (Figure 43). The mill complex included the sawmill, planing mill, power house, machine shop, blacksmith shop, a big waste burner, and a steam-heated log pond. The town itself housed as many as 200 families, most of them in rows of company houses laid out neatly in the nearby woods. Other town buildings included the general store, post office, a five-room school and the Catholic Church (Figures 44 and 45) (Berger 1985; Gallup Independent 1980 [May 23]).

Over the years the McGaffey logging railroad was extended a considerable distance to the south. One line crossed the Oso Ridge and ended up in the Dan Valley, some 20 miles from the mill at McGaffey. None of the logging spurs involved noteworthy engineering, although photographs indicate the use of "pig-pen" trestles to cross the deeper arroyos. Although wasteful of timber in the extreme, such cribwork spans were cheap and easy to build from nearby timber.

The railroad ran much the same as always. Jim Clark was the woods engineer on Shay Number 1, pulling the log trains (Figure 46). Walter Viles ran Shay Number 2 making the regular trips to Perea, now up to three round trips each week. The railroad carried a wide variety of loads. Cars of ties and cut lumber went out along with occasional orders of special bridge timbers. Although the normal saw logs were 16 to 20 feet in length, the mill could handle logs up to 36 feet. Inbound were carloads of coal to fuel the mill and the locomotives, as well as all manner of supplies for the

Figure 40. McGaffey Contracting Company log train heading for the mill. The Barnhart steam loader at the rear of the train rode on an empty log car from one loading point to another. The train was crossing a very large cribwork log trestle, sometimes called a "pig-pen" trestle. Robert Searle collection.

loggers and the townsfolk. Empty cars for loading were an important part of the inbound trains. During the harvest season, the farms and ranches south of McGaffey ordered empty box cars for loading wheat and potatos. These were supplied by the AT&SF and were brought down from Perea by the McGaffey Company train (Berger 1985; Gallup Independent 1978 [January 26]).

When any but the shortest trains were run between McGaffey and Perea, Shay Number 2 would have to "double the hills." This meant simply that, on the steepest grades, the locomotive would leave part of the train standing at the foot of the steep grade while it pulled all that it could to the summit. After leaving its load at a siding at the summit, the locomotive returned for the remainder of the train. Sometimes two or more extra trips up the hill would be required. On the McGaffey Company railroad, doubling was a common practice on both sides of the summit at the head of Sixmile Canyon (Berger 1985).

The two McGaffey Shays were repaired when necessary

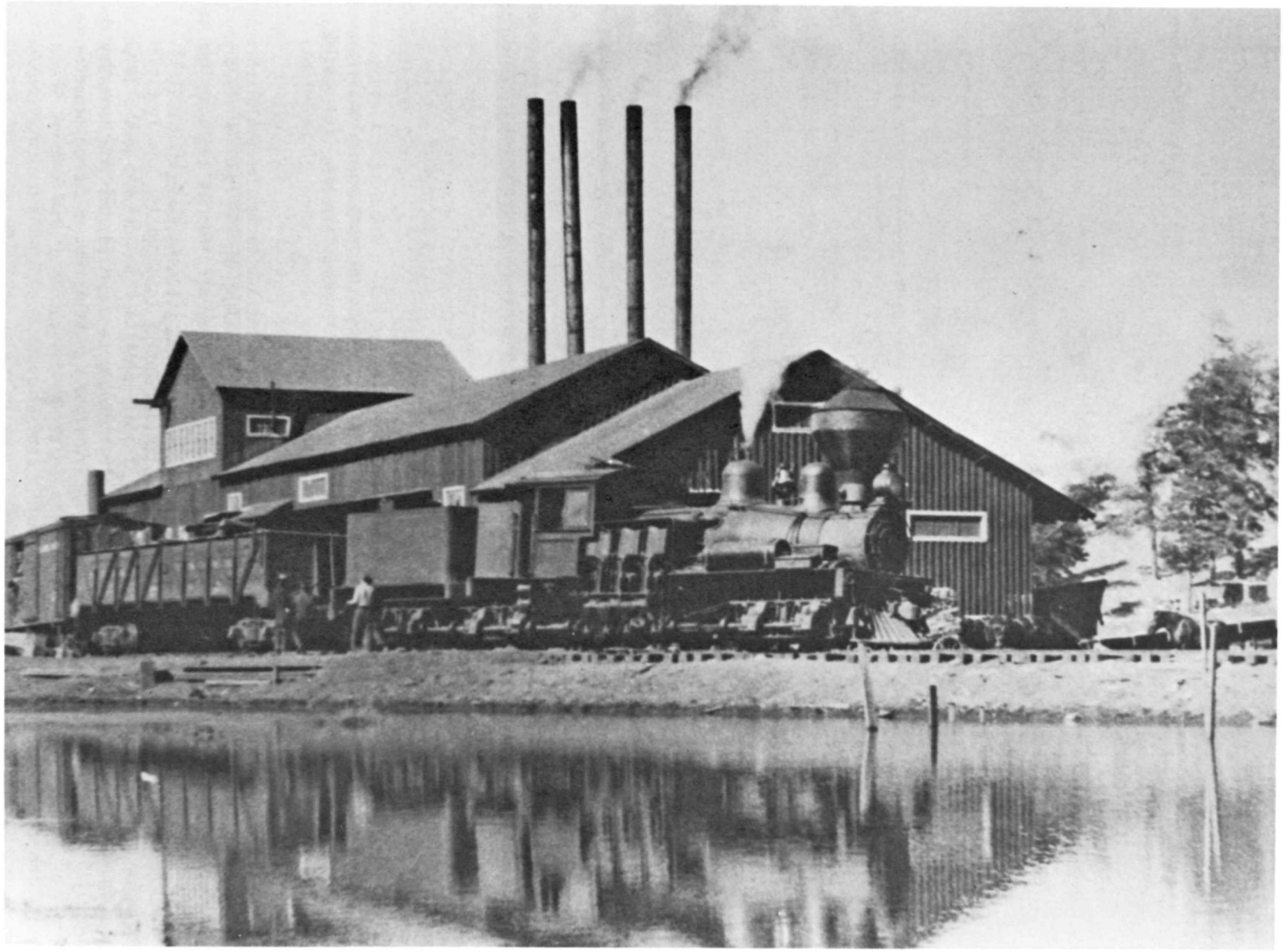


Figure 41. McGaffey Shay locomotive switching freight cars for a trip to Perea. Thomas Gasparich collection.

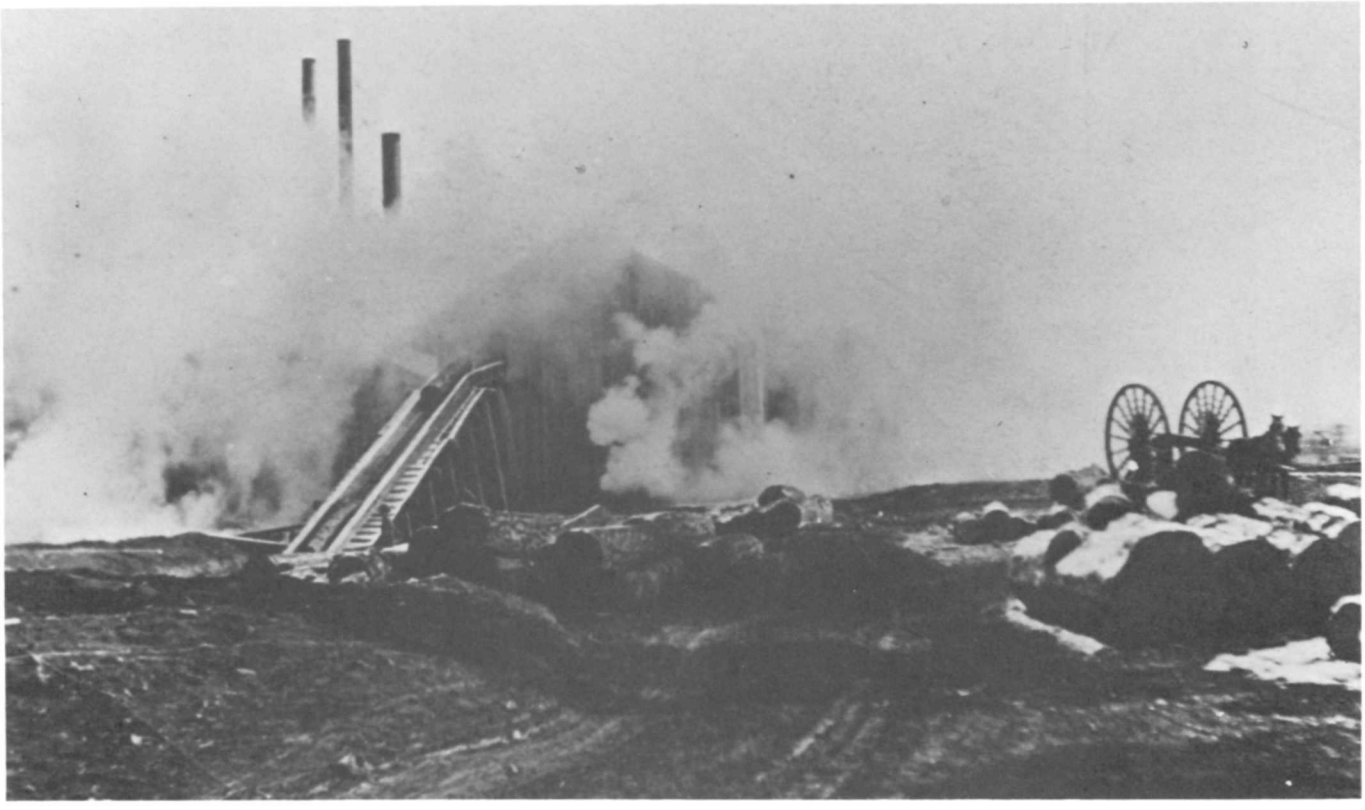


Figure 42. The sawmill fire at McGaffey in March 1917. The mill was totally destroyed. Gallup Public Library Photo Archives #417.

right at the mill. In the absence of an engine-house, most of the work was done outdoors. With all of its working parts right out in the open, the running gear of a Shay was easy to repair (Figure 47). The locomotive was simply jacked up, supported on timber cribbing, and the worn or damaged parts replaced. At one time all of the pinion gears on the drive shaft of one of the Shays were replaced. Using these simple methods, the work took about a month to complete. As time passed, more repairs and overhauls of the locomotives became necessary. There is some indication that McGaffey rented or borrowed small locomotives from the AT&SF to fill in. One example was a 75-ton 2-8-0 built by Brooks (Ron Welch n.d.; Berger 1985).

As on all logging railroads, minor accidents and derailments were common occurrances on the McGaffey railroad. Major accidents were rare, but when they occurred an extraordinary effort was required to put things right. Once during the period from 1915-1917, one of the Shays ran off the rails onto swampy ground somewhere above McGaffey. The company was forced to call on the AT&SF for help, which came in the form of the Winslow, Arizona, wrecker -- a big and heavy steam derrick -- and a locomotive. Bringing this weighty outfit down the McGaffey railroad must have been nearly as exciting as lifting the 70-ton Shay back onto solid ground (Berger 1985).

During the 1920s, logging was motorized to some extent, with tractors and trucks replacing horses for bringing logs to the railroad. A logging contractor hired during one period used eight Coleman trucks in his work (Figure 48). An old photograph shows a Caterpillar tractor pulling an eight-wheel log wagon. Another photograph (Figure 49) shows that the original Barnhart loader had been supplemented with two updated loaders of the same general type, possibly American Hoist &

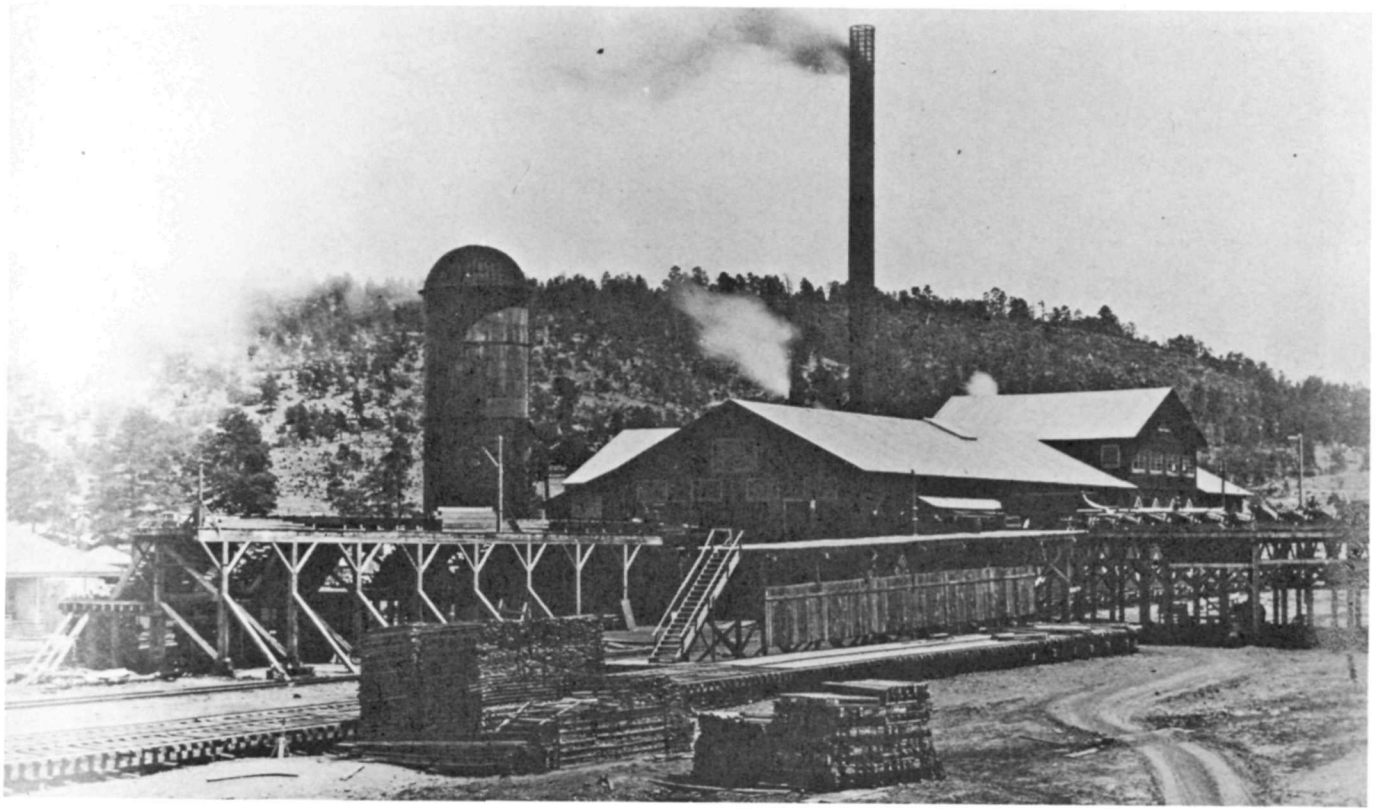


Figure 43. McGaffey sawmill as rebuilt following the March 1917 fire. Gift of Lydia Walker Morgan to Gallup Public Library; Photo Archives #415.

Figure 44. Part of McGaffey town as seen from the sawmill, 1918. Rows of neat wooden dwellings were typical of McGaffey. By O. C. Havens. Gallup Public Library Photo Archives #1098.

Figure 45. McGaffey lumber yard and sawmill. Note the four stacks on the powerhouse. Gallup Public Library Photo Archives #1102.

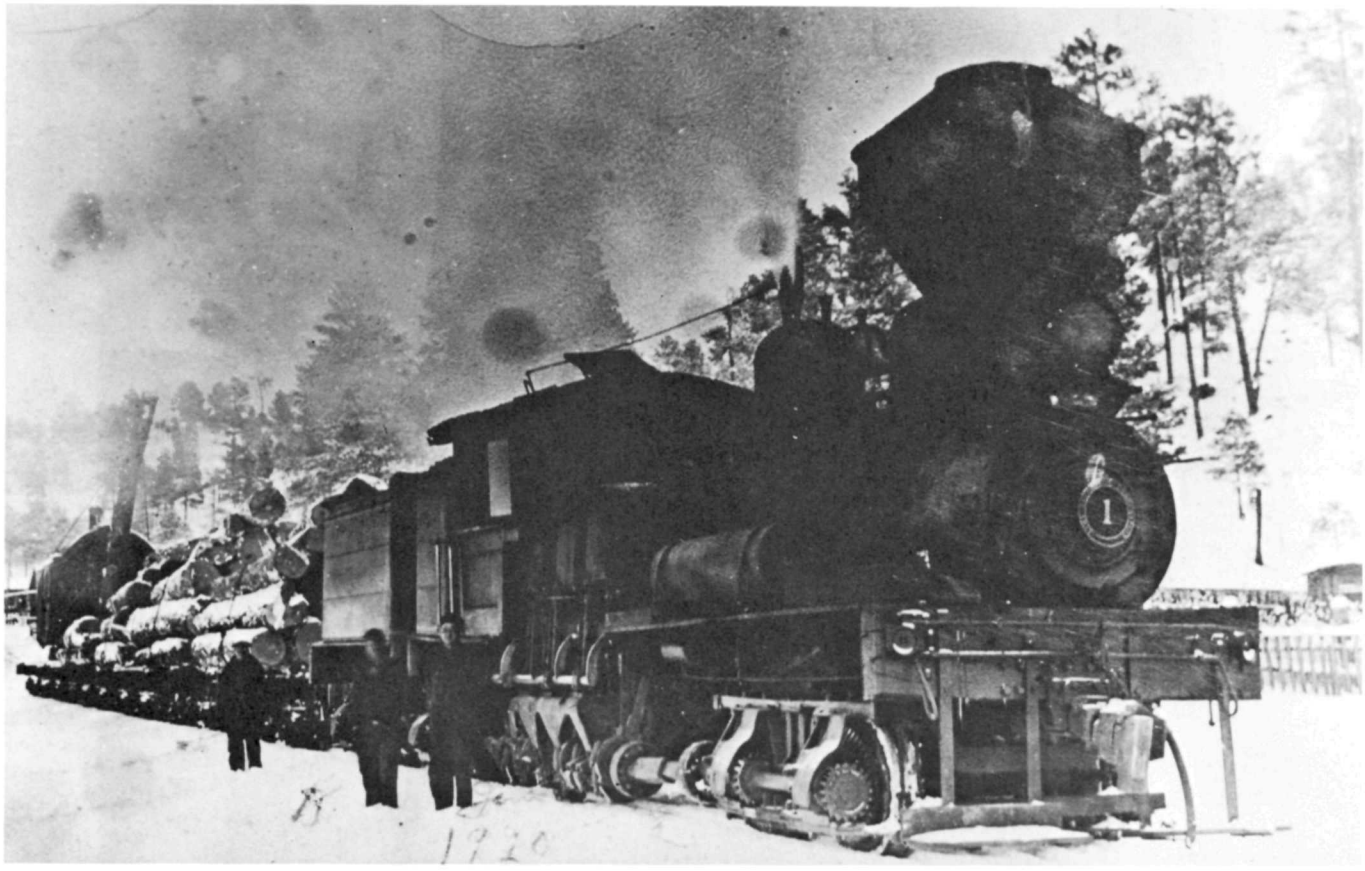


Figure 46. McGaffey Company Shay Number 1 was the woods locomotive. Jim Clark, the engineer, stood near the cab. By this time, the locomotive had lost its big wood pilot or "cowcatcher," and it had acquired a pair of rather spindly footboards. Susan Clark Kirk collection. Gallup Public Library Photo Archives #1322.

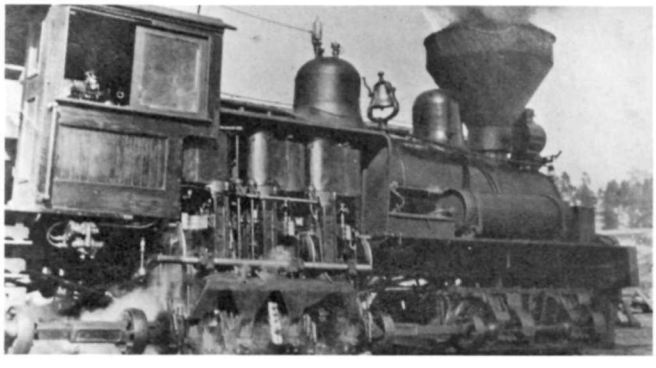


Figure 47. McGaffey Company Shay locomotive Number 1. This clearly shows the "works" of the Shay, with its main crankshaft and line-shaft to the geared wheels. Susan Clark Kirk collection. Gallup Public Library Photo Archives #1303.

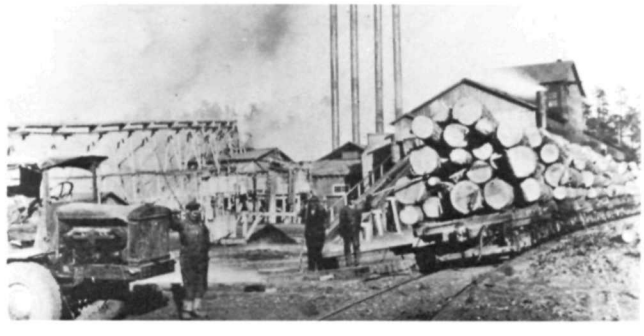


Figure 48. The log dump at McGaffey. Seen in this interesting view is an early Coleman logging truck on the left, and a string of loaded railroad log cars. Homer Baumgardner is standing next to the log cars. Gallup Public Library Photo Archives #1172.

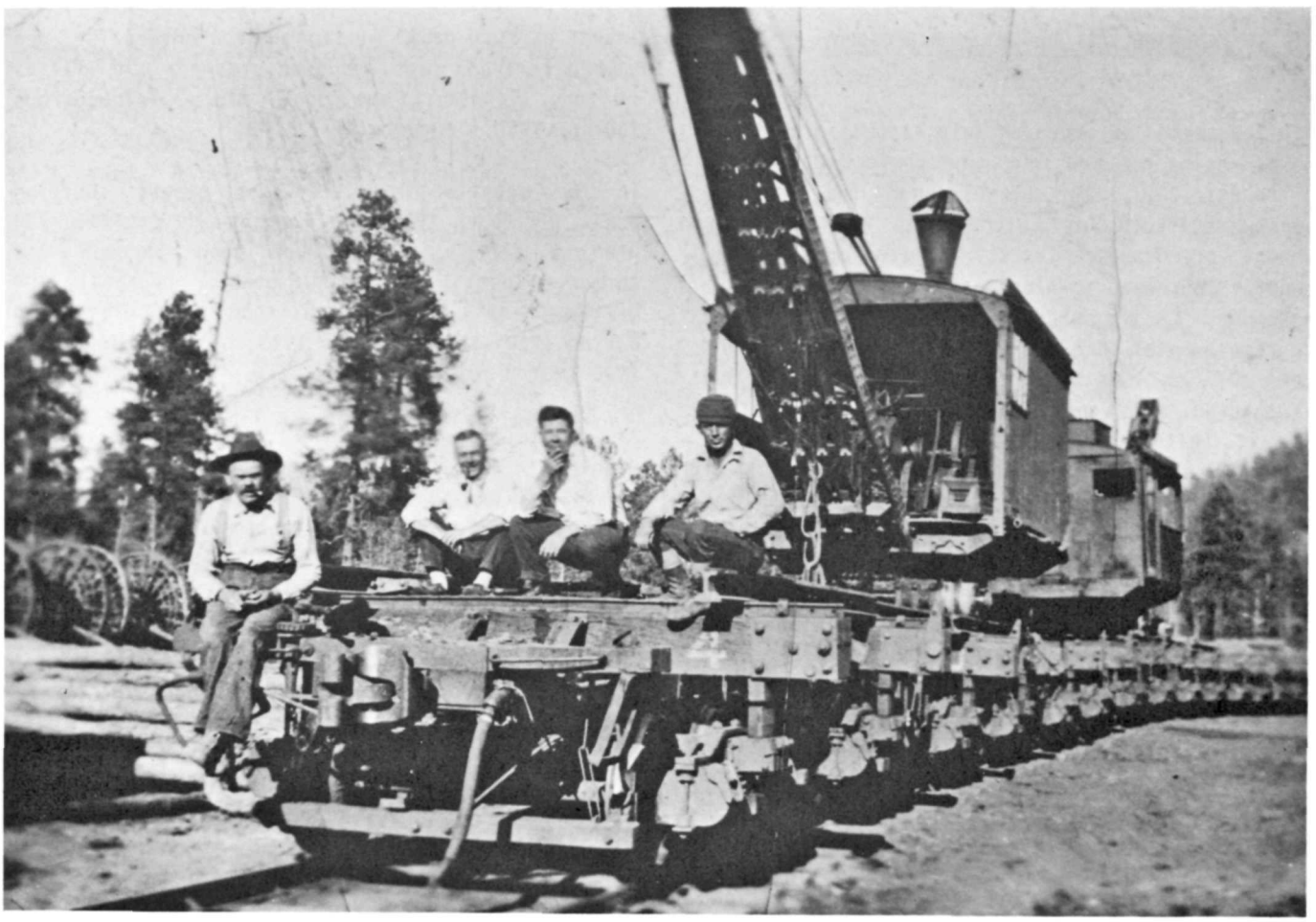


Figure 49. A string of McGaffey Company log cars carrying a pair of American Hoist & Derrick Company Model C log loaders. Although similar in concept to the earlier Barnhart loaders used by McGaffey, the Model C's were of sturdier steel construction. The four-wheel undercarriage was propelled along the car tops by a gear train. Susan Clark Kirk collection. Gallup Public Library Photo Archives #1308.

Derrick Model C loaders (R. Bryant 1923:362; Berger 1985).

The years passed at McGaffey. The rapid-fire chuffing of the Shay locomotives seemed as if it would go on forever. But, of course, the timber finally came to its end, and McGaffey began searching for additional timber. In February 1929, McGaffey purchased an additional 5 million board feet of Forest Service timber, the "Navajo Siding" Unit, northeast of the town of McGaffey (Randles 1924; Gallup Independent 1929 [February 8]).

But A. B. McGaffey had something far greater in lumbering potential in mind. Since early 1928, he had been considering the pine timber on the Defiance Plateau on the Navajo Indian Reservation. Following a survey by the Bureau of Indian Affairs in May 1928, the unit was advertised for sale. The timber consisted of an estimated 500 million board feet of Ponderosa pine and was located north of Fort Defiance just west of the Arizona border. McGaffey bid on the timber at the minimum rate of $3.00 per thousand board feet, and he was awarded the contract in late 1928 (Kinney 1950:155).

Lutcher and Moore Lumber Company

McGaffey seemed to have run into trouble organizing and financing his new lumbering project operation. On August 20, 1929, he assigned the Defiance Plateau contract to Lutcher and Moore Lumber Company of Orange, Texas. A few days later, McGaffey journeyed to Albuquerque where on Tuesday, September 3, he boarded an airliner of the Transcontinental Air Transport line. The plane took off on its flight to Los Angeles and disappeared into the clouds over Mount Taylor. When it failed to arrive at its next stop, the plane was presumed down, and a search began. It was not until Saturday, September 7, that the wreckage of the plane was found high on the mountain following a frantic and widespread search. All on board were dead (Albuquerque Journal 1929 [August 23, September 3, September 7]; Kinney 1950:155).

Lutcher and Moore made a determined effort to develop the timber during 1929 and 1930, but the economic conditions of the time prevented them from carrying out their plans. During 1930, Lutcher and Moore was planning to log with a 25-mile railroad out of Gallup, New Mexico, or Manuelito, Arizona. They considered mill sites at both Albuquerque and Gallup. At one point, the company was planning to invest as much as $3 million in the enterprise, and 80,000 railroad ties had been ordered, but little, if any, construction took place (Albuquerque Journal 1930 [February 21]).

In the meantime, McGaffey was slowly shutting down. By March 1930, all logging had ceased. The planing mill, however, continued through the summer. Then, it too, shut down. Apparently the mill machinery and the railroad were dismantled during 1930 (The Timberman 1930; Gallup Independent 1930 [March 22]).

At least one of the two Shay locomotives at McGaffey was sold to Lutcher and Moore, presumably for use in construction of the Defiance logging railroad. It was repaired at the AT&SF roundhouse in Gallup during 1931. The other Shay locomotive and the log loader were set aside on a track at Perea and forgotten for several years. Lutcher and Moore announced a plan to log using truck haulage and portable sawmills, but that too was doomed to failure. In 1935, the two locomotives were shipped out to a Mexican logging operation. And, finally, in July 1935, the Department of the Interior declared the Defiance contract to be forfeit, following several years of inactivity (Santa Fe Magazine 1931:81; Albuquerque Journal-Evening Edition 1931 [October 13]; Kinney 1950:155-156; Koch 1971:441, 445).

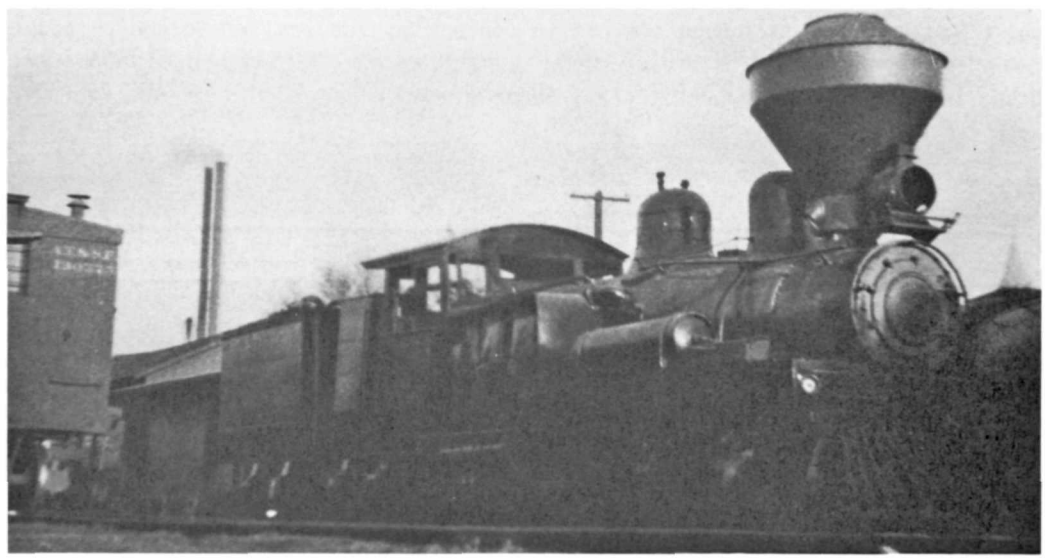


Figure 50. McGaffey locomotive Number 2 at El Paso enroute to Mexico, 1935. R. L. Welch collection.

CONCLUSION

The steam logging railroads of the Zuni Mountains were, in retrospect, only a brief interlude in the history of the area. In many ways, they left little sign of their passing and they were little noted by many. For others, however, the logging railroads were part of pioneer life in the mountains, an integral part of a tough, rugged existence in a hard and remote land. For that reason alone, their story is worth the telling.

But the logging railroads served another purpose, one that has only rarely been mentioned in histories of the town of Albuquerque. That purpose was economic. For many years, the sawmill in northwest Albuquerque was one of the two largest employers of labor in the city, rivaling the AT&SF repair shops. Fed by the regular trains of logs from the mountains, the operation of the sawmill was a key element in Albuquerque's growth and economic vitality for many years. Only with the coming of the nuclear age was "the sawmill" eclipsed as one of the town's most important institutions.

Thus, these minor railroads made their mark on the community and on the land. Although they have passed from the scene, they have left behind some fascinating traces and memories of their time. This study has explored their history and physical plant to provide a record for future use and reference.

Figure 51. Zuni Mountain Railway Number 6 outside of Kettner with a log train. The engineer apparently halted his train for the benefit of the photographer, resulting in this interesting study of railroad logging in the Zuni Mountains. Cibola National Forest collection.

APPENDIX A

LOCOMOTIVE ROSTERS

Locomotives in the Zuni Mountains

The logging railroads of the Zuni Mountains used what could best be described as a "motley collection" of steam locomotives. Some came from dealers in used railroad eqipment, many were purchased from the friendly AT&SF, and several came right from the builder's works. Few, if any, of the locomotives were of any distinction in terms of design; they were simply purchased from among the locomotives available at the time. Nevertheless, several of the locomotives worked for years in the Zuni Mountains serving under several companies in turn.

The typical logging locomotive in the Zunis fell into one of two groups. The first group consisted of obsolete main line locomotives, purchased from the AT&SF or from dealers in such equipment. This group also included a number of obsolescent locomotives leased from the AT&SF for periods ranging from a few days to a year or two. The second group was made up of specialized logging locomotives purchased new from the builders for use on steep logging spurs laid with light rail on uncertain road beds. The Shay geared locomotive, built at Lima, Ohio, proved to be the most popular and longest-lived of the specialized types. The lone Climax gear-drive locomotive was useful enough to last for many years.

The accompanying Locomotive Rosters (Tables 1, 2, 3, 4, 5,) list every locomotive known to have operated on the logging railroads in the Zuni Mountains. It is very likely that there were additional leased locomotives, but specific information is not available. The tables also list, where known, the locomotive wheel arrangement, builder, date built, builder's serial number, and the key dimensions and weights. This information is expressed in an abbreviated form which may best be explained by the following example:

102 2-8-0 Schenectady #5620, 1900 51-22x26 - 168500

102 is the road number, i.e., the number assigned to the locomotive by the operating company. It is usually found painted in several places and on a cast number on the smokebox front of the locomotive.

2-8-0 represents the locomotive wheel arrangement in the Whyte System (Bruce 1952:19, 25). The first digit counts the pilot truck wheels. The second digit counts the driving wheels. The third digit counts the trailing wheels. A zero is used to indicate none, and "T" indicates a tank locomotive carrying fuel and water on the locomotive itself in place of a separate tender. Gear drive locomotives are indicated by 2T Climax or 3T Shay, showing the number of drive trucks and the design.

Schenectady #5620, 1900 is the builder, builder's serial number and date built (year or month/year). The serial number is usually found on a cast plate attached to the smoke box and often it is stamped into other parts of the locomotive. The builders of concern here include the following:

Baldwin Locomotive Works, Philadelphia, Pa.
Climax Manufacturing Company, Corry, Pa.
Glover Machine Works, Marietta, Georgia
Hinkley Locomotive Works, Boston, Ma.
Lima Locomotive and Machine Company, Lima, Ohio
Manchester Locomotive Works, Manchester, New Hampshire
H. K. Porter Company, Pittsburgh, Pa.
Schenectady Locomotive Works, Schenectady, New York
American Locomotive Company (ALCO), Schenectady Works, Schenectady, N.Y., and Brooks Works, Dunkirk, New York

51-22x26-168500 gives some key locomotive dimensions:

51 is the driving wheel diameter in inches.
22x26 is the diameter and stroke of the cylinders in inches.
168500 is the total engine weight in pounds.

The term "light weight," where used, means the weight of the locomotive without its normal load of fuel and water. The weights of gear-drive locomotives, given as "70 tons," are nominal weights of typical locomotives of the same class. Actual locomotives varied considerably, depending on details chosen by the purchaser.

Table 1. Locomotives of the Zuni Mountain Railway (Narrow Gauge), 1892

Road Number		Description	
(?)	2T Shay	Lima	
212	2T Shay	Lima #212, 5/1888	28-(3)10x10-

Histories:

(?) Little is known of this locomotive except that it arrived in New Mexico on May 23, 1892, and went to work at Mitchell around July 1. It was heavily damaged in a wreck on August 8 or 9, 1892, and may have been scrapped subsequently.

No. 212. Built for Wilson, Luther & Wilson, Luther, Michigan as No. 212, then to Mitchell Brothers ca. August 1892. Location and owner unknown until shipped to Ferrocarril Toluca y Zitacuaro, Zitacuaro, Michoacan, Mexico, ca. 1908.

Figure 52. A borrowed Santa Fe Railway locomotive, Number 2303, off the rails on new logging track of the Zuni Mountain Railway, January 4, 1906. V. J. Glover collection.

Table 2. Locomotives of the Zuni Mountain Railway (Standard Gauge)
1903 - 1917

Road Number		Description	
2		No data	
4	4-6-0	No data	
6	2-8-0	No data	
8	2T Climax	Climax Mfg. Co., 1906	
10	3T Shay	Lima #2027, 12/1907	36-(3)12x15-116000 #light
12	2-8-0	Baldwin #32564, 1/1908	51-21x26-
3	3T Shay	Lima #2321, 5/1910	36-(3)12x15-119300 #light
096	4-4-0	Manchester, 1880	61-17x24-84200
261	4-6-0	Schenectady #2499, 1888	58-18x26-113750
271	4-6-0	Schenectady #2501, 1888	58-18x26-113750
2303	2-8-0	Hinkley #1530, 1882	48-17x26-88000

Histories:

2. Purchased from a dealer ca. 1903. Refurbished at AT&SF shops Albuquerque, July 1903. Damaged in wreck in September 1907.

4. Purchased from a dealer ca. 1903.

6. Purchased from Hicks Locomotive & Car Works (dealer) in 1905.

8. New. Order reported in Railway Age, April 6, 1906. Retired ca. 1923.

10. New.

12. New. Sold 1920.

3. New.

096. Purchased April 3, 1912. Was AT&SF 096.

261 and 271. Purchased March 1, 1916. Were AT&SF 261, 271. Evidently the two locomotives had been leased by the Zuni Mountain Railway some time prior to the ceasing of operations in late 1913. Note that the recorded date of sale was during the period of inactivity.

2303. Leased from AT&SF ca. 1906 - 1908.

General Note: Most, if not all, of the above locomotives were taken over by the McKinley Land & Lumber Company in 1917.

Table 3. Locomotives of the McKinley Land and Lumber Company, and the George E. Breece Lumber Company, 1917 - 1942

Road Number		Description	
3	3T Shay	Lima #2321, 5/1910	36-(3)12x15-119300 #light
4	4-6-0	No data	
6	2-6-2T	Porter #6727, 8/1922	44-19x24-167000
7	2-6-2T	Porter #6817, 6/1923	44-20x24-174000
8	2T Climax	Climax Mfg. Co., 1906	
2nd 8	2-8-0	ALCO-Schenectady #25622, 1902	51-22x26-168500
9	4-6-0	Schenectady #3262, 11/1890	51-19x26-125000
10	3T Shay	Lima #2027, 12/1907	36-(3)12x15-116000 #light
12	2-8-0	Baldwin #32564, 1/1908	51-21x26-
102	2-8-0	Schenectady #5620, 1900	51-22x26-168500

Histories:

3. Formerly American Lumber Company. Disposition unknown.

4. Formerly American Lumber Company. On property in derelict condition.

6. New. Used at Grants, then at Cloudcroft ca. 1926-1930. Sold ca. 1942.

7. New. Scrapped ca. 1942.

8. Formerly American Lumber Company. Retired ca. 1923.

2nd 8. Was Colorado Springs & Cripple Creek District RR. 8, purchased ca. 1923.

9. Formerly Colorado Midland RR. 46. Purchased March 29, 1920.

10. Formerly American Lumber Company. Disposition unknown.

12. Formerly American Lumber Company. Sold June 29, 1920.

102. Was Colorado Springs & Cripple Creek District RR. 2, purchased ca. 1926.

Note: In addition, George E. Breece Lumber Co. purchased the locomotives owned by Prestridge & Seligman at Grants in 1940. See Table 4.

Table 4. Locomotives of Prestridge & Seligman, Grants, New Mexico, 1933 - 1940

Road Number		Description	
4	2-6-0	Glover Machine Works	
648	2-8-0	Baldwin #30935, 1907	57-21x30-180800
2nd 4	3T Shay	Lima #3026, 2/1919	46-(3)17x18-264500
678	2-8-0	Baldwin #16324, 1898	57-21x28-161500

Histories:

4. Purchased ca. 1933 from unknown source. Sold ca. 1934.

648. Was AT&SF 2nd 648. Purchased June 7, 1934.

2nd 4. Purchased April 1935 from Southern Iron & Equipment Co. (dealer). Sold May 1943 to Saginaw & Manistee Lumber Co., Flagstaff, Ariz.

678. Was AT&SF 678. Purchased October 10, 1940, following a period of leasing.

General Note: Locomotives 648, 2nd 4, and 678 were sold July 17, 1940, to the George E. Breece Lumber Company. 2nd 4 was sold as noted, and the remaining two locomotives were scrapped at Grants ca. 1943.

Table 5. Locomotives of the McGaffey Company, 1912 - 1929

Road Number		Description	
1	3T Shay	Lima #2582, 7/1912	36-(3)12x15-122100 #light
2	3T Shay	Lima #2773, 6/1914	36-(3)12x15-146000 #working
2441	2-8-0	ALCO (Brooks) #29722, 1904	50-19x26-147200

Histories:

1,2. Number 1 was sold along with logging rights to Lutcher & Moore Lumber Co., Orange, Texas, in 1929. Locomotive Number 2 remained at Perea, New Mexico, until about 1935 when both were sold and shipped to Cia. Maderera de Durango, El Salto, Durango.

2441. Leased from AT&SF ca. 1928.

APPENDIX B

These additional figures include more views of the railroads and other aspects of logging in the Zuni Mountains. The costs of publication prevent us from being able to include every photograph found in the files of the authors and of the USDA - Forest Service. There are probably also many more views in private hands and unknown to the authors.

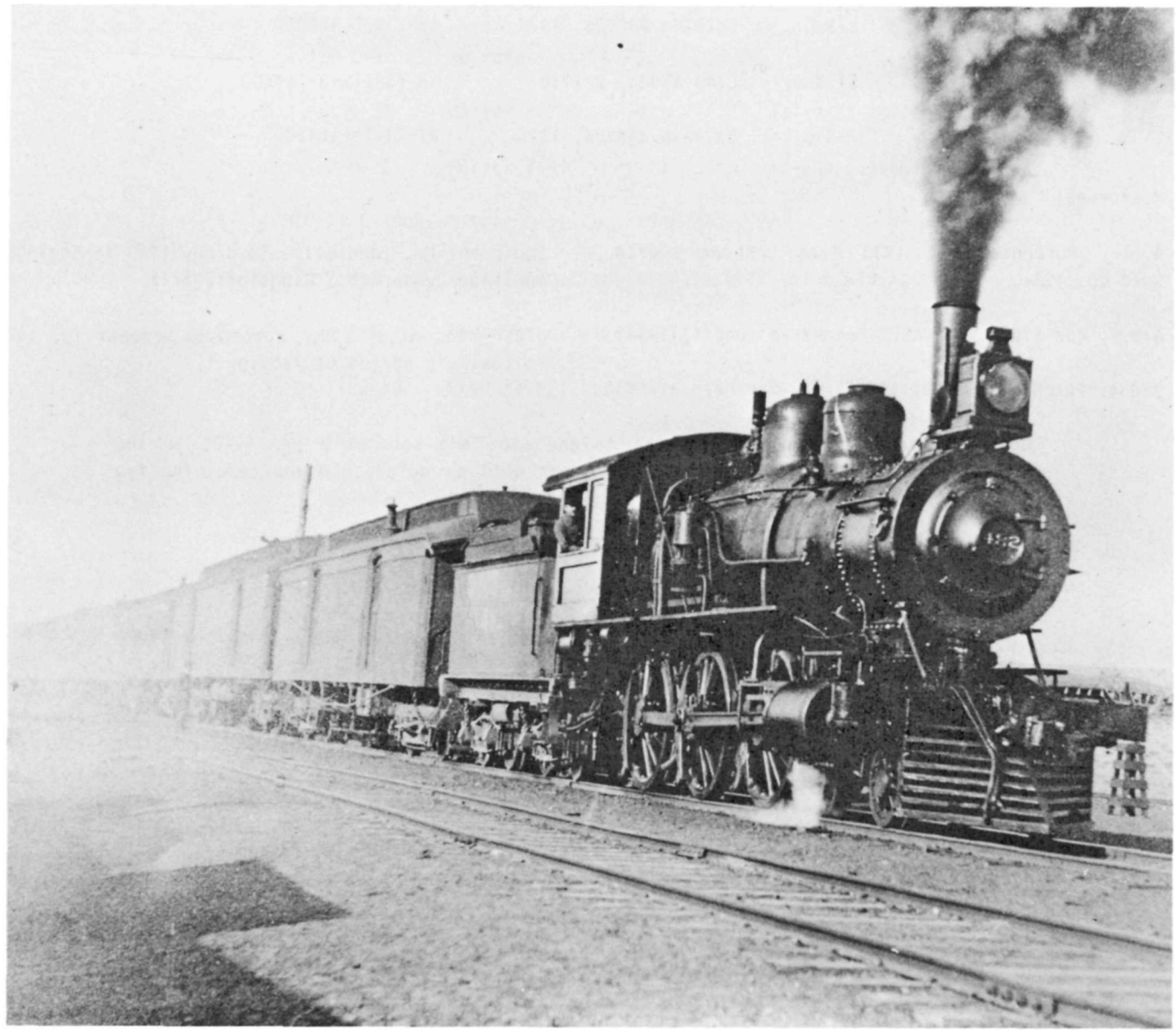


Figure 53. A Santa Fe Railway train at Guam, New Mexico, in the era before steel coaches. The locomotive was No. 482, built in 1900 by the Rhode Island Locomotive Works. Loggers boarded similar trains at Thoreau to reach Albuquerque and points east. They would likely have ridden in the "smoker," the old and slightly decrepit car seen here as the third in line, which was reserved for working men and smokers. Cibola National Forest collection.

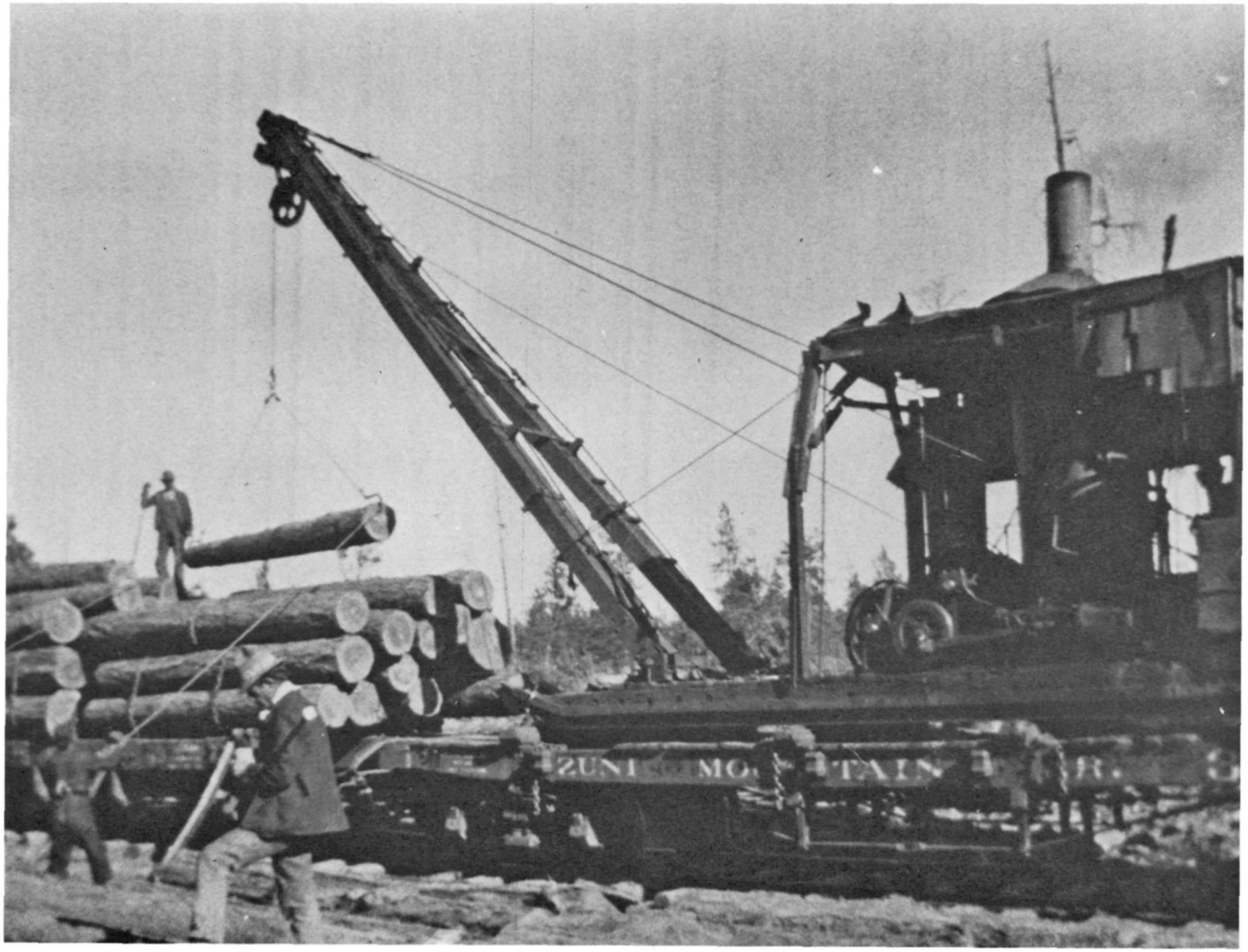


Figure 54. Loading logs near Sawyer. The vertical boiler and donkey engine of the loader may be seen on the right. The loader boom did not swing to the side, requiring the logs to be yarded as close to the railroad track as possible. John Bigley collection.

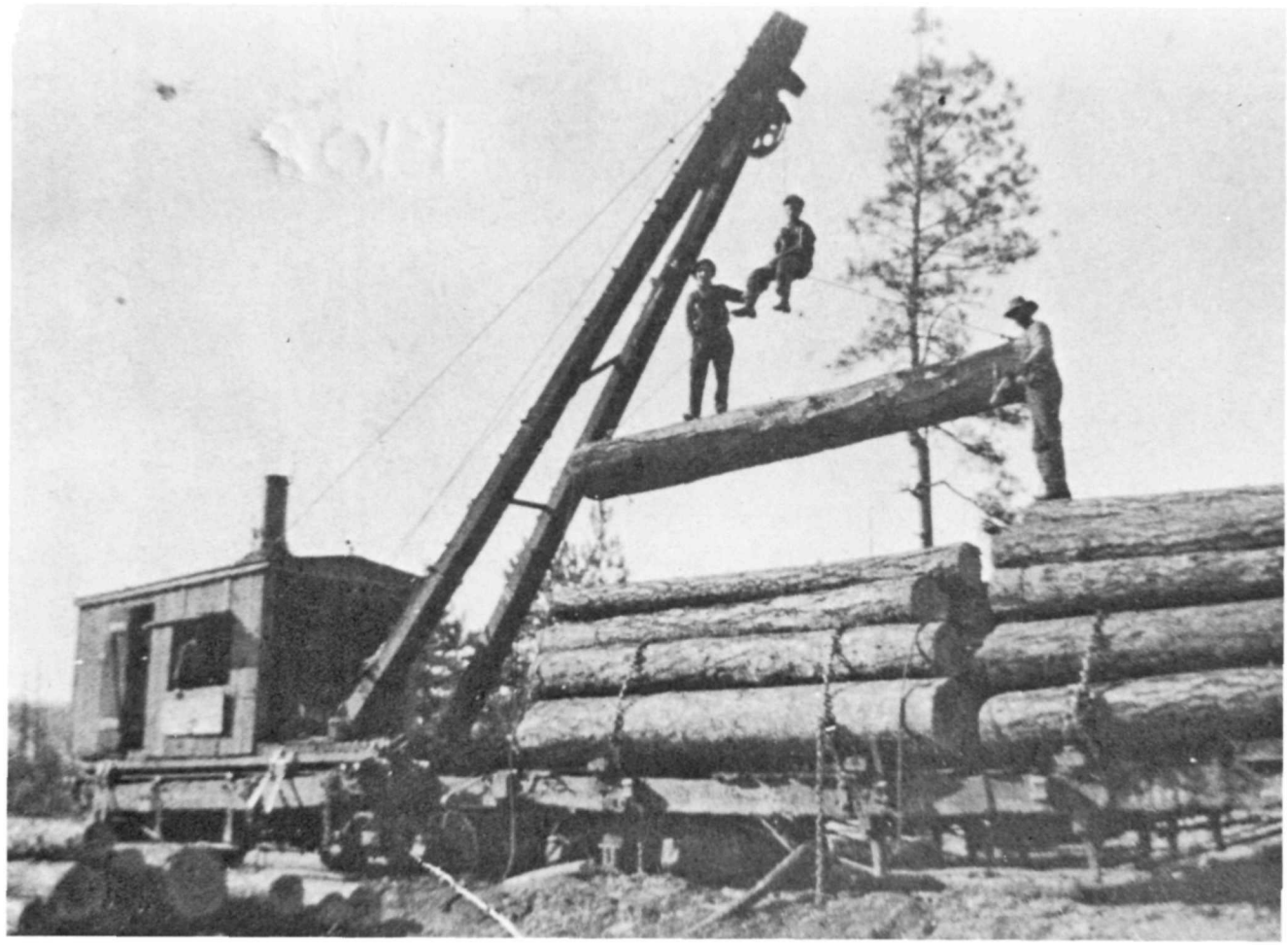


Figure 55. Loading stopped for the photographer in this image, taken circa 1908 near Sawyer. The obvious casual attitude with regard to the heavy load and the lack of safety equipment would not be allowed by modern safety engineers. John Bigley collection.

Figure 56. An overall view of the main logging camp at Kettner. Cibola National Forest collection.

Figure 57. The Climax gear-drive locomotive, Zuni Mountain Railway Number 8, heads for camp with loads of logs. Cibola National Forest collection.

Figure 58. Big wheels at a railroad landing. This scene was probably during the American Lumber Company years, but it represents typical logging practice in the Zuni Mountains throughout the entire railroad logging era. Cibola National Forest collection.

Figure 59. Laying track for the Zuni Mountain Railway on freshly graded roadbed. Logs had already been yarded to both sides of the new spur track ready for loading on the cars. Cibola National Forest collection.

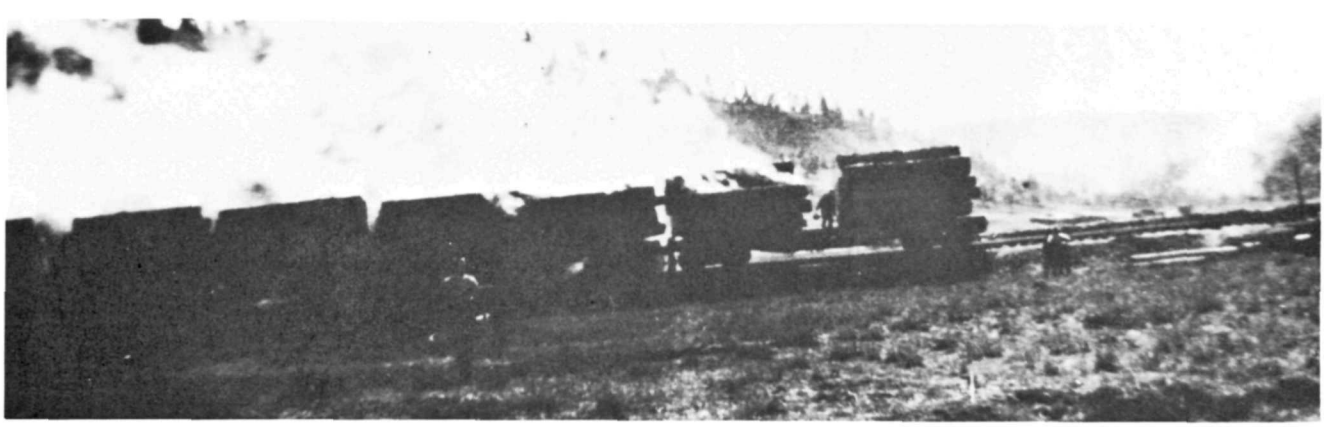


Figure 60. Stacked logs burning near Sawyer, circa 1908. Fires such as this were frequently started by sparks from the locomotives and loaders. John Bigley collection.

Figure 61. Three "car tonks" -- railway mechanics -- working on an arch-bar freight car truck at Kettner, circa 1908. This type of truck, bolted together of individual parts, was soon superseded by massive cast trucks. John Bigley collection.

Figure 62. Winter view of the Sawyer roundhouse, circa 1908 - 1913. One of the American Lumber Company log loaders was spotted nearby, probably for repairs and maintenance during the slow winter months. John Bigley collection.

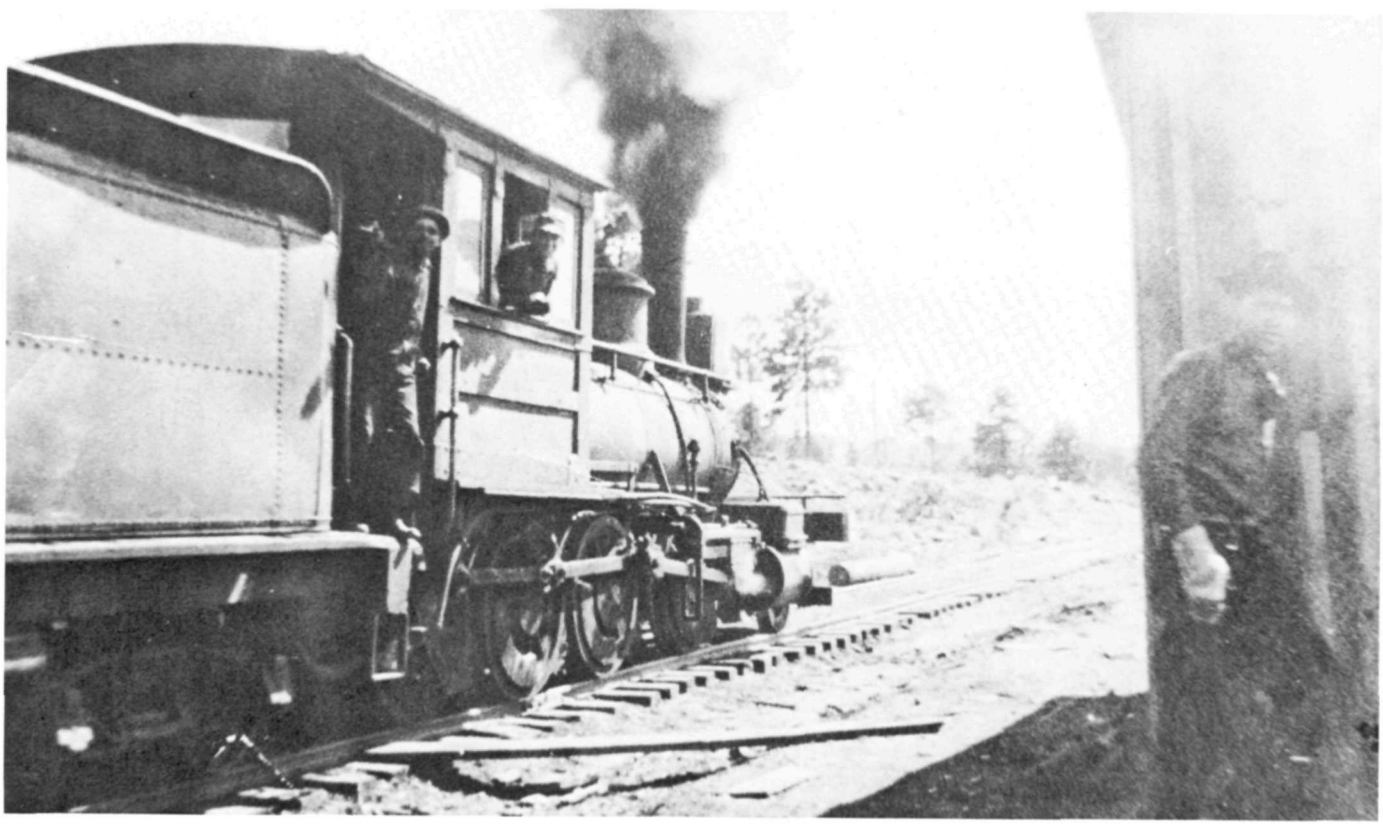


Figure 63. An old Santa Fe Railway freight locomotive on the Zuni Mountain Railway. This is probably Number 2303, an 1882 Hinkley leased or borrowed by the logging railroad circa 1906 - 1908. John Bigley collection.

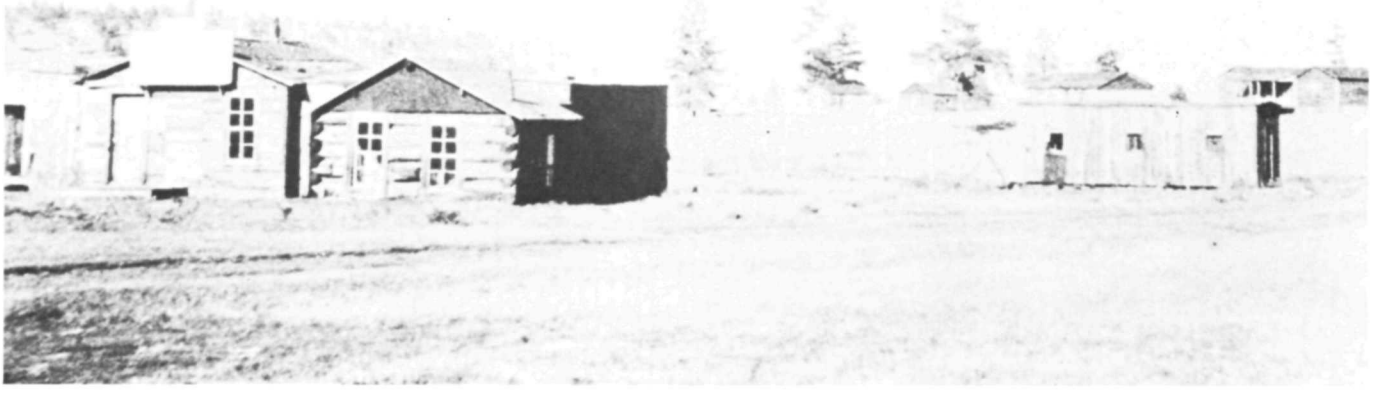


Figure 64. The logging camp at Sawyer on the American Lumber Company holdings. A wide variety of building construction was apparent, including some structures intended for haulage on railroad cars. Cibola National Forest collection.

Figure 65. Zuni Mountain Railway track gang comprised mostly of Navajo Indians. The track is not yet ballasted, and is laid on a newly graded roadbed. Cibola National Forest collection.

Figure 66. Scaling logs for the American Lumber Company. Cibola National Forest collection.

Figure 67. A discarded locomotive brake shoe found along the Pine Canyon railroad of the George E. Breece Lumber Company. The shoe is typical of those used on Shay locomotives. By David "A" Gillio. USDA-Forest Service photograph.

Figure 68. A tent logging camp, probably in the American Lumber Company times. Cibola National Forest collection.

Figure 69. Tent camp in winter, probably on the American Lumber Company. Cibola National Forest collection.

Figure 70. A long forgotten festive occasion at McGaffey. Seen on the right is the first sawmill, which dates the photograph to before March 1917. McGaffey's characteristic light trackage and nearly nonexistant roadbed explain why it is very difficult to locate the tracks today. John Bigley collection.

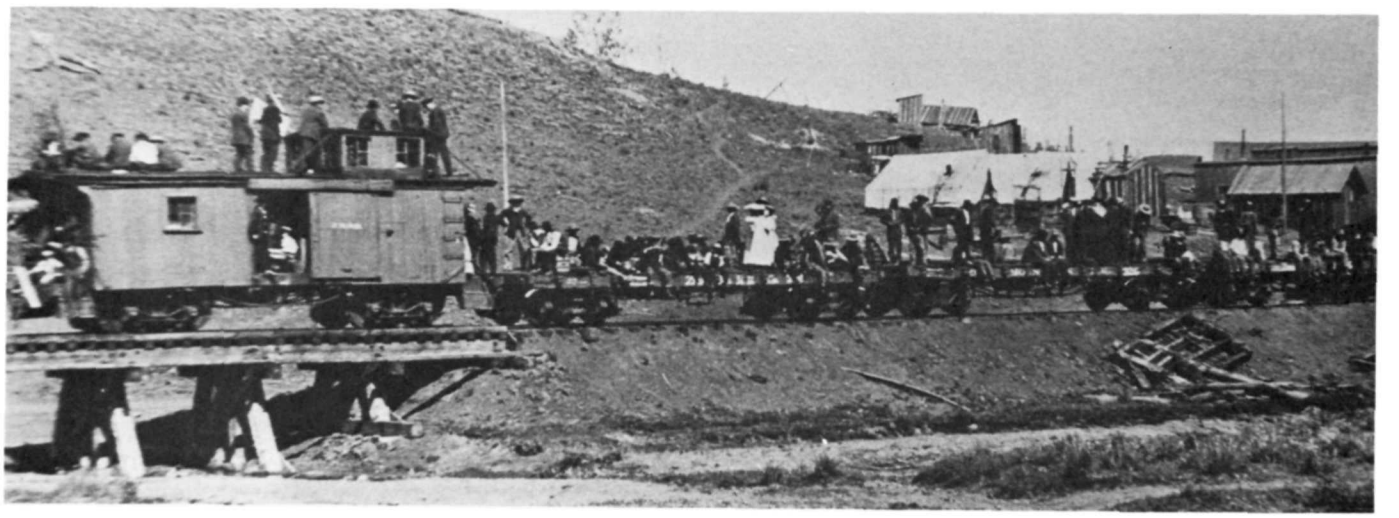


Figure 71. Excursion train leaving Kettner Camp, July 4th 1908, Zuni Mountains, New Mexico. D.F. Lewis collection.

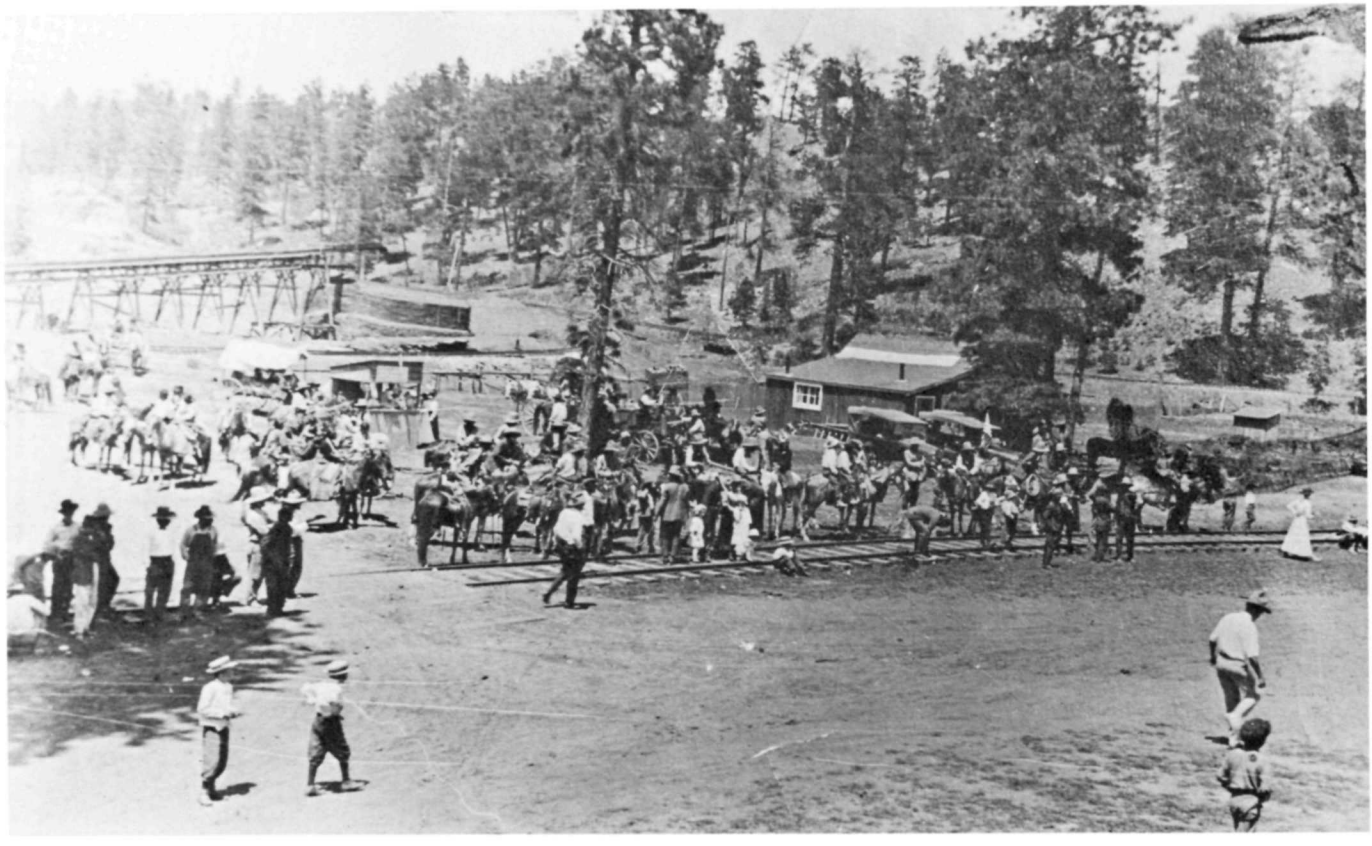


Figure 72. Fourth of July celebration at McGaffey, 1921. In the background can be seen the tracks of the McGaffey Company railroad beginning their climb up Train Canyon on the route to Perea. The structure in the left rear was the sawdust conveyor from the sawmill out of sight to the left. Susan Clark Kirk collection. Gallup Public Library Photo Archives #1320.

APPENDIX C

Excerpt from Report on Timber Conditions and Feasibility of Railroad Operation, New Mexico Division, Apache National Forest, by D. M. Lang, Logging Engineer, June 1928.

Possibility of Railroad Extension:

In order to reach this division, railroad extension would have to be made from the south end of Mt. Sedgwick to Quemado and then several branch lines would have to be constructed to tap the different units. In order to arrive at some conclusion as to the feasibility of the project, I have tabulated the railroad necessary to tap the several units within the division. In general, railroad construction from Mt. Sedgwick to Quemado is feasible and not particularly difficult. It must be borne in mind, however, that such extension would pass through no timber of commercial importance between the south end of Mt. Sedgwick and Quemado, which is a distance of approximately 75 miles. Extension from Quemado east and south up Mangas Creek is also not difficult, although the 26 miles necessary would be through open country and the woodland type. The extension from Quemado west and south to Luna would not be particularly difficult. Branch lines from this main spur would tap Saw Mill Canyon, Agua Fria, Gallita & Bull Camp and Toriette Lakes. The feasible route would be directly through Jewett Gap down Center Fire Creek and finally into Luna. Much of this railroad would be through open country or scattered unmerchantable timber. In order to reach Hell Roaring Mesa, E L C Flat and Alpine Valley extension would have to be made west paralleling the Ocean to Ocean Highway and then south up Coyote Canyon to the Mesa. This part of the construction would not be particularly difficult.

All of this country is either open land or woodland type. Topography is rolling and a good many canyons would have to be bridged. In order to reach Alpine Valley, the railroad would have to be extended down Stone Creek and through the box on San Francisco River. Here construction would be extremely difficult and very expensive. This, however, is the most feasible route that could be located. The railroad necessary and the approximate cost of construction follows:

From Mt. Sedgwick to Quemado - 75 miles:

Cost grade and culverts	$3,500.00
Ballasting	1,000.00
Laying and spiking steel	700.00
Ties	3,000.00
Fittings	500.00
Cost under steel	$8,700.00

75 miles at $8,700.00 ..... **$652,500.00**

From Quemado to Mangas - 26 miles:

Cost grade and culverts	$2,000.00
Light Ballasting	300.00
Fittings	300.00
Lifting and laying	900.00
Ties used twice	1,500.00
	$5,000.00

26 miles at $5,000.00 ..... **$130,000.00**

From Quemado to Luna - 100 miles:
(Including spurs to Sawmill Canyon, Agua Fria, Gallita, Toriette Lakes, etc.)

Grade and culverts	$3,000.00
Lifting and laying	900.00
Light Ballast	300.00
Fittings	300.00
Ties, used twice	1,500.00
	$6,000.00

100 miles at $6,000.00 ..... **$600,000.00**

From the Quemado-Luna Spur to Alpine - 76 miles:

73 miles at -

Grade and culverts	$ 3,000.00
Light Ballast	300.00
Lifting and laying	900.00
Fittings	300.00
Ties	1,500.00
	$ 6,000.00

3 miles through Frisco Box -

Grade, bridges & culvert	$75,000.00
Lifting and laying	900.00
Ballast	300.00
Fittings	300.00
Ties	3,000.00
	$79,500.00

73 miles at $6,000.00	438,000.00
3 miles at $79,500.00	238,500.00

Total Alpine spur..... **$ 676,500.00**

Total cost main spurs Mt. Sedgwick to timber,

$2,059,000.00

Steel necessary - 90# steel figured on -

75 miles to Quemado
100 miles additional
15 miles secondary spurs
190 miles steel necessary

Steel figured at $40.00 per ton-

157-1/2 tons per mile at $40.00 = $ 6,300.00

190 miles at $6,300.00	$1,197,000.00
Cost of grade, ties, etc.	$2,059,000.00
Total R. R. Cost	**$3,256,000.00**

The calculated cut available from the several units is tabulated as follows:

Mangas Unit	34,000 M ft.
Sawmill Canyon Unit	15,000 M ft.
Aguc Fria Unit	12,000 M ft.
Jewett Gap	10,000 M ft.
Gallita & Bull Camp Unit	20,000 M ft.
Toriette Lakes	20,000 M ft.
Luna Valley	30,000 M ft.
Lower Trout Creek	7,000 M ft.
Centerfire Unit	7,000 M ft.
Hell Roaring Mesa	40,000 M ft.
Total New Mexico Division	195,000 M ft.
Alpine Unit	56,000 M ft.
E L C Flat	35,000 M ft.
Total available	286,000 M ft.

It will be readily apparent from the foregoing that extension to this area is at present not at all feasible. In order, however, to further bring out the writer's opinion as to feasibility, a rough calculation of costs follows:

Felling and bucking	$1.50
Brush Disposal, lop & scatter	.45
Felling snags	.10
Skidding & hauling	2.75
R.R. spur charge	1.25
Landing expense	.12
Roads	.15
Maintenance logging equip	.60
Logging supervision	.50
Moving camp	.15
Total stump to track	$ 7.57

Hauling woods to mill -

Loading on cars	.50

(7 engines and crews will be required on this haul.)

7 crews at $65.00 per day including overtime	$455.00
Prorated on 125	$ 3.64
Santa Fe charge	3.00

Maintenance Railroads - 15 crews required:

15 foremen at $3.50	52.50
75 laborers at $2.50	187.50
Supplies	75.00
	315.00
Prorated on 125 M	2.52
Maintenance R. R. Equipment	1.25
Water expense	.30
Unloading in pond	.10
R. R. Supervision	.30
Total R. R. charge	11.61
Total cost logs in pond	$19.18

Based on a cut of 40,000 M per year there is sufficient timber to last the mill 7 years.

R. R. Depreciation except steel would be:

Cost of R.R.	Life Years	Annual Depreciation
2,059,000	7	$294,143.00

Steel Depreciation would be:

Cost of Steel	Life Years	Annual Depreciation
1,197,000	20	$59,850.00

Railroad Depreciation would be $353,993.00 per year or on a per M basis.....$ 8.85

Depreciation on plant, logging and railroad equipment, etc. would amount to..... 1.50

Total Depreciation..... 10.35

Manufacturing and overhead log scale..... 10.83

Total Cost -

Logging.....$	7.57
R. R. Charge.....	11.61
Depreciation.....	10.35
Manufacturing and overhead.....	10.83
	40.36
Stumpage.....	2.00
Margin.....	6.00
Total.....	48.36

It should be borne in mind that the estimates given as to volumes of timber and as to cost of production are approximations only, but represent the opinion of the writer based on a rather careful size-up of the situation. Under the foregoing the writer has concluded that the fob mill selling price of lumber would have to reach at least $45.00 per M with costs remaining as at present before this scheme could be considered at all feasible. The average selling price for the region for the past 4 years has been $26.81. Therefore, in my opinion, with the approximate $20.00 differentiation between present selling price and the selling price necessary to render this scheme feasible, it will be probably many years before the lumber market would reach a point that would warrant extension into this region for timber alone. Col. Breece may, of course, have other things in mind, such as the extension of a main line from Grants, the point on the A. T. & S. F. R. R., where his present Mt. Sedgwick logging road joins the main line, to the mining region around Silver City. If such a line were ever constructed much of the timber on the New Mexico division could be exploited by spur extension to come out over this line, although it is the writer's opinion that even with a main line constructed for other purposes, the timber in the region could best be handled by a series of small mill sets with the product being hauled to the shipping points by auto trucks.

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