THE CURECANTI ARCHEOLOGICAL PROJECT:

The Archeology of Marion, an Historic Railroad Camp in Curecanti National Recreation Area, Colorado
1. Anderson, Adrienne B.  

2. Mundell, Raymond L.  
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5. Falk, Carl R., Steve Holen, and Robert Pepperl  

6. Olinger, Danny E.  

7. Stiger, Mark A., and Scott L. Carpenter  

8. Jones, Bruce A.  

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THE CURECANTI ARCHEOLOGICAL PROJECT:

THE ARCHEOLOGY OF MARION,
AN HISTORIC RAILROAD CAMP IN
CURECANTI NATIONAL RECREATION AREA, COLORADO

by

Mary P. Rossillon

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Site 5GN1664, Marion, is the site of an 1889 railroad camp that lies in Curecanti National Recreation Area on the Western Slope of Colorado. The site was occupied for a brief period during construction of the Lake City Branch of the Denver and Rio Grande Railroad. Thirty historic features were examined at Marion during the 1982 and 1983 Curecanti Archeological Project field seasons, and research included excavation, surface collection, and mapping of the remains. Most of the historic railroad features have been interpreted as habitations for unskilled laborers and field bosses, although four stone ovens, a storage structure, two dumps, and a possible commissary were also identified.

Artifactual remains from the railroad camp were few in number, apparently reflecting the short period of occupation and the plain lifestyles of the inhabitants of the site. However, the assemblage still permitted examination of several interesting historic archeological problems when the Marion information was used in conjunction with other archeological data and historic documentation. The problems addressed in this report include the organization and spatial segregation of different activity areas in a railroad grading operation, Italian ethnicity as it may be reflected in artifact assemblages and architectural styles, and construction of a mean multiple-artifact date formula.

Two Late Archaic aboriginal components were also exposed in the course of examination of the historic remains at Marion. Together, these contained five hearths, about 500 chipped stone artifacts, and several thousand animal bone fragment. The radiocarbon age of the first component was found to be 2,040±47 years B.P., while that of the second was 1,060±48 years B.P.
ACKNOWLEDGMENTS

This report of excavations at 5GN1664, the site of Marion, reflects the work and support of many National Park Service employees and others. Bruce Jones first recognized the significance of the site and was responsible for obtaining adequate funds to properly evaluate the site and mitigate impacts. He provided overall supervision for the entire project, aided in lithic analysis, edited the manuscript, arranged for ancilliary studies, and performed countless other supportive tasks. Linda Haws was responsible for analysis of all historic artifacts recovered during the 1983 field season and for numerous other laboratory work involved with the compilation of analysis results and the curation of the collection. Steve Baumann, Bob Blasing, Jan Dial, Janet Matel, and Greg Risdahl served as the 1982 field crew under the supervision of Bruce Jones. Steve Baumann, Patrick Flanigan, Marc Kodack, Bob Kriebel, Fred Peck, Terri Schall, and Bill Waters served as field crew members in 1983 under my supervision. Present and former employees of the Midwest Archeological Center provided a productive atmosphere of information exchange and logistical and emotional support. Finally, Park personnel and various state and county employees provided critical data for completing the project and the final report. To all mentioned and to any of those whom I may have inadvertently forgotten, I appreciate your assistance.

MPR
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1. INTRODUCTION

Site 5GN1664, or Marion, is a multi-component site on the east side of the Lake Fork of the Gunnison River at the southernmost end of the Lake Fork Arm of Blue Mesa Reservoir. It lies approximately 20 air miles west-southwest of Gunnison, Colorado within the boundaries of Curecanti National Recreation Area.

Evaluative test excavations were conducted at the site in 1982 under the supervision of Center Archeologist Bruce Jones, and mitigative research occurred there in 1983 under the supervision of the writer. The archeological investigations at Marion took place in anticipation of construction activity in the Gateview Development Area in the immediate vicinity of the site.

The Marion work was initiated at a series of features associated with an historic railroad construction camp. However, prehistoric components were also intensively examined during the investigation of those features. Two major prehistoric activity areas were ultimately exposed, and limited evidence of a third aboriginal component was also identified.

The three distinct prehistoric components at 5GN1664 date to approximately 2,000 years B.P., 1,000 years B.P., and the Late Prehistoric Period. The remains of animal food processing and lithic tool manufacture and repair dominate the archeology of the 2,000 B.P. and 1,000 B.P. occupations. Associated with those two occupations were five fire pits, a small number of chipped stone artifacts, and a moderate amount of fragmentary bone. Many of the quartzite artifacts from the largest and most recent of the two dated prehistoric components represent several stages in a chipped stone biface reduction sequence. The Late Prehistoric component consists of several diagnostic projectile points that were widely scattered across the site. These artifacts may indicate that 5GN1664 was a kill site rather than a camp site during the most recent aboriginal occupation(s).

The 2,000 B.P. and 1,000 B.P. components at 5GN1664 have proven to be significant because each has been well-dated by radiocarbon assay. Additionally, the two occupations did not overlap spatially. This means that each associated artifact assemblage may ultimately be used to establish a local set of Archaic Period artifact types and other material culture traits, an important area of research recently identified by Guthrie et al. (1984:38,53) for the Mountain Region of Colorado.

There were four functionally distinct historic components at Marion in addition to the three prehistoric components. They include an 1889 railroad construction camp, a late nineteenth and early twentieth century railroad siding, early twentieth century mining camp(s), and recent recreational use.
Archeological and historical documentary research concentrated upon the 1889 railroad grading camp which was established during initial construction of the Lake Fork Branch of the Denver and Rio Grande Railroad. A wide range of topics related to railroad construction camps and their archeological remains were investigated, but interest focused upon the more mundane, day-to-day facets of the railroad workers’ existence, such as evidence of their personal amenities and the form of their shelters. While these subjects have not been well-documented in historic accounts, the integration of both historic and archeological information in this report provides a more complete picture of the laborers’ lives in the camps.

The railroad siding, mining, and modern occupations of Marion made considerably less physical impact upon the site, and only four features at Marion were clearly indicative of those occupations. The first component probably represented only sporadic use of the site, while the latter two components have involved short-term use. The three occupations are discussed only briefly in this report.

The historical archeological significance of Marion has two important bases. First, Marion is the only known railroad grade construction camp to have been extensively excavated in the United States. As such, it may now be used as a frame of reference for others who might analyze additional camps of this type. Two different aspects of railroad camps and their reflection in the archeological record are discussed in some detail in this report using pertinent supplementary data from the Lake Fork Canyon area. A model of the organization and segregation of construction activities within and between different camps proposed for the Lake Fork Canyon area may now be evaluated with data from other railroad camps. The ethnicity of railroad workers and its reflection in the archeological record at other camps may also be researched and compared with the Marion analysis.

In addition, a precise date for the camp has been provided by documents relating to the history of construction along the Lake City Branch. The associated artifacts provide a well-dated comparative collection for others working in late nineteenth century sites who might have similar artifacts but who lack precise information about dates of occupation. Also, the tight documented date for the Marion occupation has been used together with other site information to develop a mean multiple-artifact date formula. The formula rather accurately estimates the age of Marion’s railroad camp occupation, and may prove useful at other nineteenth and twentieth century sites upon further testing.

Purpose

Planned Park improvements at Gateview involve the construction of at least four camping pads and a visitor comfort station. Park personnel anticipated direct construction impact upon the archeological site plus indirect impacts from eventual visitor use and illicit artifact collection at the easily recognized historic features.
Evaluation of Marion's significance and mitigation of project impact occurred at several levels. Most surface artifacts from the site were collected and analyzed, most historic features were archeologically tested, and historic documents about railroad construction on the Lake City Branch and other lines were also consulted. The aboriginal components discovered during the 1983 field season were evaluated and mitigative efforts were expanded to retrieve prehistoric data, particularly in Feature 21.

In addition to the Gateview development, the Park also planned improvement of the gravel access road from Red Bridge north to the campground, a distance of about 4 1/2 miles across Bureau of Land Management and National Park Service property (Figure 1). Archeological survey along the road prior to its improvement eventually resulted in the identification of six other 1880s railroad camps, 5GN1692-1696 and 5GN1698 (Jones 1983). Finally, two other railroad camps, 5GN1699 and 5GN1725, were identified in the vicinity of Marion during other survey work. The latter two sites lie on the west side of the Lake Fork River and are outside any current Park or BLM project areas.

Local Environment

Marion is situated on a west-facing alluvial fan at the mouth of a side canyon along the Lake Fork of the Gunnison River (Figure 2). The canyon of the Lake Fork extends from Sapinero, eight river miles below Marion, to historic Madera, five river miles above the site. The canyon walls of Black Canyon schist have slopes as steep as 35%, and form a difficult but not impenetrable barrier to human travel (Hedlund and Olson 1973). Prehistoric travel in and out of the canyon probably took place along tributary ravines and side canyons. Movement along the Lake Fork River itself would probably have been extremely difficult due to the steep banks and heavy vegetation there.

Talus slopes are common topographic features in Lake Fork Canyon, and provided building material for structures in the historic construction camps and for retaining walls at the bases of railroad grade cuts. In most instances these slopes appear to be relatively stable features. However, there has clearly been a rock slide at the north end of Marion which occurred after about 1905 and which destroyed and/or buried several cultural features.

Climatic information specific to the Lake Fork Canyon is not available. However, because of the narrow, deep cross-section of the canyon, winter temperatures slightly lower than those in Gunnison (where the average January temperature is 9.1 degrees Fahrenheit; Colorado State University 1976:CLM-2) would be expected. Summer temperatures are probably comparable to those in Gunnison, whose elevation is the same as that at Marion (the average July temperature in Gunnison is 61.7 degrees Fahrenheit; CSU 1976:CLM-2). Annual snowfall in the canyon has not been systematically recorded, but has measured as high as
Figure 1. Map of Lake Fork Canyon and surrounding area, illustrating the location of historic places and recorded railroad construction camps.
211 near Sapinero (CSU 1976:CLM-3). Snow remains on the Lake Fork road until the end of March in most years.

Vegetation in the Lake Fork Canyon consists primarily of an overstory of Douglas fir and Blue spruce, with sagebrush and various berry bushes contributing to the understory. Gambel oak first appears as a plentiful understory species about one mile south of Marion, and extends north and downstream past the site for an unknown distance.

Not all of the edible plant species present at Marion could be identified in the field, but those recognized include raspberry, wild rose, two species of currant, chokecherry, cactus, and Oregon grape. These plants presently comprise perhaps 6% of the aerial understory vegetation coverage at the site.

Charcoal found on the ground surface and in excavation units at Marion indicates at least one brush fire on-site within the last 100 years. While such fire may have burned off much of the brush at the site, it did no apparent harm to the archeological resources there.

Modern wild fauna in the Lake Fork Canyon include mule deer, bighorn sheep, and beaver. Elk, antelope, mountain lion, bison, and other
medium- to large-sized mammals may well have occupied the canyon before the present. A complete list of mammals currently found in the Gunnison River Basin has been presented in Durrant and Robinson (1962) and is summarized in Euler and Stiger (1981:14).

Except for Willow Creek, which joins the Lake Fork about five miles downstream from Marion, the Lake Fork River is the only permanent supply of water in Lake Fork Canyon. Tributary creeks in side canyons have carried water seasonally during floods or from very small seeps. However, seep water in those canyons generally disappears underground before reaching the Lake Fork, and the tributary streams have probably not carried a regular water supply within the last hundred years.

Field Methods

Archeological investigations at Marion initially focused upon the historic remains at the site, features that appeared as rock alignments, artificially terraced areas, rock mounds, and/or artifact concentrations. In addition, most surface artifacts not clearly associated with specific features were collected. Only a general horizontal provenience was recorded for most of the surface material collected in 1982. However, artifacts recovered in the following year were usually assigned specific horizontal proveniences using the grid system that overlay the nearest identified cultural feature.

The entire site was initially surveyed systematically with an FRL Explorer II metal detector. However, the survey proved to be of limited utility, and no previously undetected cultural features or artifact concentrations were revealed. This was probably a reflection both of the quality of the equipment and of the relatively small number of metal artifacts on-site.

One or two profiles or cross-sections were drawn at each identified cultural feature before its excavation, with the exception of Features 2, 19, 23, and 31. The profiles were used to document the nature of the ground slope at each feature together with the physical relationship of each feature to the surrounding topography. Except at Features 19, 23, 25, 26, and 28, a plan map was also drawn for each feature to illustrate extant architectural details, the feature's position relative to nearby features, those units within the feature that were excavated, and other information.

Metric measurements were used during excavation because of the ease the system afforded in recording provenience information. Measurements of aboriginal data have been presented according to that system. However, historical archeologists generally employ the English system of measurement (feet and inches) because most manufactured goods were produced according to that system and because most of the people who occupied historic sites employed it. Accordingly, all measurements of historic remains in this report have been presented in both the English and the metric systems.
Features 1 and 2 were excavated in two meter squares in 1982. During the subsequent field season, the primary excavation unit was the one meter square. In those cases where few artifacts were expected, such as in Features 12, 18, and 24, 1 x 1/2 m test units were excavated to verify or disprove those initial predictions. Each feature was assigned its own grid system, which was simply aligned with the primary orientation of the feature.

While the basis of selection of units for excavation was primarily intuitive, an attempt was made to test each interior quadrant of each feature. Additional excavation units were placed in those locations where a structure entrance was suspected, and occasionally one or two units were also placed outside the visible limits of the feature, either on the downhill side or on the side of the entrance, in an attempt to identify associated trash deposits.

Determination of the number of units excavated within each feature depended primarily upon the artifact density within the first units that were examined. Excavation usually ceased after only 20-30% of the feature had been examined in locations with very low artifact density and shallow soil development. For example, only 10 artifacts were recovered after 5 square meters or 30% of Feature 8 had been excavated, and work at that feature was consequently discontinued. Likewise, excavation in Feature 12 ceased when it became apparent that each of several units in the southern half of the feature contained about the same number and types of artifacts.

Excavated soil was dry screened through 1/4 in hardware mesh, and all historic material from one excavation unit was usually bagged together regardless of vertical provenience; however, most historic artifacts were found within the uppermost 10-15 cm and these remains were assumed to be contemporaneous. Artifacts from the largest concentrations of prehistoric material, Features 13 and 21, were collected and bagged in 10 cm levels in the former case and in 5 cm levels in the latter. When prehistoric tools were found in situ, they were point-provenienced. Historic artifacts excavated in 1982 were also point-provenienced, but this practice was abandoned in 1983.
2. PREHISTORIC OCCUPATIONS

Previous Research

Only within the last ten years have archeological investigations in the upper Gunnison River Basin included any extensive excavation of aboriginal remains. Major work during that time has included the six-year National Park Service project in Curecanti National Recreation Area (Euler and Stiger 1981; Stiger 1981; Jones 1982), the Amax Mount Emmons project in the Crested Butte/Almont area (Black et al. 1981), the Colorado Department of Highways excavations at the Zephyr site near Cerro Summit 35 km to the west (Indeck and Kihm 1982), and the Bureau of Reclamation Dallas Creek project near Ridgway (Muceus and Lawrence 1981; Figure 3). Most of the recent research in the area has been summarized in the report of the 1980 Curecanti investigations (Jones 1982) and the reader is referred to that manuscript for information not mentioned below.

Research to date in the upper Gunnison River Valley has focused upon basic archeological problems of culture history. It has addressed questions of chronology, diversity and distribution of site types, subsistence, paleoenvironment, and the character of lithic artifact assemblages.

Several prehistoric culture periods in the Gunnison Basin are better known archeologically than others. While a number of Paleo-Indian sites dating prior to 7,000 radiocarbon years B.P. have been identified in the area, archeological remains of that age are still comparatively rare (Indeck and Kihm 1982:22; Euler and Stiger 1981:32,42; Dial 1984). The majority of the sites that have been investigated to date fall within the Early and Middle Archaic Periods, and about 75% of the radiocarbon-dated features in those sites fall between 7,000 and 3,000 years B.P. (Black et al. 1981:245-250, Appendix 3; Muceus and Lawrence 1981:Appendix B; Jones 1982; Jones 1984). In addition to those sites with dated features, many other sites in the basin are presumed to date to the Archaic Period based upon the presence of diagnostic projectile point styles. Aboriginal sites dating to within the last 2,500 years have been found less frequently, and only three sites in Curecanti have produced radiocarbon dates representing such Late Archaic occupations. Elsewhere in the area, however, remains of that age appear to be more numerous. In the Alkali Creek Basin above Almont, Black et al. (1981: Appendix C) examined one site that dated to approximately 1,000 years B.P. Additionally, Muceus and Lawrence (1981:Appendix B) report radiocarbon dates between 2,300 B.P. and 1,250 B.P. for five sites on Dallas Creek. However, the remains of only a few Late Prehistoric components, dating between 650 B.P. and 350 B.P., have actually been excavated in the area (Muceus and Lawrence 1981:7-106; Jones 1984; Dial and Jones 1985).

Archeologists working in the upper Gunnison Basin have depended upon attributes such as the presence or absence of natural or cultural
shelters, and hearths as well as tool kit diversity and site location in relation to topographic features to identify site function or type (Reed and Scott 1982:355-360; Black et al. 1981:23-24; Stiger 1981:92-95,102-105). However, profession-wide acceptance of standard terminologies and definitions of site types has yet to be achieved (Guthrie et al. 1984:8-9), and this problem is quite apparent in the Gunnison Basin data in the inconsistent definitions of short-term camps and limited activity areas. The confusion stems in large part from attempts to identify site function using survey data alone, as well as from simplistic interpretation of past resource exploitation and associated site occupation. Reed and Scott (1982:355-360) have grouped short-term occupation sites with limited activity areas instead of with habita-
tions, while Black et al. (1981:23-24) included short-term camps with habitation in a larger group of "multiple activity sites."

The distribution of sites of different types in the Gunnison Basin is also of common interest. Using data from survey and limited testing, Black et al. (1981:196) found that "habitation sites and short-term camps are most often found near Alkali Creek on relatively leve landforms and at lower elevations than limited activity areas." Stiger (1981:103) observed a different phenomenon in the Curecanti area, where he examined a wide range of site attributes and suggested that the ridgetop sites in the park differed significantly from lowland sites in the percentages of exotic lithic material, in the ratio of ground stone to flaked stone artifacts, and in the number of flakes and bone fragments recovered. The ridgetop sites were believed to represent habitation, while the sites at lower elevations were interpreted as "shorter term" occupations. However, Jones (1982) cautioned that such generalizations about settlement patterns in the Curecanti portion of the Gunnison Basin could be premature because of the narrow corridor within which research there had occurred, and suggested a potential bias in the Curecanti site sample. He noted that while a substantial number of archeological sites had been examined in various topographic settings in the Park, "all of them one time lay within 1,200 m of the Gunnison River" (Jones 1982:145). Subsequent investigations at 5GN42 and 5GN1664 in 1983 have provided the first information about Curecanti sites which lie at a greater distance from the Gunnison.

The subsistence activities of aboriginal inhabitants have been another topic of archeological interest in the Gunnison Basin. Archeologists working in the area have typically interpreted the considerable range of Archaic artifact types and site locations as indicative of a broad-based aboriginal subsistence system (Black et al. 1981:193; Reed and Scott 1982:339; Guthrie et al. 1984:22). This picture has been drawn in part using ethnographic analogy, and is largely based upon the economic system of the Ute Indians who occupied the area historically.

Identification of economic plants in the Gunnison Basin archeological sites has been through pollen and macrofossil analysis. Opuntia (cactus) and Cleome (beeplant) pollen were identified in Curecanti sites examined in 1979 (Scott 1981a:122,130), and Hevly (1982) identified 17 families of potential economic plants from pollen washes of two metates recovered from Curecanti sites. Economic plants from Alkali Creek sites were identified through macrofossil analysis and included bulrush, wheatgrass, and ricegrass (Gasser 1981:237). Plants identified as probable food sources for Dallas Creek aboriginal populations included Caryophyllaceae (chickweed family), Chenopodiaceae and Amaranthaceae (goosefoot and pigweed families), Descurainia (tansy mustard), Cucurbita (squash), [Bye 1981:D-5,6], Typha (cattail), Acer-negundo (boxelder), Helianthus (sunflower), Onagraceae (primrose family), Physalis (ground cherry), Verbenaceae (vervain family), Sphaeral-cea (globe mallow), Gilia (gilia), and Senecio (groundsel; Scott 1981b:C-14-17).
Faunal remains from sites in the Gunnison Basin have yielded less information than have plant remains because only a small percentage of the osteological elements recovered have been identifiable. Faunal material associated with cultural features in the area include remains of magpie, bison, and artiodactyl at the Zephyr site (Indeck and Kihm 1982:57-58); fish, mountain sheep, elk, dog or wolf, deer, antelope, and bison in Curecanti sites (Stiger 1981; Emslie et al. 1982; Olsen 1983; Appendix A); and beaver, coyote, deer, and elk in the Dallas Creek sites (Muceus and Lawrence 1981). Butchering practices have seldom been discernable due to the small size and poor condition of the bone fragments recovered.

The concern with subsistence in the Gunnison Basin has been tied to an interest in the environmental history of the area, with the argument that shifts in aboriginal subsistence strategies may have occurred as a result of changes in the nature of the paleoenvironment. The reconstruction of the Gunnison Basin paleoenvironmental sequence has depended almost entirely upon the examination of pollen profiles. Scott (1983:195-199) has summarized the results of several palynological studies in western Colorado and noted that they are not consistent from one locale to the next. However, research in Curecanti and along Alkali Creek has indicated that the climate there has been largely stable for the past 4,000 years. Our knowledge of the character of the environment prior to 4,000 B.P. is incomplete, since conflicting climatic interpretations exist for that time period (Scott 1981a:137; 1981c; Markgraf and Scott 1981).

Archeologists have characterized artifact assemblages found in upper Gunnison Basin sites primarily by identifying tool and raw material types and by analyses of chipped stone detritus. Judgments of tool type and function have been based primarily upon morphology because the predominantly quartzite artifact assemblages rarely exhibit visible wear patterns. Locally available quartzites generally compose over 90% of the raw material represented in the chipped stone debitage from sites of all types in much of the Curecanti area. Quartzite tools make up a large percentage but generally less than 90% of all formal tools.

The sources of non-quartzitic or exotic raw materials have largely remained unexplored. Black (1980:17) has reported that chert and chalcedony outcrop in the Antelope and Cabin Creek Valleys near Gunni-

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son, but did not indicate whether archeological specimens have been tied to those or other sources of cryptocrystalline material. The sources of obsidian collected from prehistoric sites on the Dallas Creek Project have been identified as the Jemez Mountains, Polvadera Peak, and Red Hill in New Mexico and Government Mountain in Arizona (Muceus and Lawrence 1981:7-12, 7-18, 7-151, 7-168). Two obsidian flakes recovered from 5GN10 in Curecanti represented a source area on the Cochitopora Dome 25 miles to the southeast (Sappington 1980).

Tertiary flakes and shatter dominate the debitage portion of the collections from the area, and in large part represent the remains of bifacial thinning and tool rejuvenation tasks.
Analysis of chipped stone tools has enabled archeologists to make statements about tool function, site function, site and area chronology, and outside cultural influences. In the Gunnison Basin, the morphology of lithic tools has largely formed the basis for determination of tool function. Most recovered chipped stone tools have been correlated with the procurement and processing of animal food and other materials, such as hides and bone. Changes in projectile point styles through time have been used to identify a site's period of occupation, and point styles from western Colorado sites have been used to indicate contact with aboriginal groups in the Great Basin and on the Plains (Guthrie et al. 1984:35).

Analysis of the techniques of tool manufacture in Gunnison Basin sites, including biface reduction sequences, has been fairly basic. While the tool class of blanks or preforms has been recognized (Indeck and Kihm 1982:34-44; Kvamme 1980:183; Masterson 1981:150), their place in the reduction sequence remains poorly understood. Two exceptions have been the analysis of artifacts from the Zephyr site and Mount Emmons Project sites. In the first case, Indeck and Kihm identified three stages in the biface reduction sequence during the blank or preform stage. In the latter instance, Kvamme very briefly discussed core reduction techniques and steps in biface reduction. However, there have been no attempts at biface replication, an analysis methodology believed by many to be vital to the identification of reduction sequences (Flenniken 1981:2).

Ground stone implements are often found in the sites of the Gunnison Basin, either in the form of slab metate fragments or one-hand manos (Reed and Scott 1982:387). Ground stone artifacts identified in Curecanti have typically been manufactured from a variety of materials including sandstone, quartzite, welded tuff, and schist (Jones 1982).

Prehistoric Feature and Artifact Descriptions

Research at 5GN1664 ultimately addressed questions about the culture history of the upper Gunnison River Basin that were similar to those posed by archeologists who have worked there previously. The types of information that were collected at 5GN1664 allowed examination of chronology, subsistence, and the character of lithic assemblages.

The discovery of aboriginal material at 5GN1664 was fortuitous in that the prehistoric components in the site were identified during excavation of several of the historic railroad camp features. There was little surface indication of the extent of the aboriginal occupations at Marion, and no systematic testing program was ever initiated to determine the distribution of aboriginal material outside the area of the historic features. However, most portions of the site were ultimately tested during the examination of the almost 30 railroad camp features, the only notable exception lying in the area between the side canyon and Feature 21, where no historic investigations were conducted. Thus, as the result of this primary focus upon the excavation of historic re-
mains, what might now appear as discrete clusters of aboriginal materials across the site (Figure 4) were in fact those locations in which the excavation of historic material happened to uncover prehistoric artifacts. In most instances the boundaries of those "clusters" remained unexplored. The provenience of aboriginal artifacts was noted relative to the nearest historic feature, and feature numbers were not assigned to aboriginal remains. The prehistoric material ranged in density from isolated finds to the major concentrations of hearths, bone, and lithic artifacts in Features 13 and 21.

Although the aboriginal material was found within and below historic features, the subsequent historic occupations apparently did not radically disturb the context of the prehistoric artifacts. First, all of the historic features at the site but two were probable tent platforms or flat areas where tents were erected. The other two features were a dump (Feature 31) and a rock-walled structure (Feature 7). Historic disturbance of the ground surface at 5GN1664 was thus generally confined to the uppermost 10 cm of sediment. While the construction of a tent platform at Feature 13 may have removed some of the uppermost prehistoric artifacts, it apparently did not disturb two hearths and the majority of the artifacts found there. No historic ground leveling occurred at Feature 21 and disturbance there appears to have been minimal. The concentration of lithic material within a few adjacent excavation units in both Features 6 and 14 also indicates little if any disturbance during the historic occupations. Finally, the few artifacts uncovered in Features 2, 7, and 10 may not be in situ, but instead may represent casual artifact collection by historic inhabitants. However, such on-site disturbance has not been considered significant.

The decision to intensively excavate the aboriginal material in Features 13 and 21 was based both upon a concern with the impact of planned construction upon those resources and upon an interest in the types and content of aboriginal sites in side canyons of the Gunnison River in the Curecanti area. In the first case, a camping pad was to be constructed immediately atop Feature 21, and damage to the underlying aboriginal component was anticipated to be substantial. Second, and as has been stated previously, archeological research in Curecanti had heretofore been largely restricted to the immediate vicinity of the Gunnison River around Blue Mesa Lake (Jones 1982:145). Discovery of a series of aboriginal occupations at 5GN1664 provided an opportunity to obtain information about subsistence and local chronology at a Curecanti site in topographic setting radically different from that along the Gunnison River in much of the Park.

Feature 13

Historic Feature 13 contained one of two major concentrations of aboriginal activity exposed at the site (Figure 4). Two hearths, 34 pieces of chipped stone debitage, 10 formal chipped stone tools, two utilized flakes, and over 1,000 bone fragments were recovered in the
Figure 4. Distribution of prehistoric artifact concentrations of various sizes.
fill of the feature, and a total of 16 one meter squares were excavated there. All but two of these contained prehistoric artifacts (Figure 5).

Hearth A lay below the north-central part of Feature 13. The hearth was roughly basin-shaped in vertical profile, although it was elongated in plan view (Figure 6). It appeared to have two contiguous parts, a main area measuring 100 x 70 cm by about 25 cm deep, and a smaller area at the north end of the main hearth that measured approximately 55 x 45 cm by 11 cm deep. The tops of both parts of the hearth were exposed at a depth of 10-15 cm below the ground surface. Hearth A was filled with fire-cracked rock, most of which measured 15 cm in diameter or smaller, and pockets of charcoal lay scattered around the hearth at depths of 12 to 42 cm below the ground surface. Similar material was found near Hearth B, and in each case the distribution of the charcoal did not appear to have been caused by rodent activity, but instead suggested either the scattering of hearth fill during food preparation or subsequent disturbance, such as reuse or erosion (Guernsey 1983). Assay of a charcoal sample collected from the hearth produced a radiocarbon age of 2,000+60 years: 50 B.C. (Beta-8116), or a calibrated date of 170 B.C. - A.D. 205 (Table 1). The soil below the main part of Hearth A was burned a slight orange.

Hearth B lay approximately 2 m south of Hearth A in Feature 13. It was slightly smaller than Hearth A, and measured approximately 55 x 42 cm by about 30 cm deep. Hearth B did not contain as much rock or charcoal as Hearth A, and its surrounding soil was not burned orange. The top of Hearth B lay about 10 cm below the ground surface, while its

<table>
<thead>
<tr>
<th>Hearth</th>
<th>Sample No.</th>
<th>5568 Half-life</th>
<th>Calibrated*</th>
<th>Averaged**</th>
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<tr>
<td>F-13 B</td>
<td>Beta-8115</td>
<td>2130 ± 80</td>
<td>390 B.C. - A.D. 1</td>
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</tr>
<tr>
<td>F-21 B</td>
<td>Beta-8118</td>
<td>1090 ± 60</td>
<td>A.D. 885 - 1040</td>
<td>A.D. 875 - 1055</td>
</tr>
<tr>
<td>F-21 C</td>
<td>Beta-8117</td>
<td>1020 ± 70</td>
<td>A.D. 890 - 1170</td>
<td></td>
</tr>
</tbody>
</table>

*Klein et al. 1982
**Rippeteau 1974
Figure 5. Plan and profile of Feature 13, showing distribution of hearths, lithic material, and bone fragments.
Figure 6. Plan of Hearth A from Feature 13, as it was exposed at about 7 cm below top of hearth. Limits of feature marked by dotted line and rocks by hatching.
bottom lay at a depth of 37 cm. Its base was irregularly shaped; the northern half gradually sloped away from the center but its south wall was almost vertical (Figure 7). Assay of charcoal recovered from the hearth produced a radiocarbon age of 2,130+80 years: 180 B.C. (Beta-8115), or a calibrated radiocarbon date of 390 B.C. - A.D. 1. A water-screened sample from this hearth was examined for macrofossil remains, but no seeds or fruit were found (Minnis 1984).

Excavation exposed an unusual feature at the base of Hearth B, a hole that had been dug approximately 15-20 cm deep and 20 cm in diameter and was subsequently filled with charcoal, partially burned wood, and sediment (Figure 8). The function of this anomaly was unclear. It was apparently not part of the overlying hearth because it did not contain rock. While the feature resembled a posthole, but there was no other evidence of aboriginal architecture observed on-site and the partially burned pieces of wood and charcoal lay at an angle in the hole. The use and origin of this feature remain undetermined.

Cultural Material

A wide variety of lithic raw material was recovered from the aboriginal component in Feature 13. Approximately 60% of the debitage is cryptocrystalline silicate, one third is quartzite, and the remaining material is welded tuff (Table 2). Fourteen distinctive material types are represented in the collection, including three types of quartzite, one of welded tuff, and 10 of chert and chalcedony (the three quartzites and the 10 cherts and chalcedonies were distinguished solely on the basis of visual identification). All pieces of debitage except for one secondary flake are either tertiary flakes or shatter. The debitage is small, and most recovered flakes measure between 10 and 20 mm in length.

Several hafted bifaces were recovered in Feature 13, and ranged in style from large corner-notched Archaic to small Late Prehistoric projectile points. Specimen #633 represents the most common point type (Figure 9a). It is one of several large, corner-notched points whose original maximum dimensions range from 60 to 75 mm. The points of this type in the collection have asymmetrical blades and broad corner notches. Their bases are convex, and they have slightly expanding stems that have been ground or crushed. Specimens of this type are thick and exhibit fairly gross, non-patterned flaking. Many of the flake scars end in step fractures, perhaps due to the flaking properties of the fine-grained quartzite from which they have been made. The quartzite implements do not exhibit evidence of wear, and determination of their function is thus problematical. The large, corner-notched points are of the type that dates from about 7,000 years B.P. to the Historic Period (Reed and Scott 1982:381).

Specimen #609 is the base of a projectile point of the same type as Specimen #633, but it is slightly smaller than others found at Marion. This quartzite artifact has a minimum stem width of 13 mm, while
Figure 7. Profile of Hearth B at Feature 13, illustrating its irregular shape.
the average for the other large, corner-notched points from Marion is 16.5 mm.

Specimen #634 is a broadly corner-notched point made of white quartzite (Figure 9b). The artifact is broken, but is estimated to have originally measured over 40 mm in length. It is 5 mm thick. Its stem expands slightly to a convex base, and like most of the larger Archaic projectile points found on-site, this specimen is asymmetrically notched. No basal or side grinding or crushing is evident.

Specimen #639 is a medium-sized, stemmed white quartzite point with sloping shoulders (Figure 9c). The stem of this artifact is slightly expanding, and the center of its indented base has apparently been ground. The blade margins of this artifact are asymmetrical with one blade edge straight and the other excursive. The tip and one corner of the base have been broken, but the point was originally about 50 mm long. Flaking on the artifact is irregular, and several flakes have terminated in step fractures. It closely resembles stemmed McKean projectile points that date from 4,000 to 5,000 years B.P. (Green 1975: 164, Plate 1).
Table 2. Chipped Stone Artifacts from 5GN1664.

<table>
<thead>
<tr>
<th>Feature Number</th>
<th>Debitage</th>
<th>Tools</th>
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<tr>
<td></td>
<td>Quartzite</td>
<td>Chert</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
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</tr>
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<td>3</td>
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<tr>
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<td>14</td>
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<tr>
<td>17</td>
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<tr>
<td>21</td>
<td>364</td>
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</tr>
<tr>
<td>22/11</td>
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<tr>
<td>31</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Gen.Surf.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>413</td>
<td>5</td>
</tr>
</tbody>
</table>

% of all debitage: 75.2 0.9 12.4 10.2 1.3%

% of all Tools: 60.7 33.9 5.4%
Specimen #606 is a small corner-notched point made from plum-colored quartzite (Figure 9d). The tip and one tang have been broken, but the point was originally about 25 mm long. Its blade edges are serrated and slightly asymmetrical. This is a well-made point that bears evidence of fine pressure flaking, and its maximum thickness is 2.5 mm. It is virtually identical in shape to a point found on the surface of 5OR198 along Dallas Creek, an artifact which Muceus and Lawrence (1981:7-95,7-221) believe post-dates A.D. 700. It is also similar in morphology to a Late Prehistoric point recovered from Vail Pass (Gooding 1981:34,Fig.16j), and to Buckles' Type 7 point from the Uncompahgre Plateau (Buckles 1971:115,Fig.2). The 5GN1664 specimen has serrated edges and is thinner in cross-section than the Type 7. However, Buckles has also suggested that the point type dates after A.D. 700 (Buckles 1971:612-613).

Specimen #626 is a small, bifacially worked, triangular point manufactured on a curved flake of yellow-brown chert (Figure 9e). It mea-
sures 21 mm in length and has a maximum thickness of 3 mm. Neither the base nor the sides have been abraded or worn. It may best be classified as a Late Prehistoric Unnotched Point (Gooding 1981:32, Fig. 15k-o).

Specimen #629 is a unifacial tool made on a flake of pink and tan quartzite. It is plano-convex in cross-section, and its convex side has been completely retouched while its interior face has only been flaked along the lateral edges (Figure 9f). The artifact is symmetrical, and is 46 mm long.

Specimen #645 is the tip of a perforating tool manufactured from white chert. The presence of numerous step fractures along one margin suggests that the tool had been used before breakage and abandonment.

Specimens #620 and #1051 are both fragments of bifacially worked tools. The first is a tip section, while the other may be the base to a projectile point. Both have been made from chert.

The other two chipped stone tools recovered from Feature 13 are utilized flakes. Specimen #638 is a tertiary flake with wear along one edge. It is small, and use wear is evident along a 20 mm section of its distal end. Specimen #603 is one of the larger flakes found in Feature 13, and measures more than 35 mm in length. It bears evidence of irregular use along 40 mm of its margin. The flake is of Spanish Diggings chert, which outcrops at various locations along Cochetopa Creek (Douglas Scott personal communication 12/5/83).

Six of the twelve tools from Feature 13 are hafted bifaces, and are probably projectile points. Four other implements that are fairly complete include an unhafted, unifacial tool that may have been used as a knife, the tip to a perforator, and two utilized flakes that were probably used for scraping. The other two biface fragments are very small and their parent tool types cannot be determined. The collection contains few implements such as choppers or knives that might have been used in butchering or final animal food preparation.

Eight of the tools are incomplete, and the remaining sections of these artifacts were not recovered. This suggests tool breakage at limited activity sites, such as kill sites, and the return of some artifacts, like Specimens #620, #1051, and perhaps #609, for repair or reworking. Such does not explain, however, the presence in the component of several small tool fragments that are apparently beyond the point of reworking. The use of these pieces as small cutting or scraping tools cannot be ruled out.

In a few cases, the debitage found in or near Feature 13 appears to represent the same raw material types as those of the formal tools. For example, the single unifacial tool (Specimen #629) appears to be of the same material as eight pieces of debitage found in the northwestern corner of Feature 6. If these are indeed of the same raw material, it would appear that the unifacial tool was manufactured on-site. Small shatter and tertiary flakes from Feature 13, probably of the same ma-
terial as the small biface fragment (#620), the small triangular point (#626), and the medium-sized stemmed point (#639), suggest that these tools were also manufactured locally. Conversely, the amount of debitage recovered in the aboriginal component in Feature 13 is very small, and does not substantiate on-site manufacture of the tools found there. Six rejuvenation flakes of plum-colored quartzite were recognized in the collection which are slightly less coarse-grained than the material from which Specimen #633, a hafted biface, has been made. Yet, it is still possible that the six pieces of debitage represent resharpening debris from this implement.

Over 1,000 fragments of animal bone were recovered from the aboriginal component in Feature 13, of which only 32 could be identified beyond the level of family (Appendix A). Another 35 elements were identified as representing medium-sized mammals such as mule deer, mountain sheep, or antelope. Four fragments are from Odocoileus hemionus (mule deer), eight are remains of Odocoileus hemionus or Antilocapra americana (pronghorn antelope), and 20 represent unspecified artiodactyl(s). Most of the bone fragments are small pieces between 0.5 and 1.5 cm in maximum dimension, and about 75% have been burned. All of the elements identified to the level of family or species are limb bones except for two molar fragments. Fragments of vertebra, innominate, and scapula were found in addition to several limb bone fragments, at least one from an immature animal, in that part of the collection identifiable only as remains of medium-sized mammals.

There appears to be positive distributional correlation between the bone fragments and the lithic artifacts in Feature 13. Both categories of material were clearly concentrated near Hearth A, especially near the northwestern corner of that feature (Figure 5). About 40% (n=430) of the bone fragments from Feature 13 were found in the fill of Hearth A, while less than 1% (9 pieces) were recovered from Hearth B.

Feature 21

Feature 21 was the second and largest area of aboriginal activity identified at 5QN1664. It lay in a sheltered area at the southern end of the site, where it was surrounded by steep talus slopes on the south and east and a tall rock outcrop on the west (Figure 4). The north end of the feature opens onto a gentle slope, and this location would have offered the advantage of protection from the wind during cold weather and possibly from heat in warm weather.

There was no surface indication of aboriginal use of this location, and excavation was initiated to discover whether subsurface historic structural remains existed to account for the light surface concentration of late nineteenth century artifacts there. No historic structures were exposed and few historic artifacts were recovered, but a substantial aboriginal component was identified and designated Feature 21.
Features and material observed and collected in the area of Feature 21 included three probable hearths, one concentration of small rocks of unknown function, 423 pieces of debitage, 36 tools and tool fragments, and almost 1,600 pieces of bone (Figure 10).

Certain post-abandonment disturbance in Feature 21 was suggested by the presence of numerous rodent burrows, several rodent bones, large tree roots, and the indistinct contacts between strata (Figure 11). Artifact displacement may have been due to freeze-thaw cycles as well as to cryoturbation (Bowers et al. 1983). However, Hearths A and C were apparently unaffected by these processes since their outlines remained distinct.

Hearths and Rock Concentration

Hearth A was a small, shallow, basin-shaped feature containing charcoal and fire-cracked rock. It measured 55 cm x 43 cm and was 6-7 cm deep at the center (Figure 12). The top of the hearth was exposed at 20 cm below ground surface. No charcoal was submitted for radiocarbon dating, but as will be discussed later, it is likely that this feature is of the same age as Hearths B and C in Feature 21. No seeds or fruits were identified in a water-screened sample of the Hearth A fill. However, Juniperus and Pinus, probably Ponderosa pine, wood charcoal was observed in the sample (Minnis 1984).

Hearth B lay slightly north and west of Hearth A (Figure 10) and was exposed several centimeters higher in the fill. This feature was unlike the other four hearths at 5GN1664 in that it was not spatially well-defined. It measured about 70 x 63 cm in plan view near its top. The greatest concentration of charcoal and fire-cracked rock lay in the uppermost 10 cm of the hearth, but charcoal and rock continued in lesser concentrations to a depth of 40 cm, essentially the lowest elevation in Feature 21 in which aboriginal material was found. The feature was not contained within a definable pit, and there had been considerable mixing of charcoal and sediment at the bottom of the feature. In addition to those other confusing characteristics, the sediment surrounding the bottom of the feature was burned a faint orange, although only scattered charcoal was present at that level. Assay of the charcoal collected from the uppermost 5 cm of Hearth B produced a radiocarbon age of 1,090+60 years: A.D. 860 (Beta-8118), or a calibrated radiocarbon date of A.D. 855-1040 (Table 1).

Hearth C was another small, basin-shaped feature that lay south and east of Hearth A, and it was remarkably similar to Hearth A both in terms of size (52 x 40 x 7 cm) and content of charcoal and fire-cracked rock. Additionally, a large amount of rock was found surrounding the hearth from its surface to the level of its base (Figure 13). While not all of this material was fire-cracked or blackened, its concentration suggested that the rocks were once part of the hearth fill. The concentration of rocks in the vicinity of this hearth is generally similar to that surrounding Hearth B in Feature 21. Analysis of the re-
Figure 10. Plan of Feature 21, illustrating excavation units, hearths, and total number of lithic artifacts and bone fragments per unit.
covered charcoal from Hearth C generated a radiocarbon age of 1,020±70 years: A.D. 930 (Beta-8117), or a calibrated radiocarbon date of A.D. 890-1170. A sample of Hearth C fill was examined for macrofossil remains, but none were detected. Juniperus and Pinus, charcoal, the latter probably Ponderosa pine, were identified in the hearth fill (Minnis 1984).
One other prehistoric feature was observed in Feature 21 near the lower limits of the same excavation unit that contained Hearth C. The feature was represented by an unusual complex of small rocks exposed at a depth of 31 cm below the ground surface. The rocks ranged between 2 cm and 10 cm in diameter and were concentrated in an area about 55 x 45 cm (Figure 14). No artifacts were found in direct association with the concentration, and the complex contained no charcoal or sediment discoloration. Most other excavation units in this part of the site contained few or no rocks at the 30 cm level. The rocks in the feature were notably smaller than most of those that occurred naturally in Feature 21, and appeared to have a cultural origin. No indication of the significance of this concentration was found.

Cultural Material

At least 12 distinctive types of chert and chalcedony are represented in the debitage from Feature 21 (Table 2). However, because such material can vary considerably in color and texture even within a single source, it is not possible to determine the number of sources represented. Several different raw material colors and textures of quartzite are also present in the chipped stone collection from Feature 21, a large proportion of which are of colors that grade into one an-
Figure 13. Photograph of Hearth C at Feature 21, facing west. Two corners of 1 x 1 m excavation unit marked by stake sat top of photo.

other. It is therefore possible that the materials represent exploitation of only a few quartzite sources.

The distribution of the debitage does not appear spatially correlated with the three hearths in Feature 21 (Figure 10). The detritus is instead concentrated in the area north of Hearth C and east of Hearth B. This is also true of the formal stone implements, which range in type from hafted bifaces to preforms (or cutting and scraping tools), probable scrapers, modified and utilized flakes, and bifacially worked tool fragments. Two-thirds of the implements have been manufactured from quartzite, while the remainder are of chert or chalcedony.

Four hafted bifaces (Specimens #668, #808, #920, #1033) are large, corner-notched projectile points of the type described from Feature 13 (Figure 15a). Only one of the four, Specimen #1033, exhibits evidence of any wear. It is rounded on one margin, suggesting that it was used to cut relatively soft material, i.e., flesh (Benedict and Olson 1978: 49). Unsuccessful attempts were made to reshape Specimens #668 and #920 after they were broken (Figure 15b).
Specimens #996 and #1109 are hafted biface base fragments that resemble the bases of corner-notched points described in the previous paragraph. The two fragments are slightly smaller, however, and their stems are narrower and blades thinner in cross-section.

Two other large, fragmentary bifaces are quite similar to the large corner-notched type, but one has distinctive notching while the
Figure 15. Selected chipped stone and bone artifacts from Feature 21.

a) Specimen #1033, b) #920, c) #834, d) #762, e) #900, f) #721, g) #663 obverse and reverse, h) #664, i) #1065, and j) bone artifact.
other is slightly narrower. Specimen #834 has been manufactured from quartzite and when complete probably measured 45 mm in length by 30 mm at its maximum width at the tangs. The notching on its unbroken side is somewhat different than that of the other large, corner-notched specimens, and is represented by a distinct, narrow tang as opposed to a sloping shoulder (Figure 15c). Specimen #1114 has been made from a black chert. Its tip is broken and its blade edges are nearly parallel, but this artifact is estimated to have measured a 60 mm in length. Like the first hafted bifaces described from Feature 21, the corner notches of this artifact are broad and asymmetrical. However, the blade on Specimen #1114 is generally narrower and its retouch is irregular, perhaps due to the flaking properties of the material.

Two smaller hafted bifaces were also recovered in Feature 21. The first, Specimen #762, is a broken, medium-sized projectile point (Figure 15d). The raw material is apparently very fragile, and the recovered fragment has broken into four pieces. The original shape and size of this artifact is not clear, but it appears as if the point was corner-notched and similar to the Elko type (Aikens 1970:35-38). It may have measured 35 mm in total length (Figure 15d). The specimen was made of pink, orange, and lavender chert and may well have been curated for its esthetic appeal. The second small hafted biface, Specimen #900, is a small corner-notched point with a slightly concave base (Figure 15e). Originally about 24 mm long, it was subsequently broken at the tip, base, and tang. Manufactured from a white-gray chert, it is only 3 mm thick. In general morphology, this point is similar to the Late Prehistoric corner-notched point type reported by Gooding (1981:34,Fig.16j) at Vail Pass and by Frison (1978:72,Fig.2-17) in northern Wyoming.

Ten of the unhafted bifaces and fragments recovered from Feature 21 are either preforms or knives. Because all of these specimens are of quartzite, edge wear interpretation is difficult. However, attributes of thickness, irregularity of edge shape, and general unfinished quality suggest that the specimens are in fact preforms (Crabtree 1972:85) rather than knives.

Indeck and Kihm (1982:34) report a similar set of unhafted bifaces from the Zephyr site. However, they define those artifacts as blanks, and suggest that some of them may have been used in their present form (perhaps as knives) even though their ultimate form and use was intended to be hafted projectile points. The ten unhafted bifaces in Feature 21 are most probably uncompleted preforms that were broken during manufacture, just as most of the blanks from the Zephyr site appear to have been.

Indeck and Kihm (1982:34) further postulate that modified flake blanks were produced in the earliest stage of the biface reduction sequence at the Zephyr site. It is possible that the earliest stage in a similar reduction sequence is indicated in the Feature 21 collection, where one artifact, Specimen #780, may represent a modified flake blank. This implement has been made on a flake of fine-grained, plum-
colored quartzite that has been modified by the removal of several flakes around its margins (Figure 16a). It measures 63 x 42 x 12 mm.

There are three groups of bifacially-worked preforms at Feature 21 that probably represent different stages in tool manufacture. In the first group, designated Type 1 (Figure 16b), six fragments of quartzite are apparently the remains of at least two preforms having large, irregular percussion flake scars and cross sections averaging 8 mm in thickness. The pieces are too fragmentary to determine the original shape of the parent artifacts. However, the size of one of the larger fragments suggests that, in the early stages of manufacture, some preforms were as great as 65 mm in length. Type 1 preforms from Feature 21 are similar to Type 5 and 6 blanks from the Zephyr site in terms of their length, thickness, and unpatterned flaking (Indeck and Kihm 1982: 40,44). Because the 5GN1664 specimens are so fragmentary, however, it is impossible to determine whether they resemble the Type 5 and 6 Zephyr site blanks in shape and medial ridge. All three types represent a class of artifacts from one of the earlier stages of biface reduction.

The second and third groups in the Feature 21 collection are smaller, triangular preforms apparently representing later stages in biface production. The Type 2 artifacts are shorter, wider, and thinner than those of the third type, and are represented by two quartzite implements, Specimens #994 and #901/1031 (Figure 16c). The latter is complete and measures 47 mm long by 32 mm wide and is 6 mm thick. These two artifacts resemble the Zephyr Type 3 and 4 blanks, but are generally smaller. However, they closely resemble the Type 4 specimens in length. The Zephyr and Feature 21 preforms differ in outline, the former having elliptical or ovate shapes while the latter are triangular. A final shared attribute is the predominance of transverse fractures.

Four artifacts from Feature 21 have been designated Type 3 preforms and include Specimens #662, 801, 944/760, and 1034/667 (Figure 16d,e). Two complete specimens of this type measure 64 x 28 x 7 mm and 56 x 27 x 7 mm, and two of the three preforms are asymmetrical at the tip. This group is similar to Type 1 and 2 from the Zephyr site, but, as before, they do not share the same outline.

While positive function identification of these unhafted bifaces cannot be made, certain attributes and characteristics of their associated debitage are consistent with their interpretation as preforms. First, Types 2 and 3 apparently represent later stages in tool manufacture and their outlines approximate those of large corner-notched points prior to notching (Figure 17). These points are the most common type of finished tool found in Feature 21. Second, 42% of the debitage from Feature 21 is of the same raw material as that of the preforms. Third, all of the preform fragments exhibit transverse fractures or lateral snaps, a type of fracture that commonly (although not exclusively) results from end-shock during tool manufacture (Purdy 1975: 135).
Figure 16. Modified flake and preforms from Feature 21.

a) modified flake, b) Type I preform, c) Type 2 preform,
d) and e) Type 3 preforms.
In addition to the unhafted bifaces that are probably preforms, there are two other unhafted bifaces in the Feature 21 collection. The first, Specimen #1053, has been manufactured from coarse-grained quartzite and originally measured approximately 44 x 28 x 5 mm. It is triangular in shape and is very similar to Specimen #1699 from Feature 31 (described below) and to a few tools from the Zephyr site (Indeck and Kihm 1982:Fig.14b,c). Its function has not been determined.

The other unhafted biface (Specimen #721) was made from locally-outcropping schist. It is broken, and its original form can no longer be determined. However, it was at least 37 mm wide and 8 mm thick, and somewhat resembles the quartzite preforms from Feature 21 (Figure 15f).

Two scrapers were identified among the lithic materials from Feature 21. Specimen #663 has been made on a broken flake of apricot-colored chalcedony (Figure 15g). It exhibits alternating unifacial flaking along 30 mm of one edge. Specimen #664 is an incomplete flake of orange-red chert with bifacial retouch across 15 mm of one end (Figure 15h). It is possible that these two artifacts were manufactured on-
Specimen #721 is a utilized chert flake that bears evidence of use along 13 mm of one margin. It has been illustrated in Figure 15(i).

Ten biface fragments that exhibit no diagnostic attributes are also present in the assemblage. Four of those, Specimens #818, #844, #860, and #1119, may be fragments of the same tool. All but two of the specimens are of chert or chalcedony.

Two ground stone artifacts were also recovered from this area of the site. The first is a small, ovate mano manufactured from welded tuff. It measures 102 x 88 x 45 mm and exhibits light bifacial abrasion. Its lateral margins have been lightly battered. The second piece of ground stone, Specimen #651, is a small pebble that measures 26 x 23 x 12 mm. Its identification as cultural material is tentative because it exhibits very little wear. However, it was found in a section of the site where rounded stones were rare.

None of the debitage from Feature 21 is irrefutably of the same raw material types as the formal tools except for two quartzites that are distinctive in color and texture. These have been mentioned in the foregoing discussion of preforms.

One formal bone tool was found in Feature 21 approximately 50 cm east of Hearth A (Figure 15j). This broken artifact measures 11 mm wide by 5 mm thick. While its original form and function cannot be determined, Olsen (Appendix A) suggests that the artifact represents the butt end of an awl manufactured from an artiodactyl metapodial. In size and breakage, the artifact also resembles a bone counter from Hogup Cave, Utah (Aikens 1970:89, Fig. 48i).

Almost 1,600 other pieces of bone were recovered in Feature 21, most of which were too small or too fragmented for element or species identification (Appendix A). Excluding rodents, those species that were identified include Odocoileus hemionus (mule deer), cf. Antilocapra americana (pronghorn antelope), and cf. Bison bison (modern bison). Deer are represented in the collection by single mandible and femur fragments, antelope by mandible fragments, deer or antelope by skull, tooth, femur and other long bone fragments, and a lunate fragment, bison by a nearly complete right metatarsal, and artiodactyl(s) by numerous long bone splinters and fragments, metapodial fragments, and several skull and tooth fragments. Bone that could be identified to element but not family or species included one fragment each of a vertebra, scapula, third phalanx, and metapodial, together with several skull and tooth fragments. These appeared to be from medium-sized mammals about the size of deer, antelope, or sheep.

Most of the bone was broken into very small pieces, and the nature of this collection has thus made it difficult to accurately estimate the minimum number of individuals present. Two notable exceptions,
however, are the bison metatarsal and the distal end and shaft of a
deer femur. Neither of these bones have been burned. The adult bison
metatarsal is from a small individual, and is of particular interest
because it is the only bison bone that has been positively identified
in the collection. Its archeological context ensures its identifica­
tion as bison instead of cow. It may be the remains of an animal tak­
en in the vicinity of 5GN1664, and so would probably represent food re­
mains. The break in the bone is similar to one illustrated in Binford
(1981:155, fourth illustration) which resulted from marrow extraction.
An equally likely explanation is that the bone was brought to the site
for use as a tool. Because the bison metatarsal is dense and heavy, it
may have been used for crushing, perhaps in the processing of plant
foods. However, if in fact it was a tool, the bone is in very good
condition (except for the fragmentary shaft) and does not appear to
have been heavily battered.

While the deer bone may also have served as a tool, there is like­
wise no clear evidence of battering as might be expected if it had been
employed in tool manufacture or food preparation. Its shaft has been
broken into several pieces, apparently by natural deterioration.

As it was in Feature 13, a large percentage of the remaining bone
from Feature 21 was burned. However, little of the faunal material was
actually found within the hearths. Like the lithic artifacts, it oc­
curred in greatest concentration in the vicinity of Hearths A and B, in
particular just to the northeast of those two features (Figure 10).

Lithic Concentrations within Features 2, 3, 6, 7, 10, 12, 14, 17, 22/11, and 31

Prehistoric artifacts occurred in relatively small quantities at
several other locations at 5GN1664. A workshop area within historic
Feature 14 and possibly a second in historic Feature 6 are probably the
most significant of these concentrations.

Two aboriginal artifacts were found within historic Feature 2.
One was a broken tertiary quartzite flake, while the second was a
small, side-notched projectile point manufactured from orange and yel­
low chert (Figure 18a). The point measures 26 mm in length by 16 mm in
width at the base (the widest point), and is 3.5 mm thick, and it thus
falls within the size range of Late Archaic points. Both the notches
and the blade edges of the point are asymmetrical, and it closely re­
sembles the Plains side-notched projectile points recovered by Gooding
from Vail Pass (1981:32,Fig.15F-J). It is also of the same form but
slightly larger than Buckles' Type 1 point found on the Uncompahgre
Plateau (1971:115,Fig.2a).

Three probable aboriginal artifacts were recovered from historic
Feature 3. These include two large flakes of black schist, a raw ma­
terial type found on-site, and one small quartz flake. Both schist
flakes measure over 65 mm long and one is a rejuvenation flake. However, no aboriginal features were found at this location.

Twenty pieces of chipped stone debitage, two biface fragments, and a scraper fragment were recovered during the course of excavation of historic materials at the Feature 6 tent platform. Perhaps as many as ten different raw material types are represented in this collection, and many of the artifacts are rejuvenation flakes, suggesting localized tool maintenance activities.

The two biface fragments found in Feature 6 were manufactured from quartzite, one white and the other a coarse-grained plum color. The white piece is an unusual artifact, and it appears to be a Hertzian Cone (Crabtree 1972:54) where one chipped surface is the base of the cone and the opposite surface, illustrated in Figure 18b, is at the top of the cone. The artifact was probably the result of accidental fracture of a bifacially-worked implement. The absence of other debitage of this material is problematical, but suggests that the artifact was not actually broken in the vicinity of Feature 6. This, in turn, implies curation of the broken fragment, despite its lack of utility as a tool. The second biface fragment is part of a large tool that originally measured greater than 90 x 80 mm. It is crudely flaked on both

![Figure 18. Select chipped stone artifacts from Features 2 (a), 6 (b), 7 (c), and 22/11 (d).](image)
faces, except along one margin where it has been regularly retouched. That edge has been rounded, apparently as the result of both intentional retouch and wear. The coarse nature of the material, however, does not permit observation of wear patterns.

Specimen #588 from Feature 6 is a fragment from a chert scraper. Approximately 7 mm of retouch remains intact along one working edge.

One small, stemmed, gray-white quartzite projectile point was recovered from historic Feature 7 (Figure 18c). The stem of this artifact is straight, while the point has a flat or slightly convex base and slightly sloping shoulders. It is 30 mm long by 12 mm wide, and is 5.5 mm thick. It resembles a stemmed projectile point recovered from 5GN208 (Stiger 1981:20, Fig. 5) in shape but not in size. It also compares favorably in shape with certain points from the Hungry Whistler site in Boulder County (Benedict and Olson 1978:Fig. 38a,o,p).

In addition to the projectile point, a coarse-grained quartzite mano was found slightly downhill from the historic feature. It is an ovate, bifacially-abraded tool that exhibits moderate wear, and its ends have been slightly battered. It is the second of only two manos found at 5GN1664.

One piece of shatter was recovered in the excavation of historic Feature 10, while nine flakes and a core were found in historic Feature 12. At the latter location, five of the flakes and the core were of the same medium-grained quartzite.

Feature 14 produced 39 pieces of debitage, including one core. Only four different raw material types are represented in this collection, and the distribution of the material suggests that all of the flakes but one were produced during a single knapping episode. With the exception of one tertiary chert flake and a chert core found slightly north of the concentration, all of the debitage was chalcedony. This material was concentrated in the north central part of the feature, where it was exposed in several adjacent excavation units. Two-thirds of the material was recovered from one square meter, apparently pinpointing that activity locus. The single core is small, complete, and irregularly-shaped. It is of the same raw material as two broken chert nodules found downhill in the Lake Fork access road.

An isolated, broken, unhafted biface was found on the ground surface halfway between Features 22 and 11 (Figure 18d). This tool was made of medium-grained quartzite and probably originally measured about 75 x 38 x 10 mm thick. Intentional microflaking and rounding along two margins suggests its use as a cutting or scraping tool.

Eight pieces of debitage and one biface were uncovered during limited excavations at historic Feature 31. At least five different chert and quartzite raw material types are represented in the small collection. Most of the biface was recovered, but it had been broken into three pieces. The tool is unhafted and was manufactured from medium-
grained plum-colored quartzite. It measures about 40 mm in length by 25 mm in width at its widest point, and is 4 mm thick.

Six other artifacts were found scattered across the site, mostly near the road. These include five pieces of debitage and part of the base of a small, chert, corner-notched projectile point.

Discussion of Prehistoric Components

At least two prehistoric aboriginal components are present at 5GN1664 based upon associated radiocarbon dates and excavated artifact assemblages. The first component dates to approximately 2,000 years B.P. and is represented by material recovered from Feature 13. The hearths excavated in this location produced an average radiocarbon date of 2,047±48 years B.P. (Rippeteau 1974:112-117), and it is quite possible that most of the stone artifacts and all of the bone recovered in Feature 13 are contemporaneous with the two hearths.

The second component is represented by material recovered from Feature 21. Two of the three excavated hearths in this area have radiocarbon ages that are statistically similar, and average 1,060±46 years B.P. It is assumed that most of the associated artifacts and bone and the third hearth are contemporaneous with the two dated hearths.

A final Late Prehistoric occupation sometime between A.D. 1200 and A.D. 1880 is suggested by four projectile points of the size and style commonly attributed to that period. There was also an undated limited activity area exposed in Feature 14, probably a single knapping episode, that may or may not date to one of the three previously indicated periods. The fact that the raw material types recovered in Feature 14 were not found elsewhere on-site suggests that the occupation there was not contemporaneous with the Feature 13 and Feature 21 occupations.

Most artifacts found in locations other than Features 13 and 21 cannot be dated with certainty, and it is consequently difficult to determine whether they are contemporaneous with other artifact concentrations. In only one case is there fair evidence for contemporary occupation of two separate areas, that being the artifacts of distinctive quartzite that occurred in Features 12 and 21. The quartzite core and five flakes from Feature 12 may represent a small chipping station outside Feature 21, the activity center of the site during the 1,060 B.P. occupation.

In theory, the faunal remains and hearths from 5GN1664 should identify both the types of animals exploited and details of animal food processing. In practice, however, these activity patterns cannot be addressed here with complete satisfaction. Four methods of animal food preparation may have been employed at the site: roasting, boiling, bone grease production, and bone juice extraction. However, the animal bone and features at 5GN1664 do not closely resemble the remains associated
with any of the above four methods as they have been identified during either ethnographic and ethnoarchaeological research or in archeological excavations.

Examination of the identifiable faunal remains from 5GN1664 (Table 3) indicates no preference for meaty cuts that could be roasted or boiled; for the articular ends of long bones, distal metapodials, tarsals, and carpals used most often in bone grease production (Vehik 1977:170; Binford 1978:157); or for those bones used frequently in bone juice extraction (including a wide range of elements, but with rib and long bone fragments most common; Binford 1978:165). The incidence of 29 skull fragments from Feature 21, representing one deer and possibly one antelope, does not correlate with any of the four possible food preparation methods. Those skull elements would be expected instead at a field butchering site. The very fragmentary condition of the bone from the site would not be expected with meat roasting or boiling activities, although that particular attribute is compatible with bone grease or juice production (Leechman 1955; Vehik 1977:169; Binford 1978:159, 164-165).

Neither do the hearth characteristics clearly identify the method(s) of animal food preparation at the site. The stone-boiling technique of preparing meat, grease, or bone juice was one possibility examined at 5GN1664 (Frison et al. 1978:11-14; Guernsey 1983). However, those hearths at the site that were filled with fire-cracked rock and charcoal would only represent one-half of the stone-boiling operation, the locations where the stones were heated prior to cooking. The absence of the requisite second type of pit, one without stone or charcoal in which the food would have been placed in a hide and actually cooked, suggests that stone-boiling did not occur on-site.

In sum, the archeological remains at 5GN1664 do not neatly match the archeological and ethnographic models for any of the four methods of food preparation examined. The hearths may have been used for meat roasting or stone heating for stone-boiling, but the apparent absence of actual stone-boiling pits on-site argues against the latter possibility. The simple presence of faunal remains suggests meat roasting or bone grease or juice production. However, the actual condition of the bone does not support the roasting argument and the elements represented do not clearly support the hypothesis of bone grease or juice production. The quantity of identified skull and tooth fragments argues that at least some butchering occurred on-site. Finally, while most of the bone recovered at the site was burned, none of the four methods of food preparation mentioned would normally have resulted in burned bone. The burned and perhaps the fragmentary condition of the bone from 5GN1664 may best be explained by camp clean-up, and not by some method of food preparation. Additionally, the distribution of most of the bone scrap outside the hearths themselves might reflect periodic cleaning of those features so that they could be reused (Gilbert 1984; Greiser et al. 1983:5-10).
<table>
<thead>
<tr>
<th>Feature 13</th>
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</thead>
<tbody>
<tr>
<td><strong>Odocoileus hemionus</strong></td>
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<tr>
<td></td>
<td>1 molar fragment</td>
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<tr>
<td></td>
<td>1 third phalanx</td>
</tr>
<tr>
<td></td>
<td>1 ulna fragment</td>
</tr>
<tr>
<td><strong>Odocoileus hemionus or Antilocapra americana</strong></td>
<td>1 femur shaft fragment</td>
</tr>
<tr>
<td></td>
<td>1 metapodial fragment</td>
</tr>
<tr>
<td></td>
<td>6 long bone shaft fragments</td>
</tr>
<tr>
<td>artiodactyl</td>
<td>12 humerus shaft fragments</td>
</tr>
<tr>
<td></td>
<td>5 long bone shaft fragments</td>
</tr>
<tr>
<td></td>
<td>2 metapodial fragments</td>
</tr>
<tr>
<td></td>
<td>1 rib fragment</td>
</tr>
<tr>
<td>medium-sized mammal</td>
<td>30 limb bone shaft fragments</td>
</tr>
<tr>
<td></td>
<td>2 first phalanx fragments</td>
</tr>
<tr>
<td></td>
<td>1 scapula spine fragment</td>
</tr>
<tr>
<td></td>
<td>1 vertebra spine fragment</td>
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<td></td>
<td>1 ilium fragment</td>
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<table>
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<td></td>
<td>1 mandible fragment</td>
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<tr>
<td>cf. <strong>Antilocapra americana</strong></td>
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<tr>
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<td>17 femur shaft fragments</td>
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<td>1 auditory meatus fragment</td>
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<td></td>
<td>2 teeth</td>
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<tr>
<td>artiodactyl</td>
<td>70 long bone shaft fragments</td>
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<td>11 teeth fragments</td>
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<td>1 sesamoid</td>
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<td></td>
<td>2 metapodial fragments</td>
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<td></td>
<td>1 skull fragment</td>
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<tr>
<td>medium-sized mammal</td>
<td>1 thoracic vertebra fragment</td>
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<td>1 scapula fragment</td>
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<td>9 skull fragments</td>
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<td>1 metapodial fragment</td>
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<tr>
<td></td>
<td>2 teeth fragments</td>
</tr>
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</table>
In addition to differences in the dates of occupation between Features 13 and 21, there is differential distribution of certain artifact types, notably preforms and tertiary flakes. Several preforms were recovered in Feature 21, while none were found in Feature 13. Conversely, tools represent a larger part of the chipped stone artifact collection from Feature 13 than they do from that of Feature 21. The ratio of pieces of debitage to the number of tools at the former location is approximately 3:1, while the ratio of debitage to tools from Feature 21 is 11.5:1. These differences cannot easily be explained by the presence of different cultural groups, since other attributes of both assemblages are very similar. The differences instead appear to be a function of the predominance of tool manufacturing activities in the area of Feature 21 and their absence in Feature 13.

The quartzite preforms, a large percentage of the debitage, and some of the broken tools at Feature 21 were apparently made from locally-available raw material, although not that found in the immediate vicinity of the site. One suspects that the prehistoric groups who occupied 5GN1664 in 1,060 B.P. procured usable quartzite in the course of their hunting and gathering activities away from the site. The tools were then manufactured upon their return to 5GN1664 for later use while hunting, gathering, and processing food.

The 1,060 B.P. component warrants further discussion in light of its associated projectile points. This occupation dates approximately 500 years after the bow and arrow is believed to have been introduced into western Colorado (Reed and Scott 1982:385), and as such should logically contain arrow points in greater frequency than dart points. This does not prove to be the case, however. Projectile points from Feature 21 were analyzed as suggested by Thomas (1978) to determine whether they functioned as dart or arrow points. Specimens #1033, 834, 1114, 762, and 900 were sufficiently complete for this type of analysis (Table 4), and of those five, the first four were classified as dart points while the last is an arrow point. Specimens #668, 808, and 920 are fragmented but are apparently of the same point type as Specimen #1033 and so were probably dart points. Two corner-notched specimens, #996 and 1109, could not be classified because their lengths and one of their widths could not be measured. Specimen #900 is the only point that clearly falls within Thomas' size range for arrow points.

The question remains why the occupants of 5GN1664 continued to use dart points when arrow points and bow and arrow technology were known. While the question is too complex to fully address here, recent research by Chatters (1982) on this subject should be noted. Chatters recognized a similar preference for dart points (or for what he conservatively called "broad-necked projectile points") in the Pahsimeroi Valley of central Idaho long after bow and arrow technology was known. He attributed this coincident use of both the broad- and narrow-necked points to two contrasting microenvironments in which game was frequently hunted. Isolated finds of narrow-necked points were most common along stream banks thick with brush, while broad-necked points were found mostly on the open plain (Chatters 1982:217). Mountain bison
Table 4. Projectile Point Measurements and Results of Dart and Arrow Point Formula Calculations (after Thomas 1978:470).

<table>
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<td>21.43 *</td>
<td>18.45</td>
</tr>
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<td>#762</td>
<td>(34)</td>
<td>(20)</td>
<td>4</td>
<td>(9)</td>
<td>12.50 *</td>
<td>10.53</td>
</tr>
<tr>
<td>#900</td>
<td>24</td>
<td>12</td>
<td>3</td>
<td>11</td>
<td>0.14</td>
<td>5.26</td>
</tr>
</tbody>
</table>

were commonly hunted along the stream banks, while pronghorn antelope were hunted on the plain (Chatters 1982:394). In the Pahsimeroi, the complete replacement of dart points by arrow points did not occur until about A.D. 1550 (Chatters 1982:219), at which time an environmental shift occurred toward a more mesic climate favoring the growth of bison herds (grazers) over antelope herds (browsers). As aboriginal peoples adapted to bison hunting, they began to rely more heavily upon the bow and arrow, which was more effective in brush.

While current data do not permit a test of Chatters' arguments in western Colorado, his research raises some interesting questions. Among these is the possibility that the preponderance of dart points from Feature 21 at 5GN1664 may indicate that site occupants regularly hunted those animals that preferred the open plains over brushy environments.

Other Lake Fork Canyon Sites

Nine aboriginal sites have been identified to date in Lake Fork Canyon between the mouth of the Lake Fork and Gateview (Colorado Preservation Office site files). These are situated on small alluvial fans and benches above the Lake Fork River, and all are lithic scatters. In addition to the recorded sites, area visitors have occasionally reported the presence of projectile points and flakes along the canyon, and a mano was observed at the edge of historic site 5GN1698 in 1983.
None of the scatters have been tested for subsurface material, but it is probable that buried components are common in Lake Fork Canyon. The light scatters of aboriginal artifacts appear on the surface much as they did at 5GN1664 before excavation. However, as at 5GN1664, there may be significant subsurface deposits in many of the sites.

Those Lake Fork Canyon sites most likely to have significant subsurface deposits are those on alluvial fans, such as the one at 5GN261 just below Red Bridge on the west bank of the Lake Fork. The fans would probably have been preferred camp spots not only because the canyon widens in those locations, providing comparatively flat ground for habitation, but also because the small drainages that feed the fans probably served as access routes to and from the canyon.

The integrity of these sites undoubtedly varies with the amount of wash that has occurred during spring floods and with the intensity of subsequent historic occupations. For example, although the bench at 5GN1696 (approximately one river mile upstream from 5GN1664) would appear to have been a preferred location for aboriginal occupation, perhaps 25% of the area has been covered by gravel wash or scoured during spring run-off. The late nineteenth century railroad construction, early twentieth century mining occupations, and modern camping have also disturbed about 25% of the possible aboriginal site area. The chances of finding undisturbed prehistoric archeological deposits at 5GN1696 are consequently diminished.

Summary of Prehistoric Occupations

Site 5GN1664 is a significant Late Archaic site in several respects. It has two spatially distinct components, Feature 13, dating to 2,047+48 years B.P., and Feature 21, dating to 1,060+46 years B.P. Associated with the earlier component are two hearths and a small collection of lithic artifacts and bone scrap. Three hearths and a somewhat larger collection of lithics and bone are associated with the later component. Both components appear to be the remains of short-term occupations by small groups.

The archeological remains indicate the predominance of animal food processing and consumption activities, but the mano found in Feature 21 might also mean that plant foods were prepared on-site during the later occupation. Animals hunted include mule deer, antelope, and bison. Unfortunately, the data are too fragmentary and ambiguous to allow definitive statements regarding hunting techniques, processing techniques and numbers of animals taken. No economic plants were identified during macrofossil analysis of hearth fill (Minnis 1984).

Two or three hearths were observed within 2 m of each other in both Features 13 and 21. This phenomenon is unexpected at camps occupied for only a few days. These hearths are not paired features of the type reported by Stiger at 5GN191 (1981:25) or by Jones at 5GN207 and 5GN212 (1982:150), and they do not seem to have functioned as comple-
mentary parts of a stone-boiling operation. Alternative explanations have not yet been generated.

One of the more interesting pieces of information obtained from the site was the outline for a biface reduction sequence resulting in creation of large corner-notched bifaces. This sequence is represented by a modified flake, fragments from at least eight preforms, and four or more corner-notched bifaces, all of which were found at Feature 21. The artifacts are similar to those reported by Indeck and Kihm (1982) at the Zephyr Site near Cerro Summit 20 miles to the west.

Periodic use of the site area at times other than the two main occupations at 2,040 and 1,060 B.P. is suggested by the small concentration of artifacts in Feature 14 and the Late Prehistoric points from Feature 13. Aboriginal groups probably gained access to the site via the narrow ravine to the east, or similar nearby ravines leading to Lake Fork Canyon, since travel along the river itself would have been considerably more difficult.
Chapter 3 is concerned with the archeology and history of the railroad camp component at Marion. It begins with a review of the history of construction on the Lake Fork Branch of the Denver and Rio Grande Railroad (D & R G) and other lines in the West and Midwest during the last century. Because Italian immigrants are known to have occupied the construction camps in Lake Fork Canyon, some background history of unskilled Italian immigrant laborers has been included to clarify the picture of what camp life must have been at Marion. Archeological research at a handful of other railroad construction camps in the West has also been summarized.

In addition, this chapter includes the introduction of a simple model of the distribution of construction activities among railroad grading camps in the West. The discussion stems from an examination of the segregation of cultural features of different functions both within and between railroad camps. This phenomenon has been observed in the Lake Fork Canyon and at other archeologically recorded railroad camps.

Artifactual remains at Marion are comparatively few, and the Italian ethnicity of the occupants is not clearly reflected in the material culture of the site. "Italian-ness" might be reflected in the dry-laid stone masonry architecture and certain construction techniques; rock structures at Lake Fork Canyon sites and elsewhere are examined with this problem in mind. However, conclusions regarding the definition of vernacular Italian architecture await more comprehensive study.

Finally, the chapter contains a section entitled "Toward Developing a Mean Artifact Date Formula," which capitalizes upon the well-documented date for the Marion railroad occupation. Current techniques are discussed for dating sites through artifact analysis, and the writer proposes to use artifact types very rarely employed to calculate mean artifact dates. The suggested mean multiple-artifact date formula produced encouraging results when Marion data were incorporated into the formula.

The Lake City Branch

The people of Lake City, Colorado, like those of most other mining camps in the Gunnison Basin, had practically begged for a railroad line to link the town with larger communities that supplied needed domestic and mining supplies (Vandenbusche 1980:83-124). Because the Denver and Rio Grande was the first railroad to penetrate the Gunnison country, Lake City residents turned to that company with their request for railroad service. The D & R G initially seemed only too willing to oblige. In June, 1881, it let contracts along a proposed Lake City Branch route to grading contractors who completed the southern two-thirds of the grade by the beginning of the following year. Yet when the D & R G could have quickly finished the grade and laid the track completing the
Lake City Branch, the railroad instead concentrated its work force upon the main line that led to Salt Lake City, Utah via the Gunnison River Canyon (Figure 3).

The shift of D & R G priorities from branch lines to the main line west and the company's concurrent tremendous financial problems (Athearn 1977:107,111,153) delayed completion of the Lake City Branch for eight years. From January to May, 1889, grading crews returned to the Lake City Branch, working on the stretch between Sapinero and what was later the site of the Barnum Section House (Figure 1; Weitbrecht 1882). Work elsewhere along the branch in that year consisted of bridge construction and repairs on the portion of the line graded eight years previously. The tracks were finally laid into Lake City in June, 1889. Details of the town's struggle to obtain a railroad and of the actual construction on the Lake City Branch have been well-documented in Vandenbusche and Borneman (1979).

Contemporary accounts of the grading operations between Sapinero and Gateview are rare, and relate only a few facts, including the names of the grading contractors, Scullan and Stacy, and the progress made in grading and track-laying during the winter and spring of 1889. Some details of the life of the laborer, including his wage, his exposure to smallpox, and the availability of liquor near the railroad camps, were recorded in contemporary Lake City and Gunnison newspapers and are contained in a few supporting documents in the Gunnison County Courthouse. The sketchy picture of railroad life in the West was supplemented by both the archeology of the Lake Fork Canyon and by consultation of primary and secondary historic sources about unskilled laborers and the railroad construction business in general.

Historic Railroad Grade Construction

First-hand reports of grading camps include those of Rossi (1892), Hitchcock (1898), Kyner (1960), and Munson (1978). Secondary sources are comparatively numerous and include Davis (1948), McCague (1964), Mayer and Vose (1975), Dolman (1979), Cornerstone Research (1981), and Buckles (1983). In addition, American Playhouse has dramatized the experiences of a Greek railroad worker in the public television presentation "King of America."

In this report, the primary interest has lain in grading and rock blasting camps, since those are the types of sites present in Lake Fork Canyon. Additionally, it has been assumed here that no major differences existed between camps of the two types (Buckles 1976:79-80), and, in fact, graders and blasters may have lived in the same camps. Any differences between the two groups of workers were probably more apparent at the work sites than at the habitation sites.

Railroad construction was handled in a variety of methods depending upon the railroad company, the established patterns of operation within a particular region, the difficulty of construction, etc. A
company might build a line itself or have one of its subsidiaries handle the construction. It might contract the job to a grading firm, which in turn could build the line itself or further subcontract the construction. Finally, the railroad company, contractor, or subcontractor might hire a labor agent to supply workers (Buckles 1983:218-219).

The Denver and Rio Grande Railway Company apparently used all of the above methods at different times and on different lines. During the 1881 construction phase of the Lake City Branch, the D & R G used some of its own employees to construct a short section between Gateview and Lake City, while at the same time contracting out other sections to several other groups (Lake City Silver World 7/30/81, 8/20/81). In turn, one of those firms subcontracted some of their grading and rock work along the line (Lake City Silver World 8/20/81), while at about the same time, the Denver and Rio Grande was searching for laborers through an agent in Italy (Athearn 1977:102). During the 1889 construction, the grading project was contracted to Scullan and Stacy, who in turn let several subcontracts for short sections of the Lake City Branch (Hinsdale Phonograph 1/18/89, 2/15/89, 2/22/89, 4/16/89).

Grading camps were typically established adjacent to the railroad lines and were only occupied for short periods of time before the crews were moved further down the line. Laborers stayed at the camps longer when the work was particularly difficult or when weather prevented rapid progress on the line (Briggs 1974:40; Buckles 1976:96; Vandenbusche 1980:86-87).

Because lines were often built quickly and camps moved frequently, housing and other structures at the camps were generally of a temporary nature. Tents were often used, but conditions of weather or terrain might dictate the use of structures that offered better protection against the elements. For example, laborers could probably withstand cold or rainy weather better in shelters other than tents. Also, if the laborers’ employers required that the men provide their own housing, the laborers would be more likely to build shelters with local materials involving little or no expense. These structures might include dugouts, log cabins, stone-walled buildings, or combinations of the above (Hitchcock 1898:248; Shields 1926-1927:51; Davis 1948:54-55; Buckles 1976:206; Anderson 1983).

Several grading camps were occupied simultaneously along a line at any one time, and were either operated by a series of subcontractors or by one contractor (Gunnison Review-Press 12/20/88, 1/19/89; Dolman 1979). The size of the camps varied with the size of the subcontract, labor availability, and other factors. Camps in the Lake Fork Valley in 1881 and 1889 probably ranged in size from between 35 and 125 persons (Lake City Silver World 7/16/81, 7/30/81, 8/20/81, 9/10/81).

The daily lives of railroad grading crew members are certainly of interest equal to other aspects of railroad construction. Historic accounts contain some information about characteristics of the construc-
tion work force, including details of gender, transience, personality, pay, and national origin. The laborers were generally of two types, men who made a living by working railroad and other large construction jobs in various locations across the country, or men who supplemented their incomes with construction work available near their places of residence. In the former case these men were often recent immigrants to the United States, especially Chinese, Irish, and Italians, but also Greeks and Slovaks (Briggs 1974:33; Buckles 1976:74-76). Black Americans were another ethnic group often employed in large numbers for railroad construction work (Lake City Silver World 4/9/81; Briggs 1974:33; Atchearn 1977:102). In the second case, local or area residents were frequently recruited for temporary railroad work, and this group included subsistence farmers and local laborers such as carpenters and miners (Lake City Silver World 6/11/81; Hinsdale Phonograph 2/22/89; Kyner 1960:103).

The ethnicity of the unskilled immigrant laborers has held considerable interest for historians of nineteenth century railroad construction. The role of the Chinese in the construction of the Central Pacific section of the first transcontinental railroad is widely known (Briggs 1974:16-32; Yen 1977; Dolman 1979), and the contribution of the Irish and Italians has also been noted, although to a lesser degree. The working skills of and the equipment used by the various groups were very similar (Dolman 1979).

However, the organization within the habitation camps often varied between ethnic groups, and cooking and eating arrangements, for example, were quite different. Laborers at a Chinese grading camp would separate into groups of 12-30 men, each of which hired its own cook (Kraus 1969:111). Italian laborers preferred to be responsible for cooking their own food, or they cooked together in small groups. Members of other ethnic groups generally ate in communal dining halls and their food was prepared in contractor-operated cookhouses. References that offer additional information about ethnic differences in the operation and material culture of railroad grading camps include Rossi (1892), Hitchcock (1898:246-251), Sheridan (1907), Chace (1966), and Iorizzo (1970:54-57). Camps of unskilled Italian immigrant laborers are described in the following section.

Immigrants and Black Americans overwhelmingly dominated the railroad labor market, and their transient lifestyles generally conflicted with those of nearby established communities. The laborers' transient nature is well-illustrated in one contractor's description of a project in northwestern Nebraska in the mid-1880s:

Had I closed down for the winter, my men, of necessity, would have scattered all over the West, and I would have been faced in the spring with the slow and difficult task of gathering another force together [Kyner 1960:213].

Both the type of men attracted to this kind of employment and the temporary nature of the work contributed to a railroad construction...
crew group personality. The men were often considered "lawless" (Gunnison Review-Press 4/18/89), "reckless" (Hitchcock 1898:253), "quarreling, wasting, stealing, gambling" (Kyner 1960:155), "wild and undisciplined" (Munson 1978:19), and in general a menace to nearby towns. These men were isolated from the surrounding communities not only by geography and their transient nature, but also by their poverty. The wages paid them were notoriously poor. They rarely spent what little money they had in the towns because most wanted to save their money, either for their families in Europe or to support themselves when construction jobs were not available.

An example of the poor wages offered comes from reports of the 1889 construction in the Lake Fork Valley. When Scullan and Stacy first advertised for laborers to work on the grade of the Lake City Branch, the company offered wages of $1.50 per day. Although 200 men hired on at that rate (Hinsdale Phonograph 1/18/89), Scullan and Stacy apparently had trouble getting and keeping men, since they paid "lower wages than were ever offered for railroad construction in the mountains" (Gunnison Review-Press 12/29/88). Wages were raised 25 cents per day to attract more laborers, yet the rate was still 25-50 cents lower than that paid at the time by other large railroad grading contractors.

Something of the flavor of life in railroad camps in general and of the Lake Fork camps in particular can be seen in the Lake City and Gunnison newspaper accounts of the period. In mid-spring the Gunnison Review-Press (4/25/89) printed a report of special sessions of the county commissioners, during which they revoked the liquor licenses of three outfits who peddled liquor to railroad laborers in the Lake Fork Canyon (Minutes of the Gunnison County Commissioners Bk.2:453-455, 4/15/89, 4/22/89). The saloons set up by these liquor dealers were probably not unlike those along the first trans-continental railroad:

Practically every large construction camp soon had its tent saloon with a plank laid over a pair of kegs for a bar, or sometimes only a wagon with the liquor dispensed straight from a barrel lashed alongside, a tin cup fastened to it by a short length of chain [McCague 1964:125-126].

The Review-Press congratulated Gunnison's county commissioners on their action, declaring that:

The action was a wise one, and will probably save the county thousands of dollars in the court and other expenses, that a killing or two—the certain outcome of the liquor traffic in that section—might at any time entail [Gunnison Review-Press 4/25/89].

Another aspect of life in the Lake Fork Canyon railroad camps was the danger of smallpox. In May, the Gunnison Review-Press (5/23/89) reported nine cases of smallpox in the camps, supposedly brought there by laborers who were released from Denver pesthouses before they had
passed the contagious stage. The presence of the highly contagious smallpox caused anxiety both within the camps and in nearby established communities, and the Gunnison Review-Press called for the railroad construction contractors to accept financial responsibility for care of the ill men. The incidence of smallpox in the camps apparently never reached epidemic proportions, however, and the surrounding communities escaped virtually unscathed.

Unskilled Italian Laborers

A summary of the lives of unskilled Italian laborers working on railroad construction projects is presented here because Italians are believed to have composed a large part of the labor force on the Lake City Branch grading operations in 1889. Although local newspapers made no mention of the workers' ethnic affiliation in their accounts of the branch's construction in that year, one secondary source (Vandenbusche and Borneman 1979:55) indicates that a large camp of Italian railroad construction laborers existed at Grabiola, about six miles downstream from Marion in the Lake Fork Canyon. As will be discussed, the stone ovens standing at most of the railroad construction camps in the canyon are of the type usually built by Italians in the United States during the mid- to late nineteenth and early twentieth centuries.

Working conditions for most Italian railroad construction workers, like those for all railroad grade laborers, were incredibly poor even by late nineteenth century standards, and the padroni or "bosses" are among those who carry the blame for perpetuating such a harsh system among the Italian immigrants. Frequently, firms obtaining contracts on large construction projects were unable to assemble their workers locally. Consequently, a contractor might contact labor agents who could readily supply him with recently immigrated and inexpensive laborers. The padrone was an Italian labor agent who, unlike most other agents, accompanied his labor force to the work site, where he provided housing and food for his crews and translated the contractor's work orders from English into Italian (Erickson 1957:72). Generally the contractor paid the laborers' wages directly to the padrone together with a lump sum for the workers' food, accommodations, and possibly their transportation to the work site. The padrone passed the wages on to the workers but retained the lump sum to spend at his own discretion. The more corners the padrone could cut in providing food and housing, the higher his profit would be. While most if not all padroni devised numerous ways to exploit the Italian laborers, the extent of their exploitation varied considerably (Lopreato 1970:95). Unfamiliar with American labor practices, the standard of living for laborers, the availability of services in nearby communities, and the English language, however, the laborer would often be none the wiser about a padrone's misuse of funds.

The padrone system of providing unskilled Italian labor to project contractors in the United States lasted from about 1872 until the early twentieth century (Fenton 1975:78, 83). The main advantage of the sys-
tem was that newly arrived Italian immigrants were employed at jobs they probably never would have found for themselves (Erickson 1957:72; Lopreato 1970:94). For example, few Italian immigrants who had just landed at Ellis Island would have been aware of railroad construction projects in the American West and Midwest. On the negative side, however, the padroni exploited the Italian immigrants by overcharging them for goods and services provided during the course of their employment, thereby keeping them in virtual servitude for years.

The individual Italian immigrants were slow to recognize that they were being defrauded for several reasons. First, they were predominantly illiterate young peasant farmers from southern Italy who spoke no English and whose attitude toward life was generally fatalistic (Fenton 1975:24). Second, they realized that they were better off financially in the United States under the thumb of the padrone than they had been in their native land (Nelli 1964:163-164), where living and working conditions were extremely difficult for the land-poor peasant. The Italian immigrant was able to take special advantage of comparatively high wages in the United States because he was very frugal (Villari 1903:56; Fenton 1975:30), and in fact, he was able to save more money each month than other European immigrant laborers (Hitchcock 1898:253; Iorizzo 1970:56).

The following comments about the padrone system relate largely to living conditions and situations in labor camps. For information about other aspects of the system, the reader is referred to reports of the U.S. Immigration Commission (1911), Ciollini (1916), Erickson (1957), Nelli (1964), Musmanno (1965), Rolle (1968), Iorizzo (1970), Lopreato (1970), and Fenton (1975).

The housing provided at a railroad camp was one of the padrone’s services that was typically of poor quality, and generally consisted of "crude log cabins without doors or windows" (Rolle 1968:171) or "rude temporary shacks" (Erickson 1957:70). Poor quality was the standard for railroad workers, however, whether provided by padroni, construction contractors, or the railroad company itself (Hitchcock 1898:246, 248; Kyner 1960:118; Davis 1948:54-55; McCague 1964:120; Mayer and Vose 1975:72). It was also no worse than temporary housing, such as shepherd’s huts, in their native Italy (Williams 1969:39). One housing arrangement common in many railroad camps was the bunkhouse. However, Italians disliked this arrangement and avoided it whenever possible (Rolle 1968:175).

While most contractors or labor agents provided meals for their American or European workers through communal cookhouses and dining halls, the Italians differed in that they traditionally cooked their food individually (U.S. Immigration Commission 1911:428; Iorizzo 1970:55) or sometimes in a small group separate from the other laborers (Rossi 1892:251). However, this arrangement could also be manipulated to work to the padrone’s advantage, because he could take his cut at the padrone-run commissary where the men bought their food and cooking utensils (U.S. Immigration Commission 1911:428; Lopreato 1970:95).
The foods that the Italian laborers ate were probably of low quality and were not particularly nutritious. The laborer wanted to save money by cutting down on expenses and so would pay for inferior food at the padrone's monopolistic commissary (Nelli 1964:60). Also, as a peasant from Italy, the laborer was unaccustomed to highly nutritious or good quality food (Iorizzo 1970:56). For example, in Italy peasant families rarely ate meat (Villari 1903:55; Radin 1935), and immigrants favored bread and vegetables over meat. Bread was one of the foods that the Italians usually cooked for themselves. They baked bread in stone ovens specially built for that purpose (Iorizzo 1970:50). Even though the men occupied a work site for only a short time, the ovens were typically constructed at each new campsite (U.S. Immigration Commission 1911:427).

Although not all construction camps occupied by Italians were run by padroni, most of the conditions mentioned here pertained to all Italian camps. Railroad camps occupied by other ethnic groups were also very strictly- and cheaply-run and resembled the Italian camps in most respects except the cooking and eating arrangements.

Previous Archeological Research

Numerous railroad construction camps have been recognized by archeologists within the past ten years, but detailed records are rare other than some very basic site descriptions, sketch maps, and historic summaries (Chace 1966; Fowler et al. 1978:70; Bleacher and Firebaugh 1980:448-450; Moe et al. 1980:56; Cornerstone Research 1981; Turpin 1982a; Kranzush et al. 1982:73-90; Turner 1982; Fawcett and Erickson 1983; Sutton 1982; Turpin et al. 1983). The most ambitious research projects at this type of camp have been Briggs' (1974) mapping and surface collection at two camps in southwest Texas, Buckles' (1976) mapping and limited excavation at a camp in central Colorado, Wegars and Sprague's (1981) mapping and test excavations at the Joso Trestle Bridge Camp in southeastern Washington, and Anderson's (1983) limited survey of several camps at Promontory, Utah.

In Val Verde County, Texas, Briggs (1974) recorded the remains of two camps occupied in 1882, one used primarily by Chinese (the Langtry Construction Camp) and another by western European immigrants, probably German and Irish (the Upper Rio Grande Tunnel Camp No. 1). Collection of surface artifacts was limited to an undisturbed 15% of Langtry Camp and a 14-acre concentration of features at the Tunnel Camp. Tents and half-dugouts were the most common habitation features identified at the two sites. The Chinese Langtry camp contained distinctive double hearths, while Briggs was able to identify several separate clusters of features at the Tunnel Camp, each apparently with different functions.

Buckles' project at 5ST2 in central Colorado was one of the largest archeological projects ever conducted at a railroad construction camp (Buckles 1976), and a total of about 75 railroad camp features were recorded at the early 1880s site. These ranged from dugouts and
stone building foundations to stone ovens and "occupied surfaces." The ovens led to the interpretation of Italian laborers on-site. In addition to description, Buckles' efforts were also directed at development of models of organization and material culture content at various railroad construction habitation camps (Buckles 1983).

Surface survey, artifact collection, and excavation at the Joso Trestle Camp known as "Trestle City" revealed 200 features, of which 89 were examined in the field (Wegars and Sprague 1981). Unlike the camps described by Briggs, Buckles, and Anderson which were occupied by grading crews, the 1913-1914 Joso Camp was occupied by skilled iron-workers. Trash or ash dumps and "trash accumulations" were the most common features remaining at Joso. However, the frame structures that once stood at the site had been removed after the camp was abandoned, and cellars were consequently all that remained at most structure locations. While artifact analysis produced considerable information about the drinking and gambling habits of the ironworkers, their ethnic affiliation could not be determined.

Anderson (1983) illustrated a wide variety of structural styles within several camps at Promontory that were probably occupied by Chinese and Irish immigrants and Mormon settlers. The Utah camps, associated with construction of the first transcontinental railroad, contained the remains of over 340 structures including pit structures, masonry foundations, leveled platforms, and dugouts (Anderson 1983:227-228).

Marion Feature and Artifact Descriptions

Twenty-four of the 30 features identified at Marion were used in 1889 during the construction of the Lake City Branch (Figure 19). Most of these were habitations for the unskilled laborers who blasted and graded the roadbed preparatory to track-laying. Unlike most of the other recorded features at historic sites in the Lake Fork Canyon, all but one of the laborers' habitations at Marion were probably tents erected on leveled earth and rubble platforms. For convenience, these will hereafter be referred to as tent platforms. Other feature types recognized at Marion included bosses' habitations, dumps, baking ovens, a possible commissary, and a storage structure. They ranged in form from simple artifact concentrations to small artificial terraces and rock-walled structures.

With the exception of the dumps and ovens, the identification of feature function at Marion was based almost entirely upon associated artifact assemblages and not upon feature form or location. Dumps were identified on the bases of their content and location, and ovens were recognized as such because of their distinctive form.

The structures at tent platforms, hereafter referred to as habitations, were sometimes known as sleeping tents (Noble 1970:64). The habitations provided shelter while the men were sleeping, and probably
also served as storage locations for their few personal possessions. In winter, socializing in the form of talking and singing may have occurred in small groups within the sleeping structures. But household activities such as cooking, eating, and other socializing took place in specialized buildings like a dining hall or commissary or in the open air.

Laborer's Habitations

Features 3, 5, 6, 8, 10, 12, 13, 14, 17, 18, 19 and 22 have been tentatively identified as laborers' habitations. With the exception of Feature 22, all are tent platforms, and range in size from 13.4 x 10.8
Table 5. Historic Feature Forms, Dimensions, Functions, and Area Excavated at 5GN1664.

<table>
<thead>
<tr>
<th>Feature Number</th>
<th>Feature Form</th>
<th>Dimensions</th>
<th>Excavated Interior</th>
<th>Possible Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>platform</td>
<td>3.7x3.0m (12.1x9.8ft.)</td>
<td>100%</td>
<td>tent/bosses' habitation</td>
</tr>
<tr>
<td>2</td>
<td>platform</td>
<td>5.8x4.8m (19.0x15.7ft.)</td>
<td>100%</td>
<td>tent bosses' habitation</td>
</tr>
<tr>
<td>3</td>
<td>platform</td>
<td>6.2x4.2m (29.3x13.8ft.)</td>
<td>40%</td>
<td>tent/labors' habitation</td>
</tr>
<tr>
<td>4</td>
<td>rock-walled structure</td>
<td>6.0x4.3m (19.7x14.1ft.)</td>
<td>50%</td>
<td>bosses' habitation</td>
</tr>
<tr>
<td>5</td>
<td>platform</td>
<td>4.6x4.2m (15.1x13.8ft.)</td>
<td>40%</td>
<td>tent/labors' habitation</td>
</tr>
<tr>
<td>6</td>
<td>platform</td>
<td>6.0x5.0m (19.7x16.4ft.)</td>
<td>60%</td>
<td>tent/labors' habitation</td>
</tr>
<tr>
<td>7</td>
<td>rock-walled structure</td>
<td>8.0x5.0m (26.2x16.4ft.)</td>
<td>50%</td>
<td>commissary</td>
</tr>
<tr>
<td>8</td>
<td>platform</td>
<td>4.1x3.5m (13.4x10.8ft.)</td>
<td>30%</td>
<td>tent/labors' habitation</td>
</tr>
<tr>
<td>9</td>
<td>depression</td>
<td>4.6x2.0m (15.1x6.6ft.)</td>
<td>40%</td>
<td>unknown/borrow pit?</td>
</tr>
<tr>
<td>10</td>
<td>platform</td>
<td>5.2x3.6m (17.1x11.8ft.)</td>
<td>80%</td>
<td>tent/bosses' habitation</td>
</tr>
<tr>
<td>11</td>
<td>platform</td>
<td>3.0x2.7m (9.8x8.9ft.)</td>
<td>60%</td>
<td>storage</td>
</tr>
<tr>
<td>12</td>
<td>platform</td>
<td>22.0x4.5m (72.2x14.8ft.)</td>
<td>30%</td>
<td>tent(s)/labors' habitation</td>
</tr>
<tr>
<td>13</td>
<td>platform</td>
<td>4.8x4.1m (15.7x13.4ft.)</td>
<td>60%</td>
<td>tent/labors' habitation</td>
</tr>
<tr>
<td>14</td>
<td>platform</td>
<td>7.0x5.0m (23.0x16.4ft.)</td>
<td>60%</td>
<td>tent/labors' habitation</td>
</tr>
<tr>
<td>15</td>
<td>artifact concentration (not a feature)</td>
<td>3.5x3.3m (11.5x10.8ft.)</td>
<td>50%</td>
<td>trash dump</td>
</tr>
<tr>
<td>16</td>
<td>flat area</td>
<td>5.0x4.0m (16.4x13.1ft.)</td>
<td>30%</td>
<td>tent/labors' habitation</td>
</tr>
<tr>
<td>17</td>
<td>flat area</td>
<td>13.2x4.2m (43.3x13.8ft.)</td>
<td>10%</td>
<td>tent/labors' habitation</td>
</tr>
<tr>
<td>18</td>
<td>flat area (not investigated)</td>
<td>unknown/borrow pit?</td>
<td>0%</td>
<td>tent (shown in 1889 photo)</td>
</tr>
<tr>
<td>19</td>
<td>depression</td>
<td>6.6x5.3m (21.6x17.4ft.)</td>
<td>30%</td>
<td>modern dump</td>
</tr>
<tr>
<td>20</td>
<td>flat area</td>
<td>15.0x8.0m (49.2x26.2ft.)</td>
<td>20%</td>
<td>thin trash scatter</td>
</tr>
<tr>
<td>21</td>
<td>rock-walled structure</td>
<td>4.0x3.4m (13.1x11.1ft.)</td>
<td>80%</td>
<td>laborers' habitation</td>
</tr>
<tr>
<td>22</td>
<td>log structure</td>
<td>4.6x2.4m (15.0x7.8ft.)</td>
<td>0%</td>
<td>20th C mng. habitation</td>
</tr>
<tr>
<td>23</td>
<td>flat area</td>
<td>8.0x6.0m (26.2x19.7ft.)</td>
<td>20%</td>
<td>siding/dump/habitation?</td>
</tr>
<tr>
<td>24</td>
<td>rock dome</td>
<td>1.6m in dia. (5.2ft.)</td>
<td>0%</td>
<td>oven</td>
</tr>
<tr>
<td>25</td>
<td>rock dome</td>
<td>1.8m in dia. (5.9ft.)</td>
<td>0%</td>
<td>oven</td>
</tr>
<tr>
<td>26</td>
<td>rock dome</td>
<td>1.4m in dia. (4.6ft.)</td>
<td>0%</td>
<td>oven</td>
</tr>
<tr>
<td>27</td>
<td>rock pile</td>
<td>unknown</td>
<td>0%</td>
<td>oven</td>
</tr>
<tr>
<td>28</td>
<td>scattered bldg. materials</td>
<td>5.0x5.0m (16.4x16.4ft.)</td>
<td>20%</td>
<td>20th C mng. habitation</td>
</tr>
<tr>
<td>29</td>
<td>rock wall</td>
<td>6.7x4.0m (22.0x13.1ft.)</td>
<td>10%</td>
<td>modern campfire</td>
</tr>
<tr>
<td>30</td>
<td>ash pile</td>
<td>1.0x1.0m (3.3x3.3ft.)</td>
<td>100%</td>
<td>stove ash dump</td>
</tr>
</tbody>
</table>
Based upon the tent stakes found adjacent to three of the features as well as upon their resemblance to tent platforms identified elsewhere (Briggs 1974:45, 124-128; Cornerstone Research 1981), the Marion features are assumed to have likewise housed wall tents. The presence of common cut and wire nails in almost all of these features suggests their use in the framing inside the tents. The larger platforms at Features 12, 18, and 19 may well have held two tents each. At Marion (except at Features 17, 18, and 19), each platform was constructed with a minimum of effort by pulling rock and gravel from the uphill slope down onto the lower side of the intended platform, forming an artificial terrace.

Wall tents were a common feature at railroad construction camps (Figure 20). The sizes of the tents used at Marion are presumed to have been standard, even though the sizes of the platforms at the site varied widely, and wall tents of all sizes (ranging from 7 x 7 ft to 18 x 35 ft) were widely distributed by mail-order companies (Schroeder 1971:763). Several historic photographs of railroad construction camps in Colorado illustrate what appear to be sleeping tents that may measure about 12 x 14 ft or 12 x 16 ft. Tents of the latter size were also used by engineering survey crews (Noble 1970:66). Briggs (1974:52-53) reported several tent platforms at the Langtry Camp in Texas and assumed that tents of four sizes, 9 x 9, 9 1/2 x 12, 12 x 12, and 9 1/2 x 14 ft, were used by laborers there. However, it has been assumed that 12 x 14 and 12 x 16 ft tents were used at all tent platforms at Marion except Features 8 and 12, where tents of those sizes would have been too large. Although the dimensions assumed for the Marion tents are slightly larger than those identified at Langtry Camp, they more closely approximate the sizes described by Noble and illustrated in the historic photographs.

Feature 22 was the only rock-walled structure at Marion that was apparently inhabited by laborers. This feature measured 13 x 11 ft (4.0 x 3.4 m) on the interior, and had walls at least 3 ft (1 m) high (Figure 21). Entrance to the structure was gained on the west side at the southwest corner. Dry-laid stone walls were constructed on the south and west sides of Feature 22, and a one-course stone foundation was observed on the east. No foundation or wall was found on the north end, where the floor had been dug slightly into the ground, creating a low berm on the outside of that wall. No evidence of a superstructure was apparent atop the north and east walls, and the floor of the feature was probably earthen. No evidence of a window was found.

Excavation within Feature 22 exposed what appeared to be the remains of the structure's roof (Figure 22). Charred logs and branches underlay a lens of burned earth that was apparently part of the original roof. No nails were found in the burned wood, suggesting that the roof was created from available logs and poles and was held in place by gravity and earth. Most of those pieces of wood that could still be recognized as logs were oriented approximately north-south across the long axis of the structure (Figure 23), and these were probably supported by a ridge pole that spanned the center of the feature. This
Figure 20. Railroad camp occupied during construction along the Colorado Midland line. Photograph illustrates "sleeping tents" used at habitation camps. (Courtesy of Colorado Historical Society).
Figure 21. Photograph of stone walls at Feature 22, facing south. Stone Oven Feature 27 stands behind Feature 22.

Figure 22. Collapsed, burned roof material at Feature 22. Charcoal exposed at 5 cm below surface.
Figure 23. Plan of Feature 22, showing distribution of excavation units, recovered artifacts, and "bed" of pine boughs.
same type of roof is still visible on several standing structures at other railroad construction sites in Lake Fork Canyon (Figure 24).

Excavation near the interior east wall of Feature 22 exposed a 2-7 cm thick layer of burned pine needles, twigs, and branches that underlay the charred logs from the collapsed roof. The stratigraphic position of the burned needles indicated that they were not part of the roof, but instead lay on the floor of the structure. Munson (1978:34) recalls that beds of pine boughs were not uncommon for laborers at railroad construction camps, for "...if you wanted anything to sleep on you went out and cut spruce limbs, as there were no cots." Most of the sleeping platforms recorded at standing structures in Lake Fork Canyon lay opposite the doorways, and the position of the needle layer along the wall within Feature 22 suggests that it too served as a bed.

Feature 22 abuts Feature 27, a rock oven, along its south side, and represents the only instance at Marion where an oven was found in direct spatial association with a tent platform. The proximity of the oven argues that Feature 22 indeed functioned as a habitation locus.

Figure 24. Stone-wall structure at 5GN1698 with a log, branch, and dirt roof still intact.
Features 17, 18, and 19 differed from the other laborer habitation features in several respects, yet probably also served as platforms for tents. Only three artifacts were found in Feature 17, while none were recovered in Feature 18. Feature 19 was not formally investigated because of heavy visitor use and modification within the past few decades. The ground at these three features was not terraced as it had been at the other tent platforms, but was flat enough to have served as tent platforms. An historic photograph of Marion taken soon after the railroad line was completed shows a tent standing in the vicinity of Feature 19 (Figure 25).

Features 17, 18, and 19 were assigned to the laborers' habitations category in the absence of associated diagnostic artifacts. In most cases, however, the historic material found in association with the remaining nine habitations could be successfully employed to identify their occupants as laborers (Appendix B). Noteworthy artifacts found in small quantity in these latter habitations include bottle glass, personal artifacts, food preparation items, and clinkers. Nails, shoe fragments, and clothing attachments represented a large part of the assemblage.

Bottle glass was found in small amounts in the laborers' habitations. When the minimum number of bottles was determined, the average number of bottles per feature (excluding Features 17, 18, and 19) for this functional group was less than 0.75. The average number is 4.0 bottles per structure in those habitations at Marion interpreted as occupied by bosses.

There were also few personal artifacts found in the laborers' habitations except for pieces of clothing like buttons, pieces from suspenders, and grip guides (Figure 26). Exclusive of that material, the most numerous type of personal artifact encountered was the tobacco tag. The only features of this group that contained any associated personal artifacts other than clothing or tobacco tags were Features 12 and 22, in which a spindle file and an inkwell were found.

The thin scatter of clinkers observed in Features 12, 17, and 18 was problematical. Very few clinkers were found in other features at Marion except in Feature 22. One possible explanation of such material in Features 12, 17, and 18 may be that it represents ballast piled along the railroad bed after the initial occupation of the site to be used by section crews repairing the track. This suggestion is in part supported by the fact that the clinkers were found in greater concentration in the upper, humus soil layers of the three features, but were relatively scarce in the underlying strata that contained most of the railroad construction occupation artifacts. Additionally, the density of clinkers in Feature 17 was greatest along the east side of the feature and just above the road bed. Such a concentration near the road bed would be expected if the clinkers had been temporarily stored on-site prior to use by the section crews. The above explanation is preferable to those involving deposits created by blacksmithing or stove-cleaning activities. No blacksmith or farrier scrap was found associ-
Figure 25. Photograph of Marion taken in 1889 by W. H. Jackson. Tent near center stood at Feature 19. (Courtesy of Colorado Historical Society, Denver)
On the other hand, the clinkers at Feature 22 cannot be explained as ballast, and instead strongly suggest the presence of a stove. A few large clinkers and a small piece of coal uncovered just north of the doorway on the interior of the structure indicate the stove's position.

There is little evidence of food preparation or consumption in the other individual habitations. With the exception of Feature 22, no hearths or stove clean-out areas were found in direct association with the laborers' habitations despite the probability that stoves were probably used to warm the tents and might also have been used for cooking.

Lacking direct evidence of stoves at most of the features, it thus becomes necessary to examine the artifactual evidence for the nature of food preparation, consumption, and storage activities. A total of 13 food cans were found in association with the laborers' habitations, and these were recovered in Features 3, 12, 13, 14, and 22. The handles to...
two lard buckets were also found in Feature 3. Additionally, a small amount of animal bone was found in several of the laborer habitations, and included a tibia and femur fragments from an antelope in Feature 3, medial shaft fragments from a large mammal in Feature 14, and sawed vertebral disk fragments from a cervid in Feature 17 (Appendix A). No evidence of bottled food was recovered in any of the laborers’ habitations except for one bottle of flavoring extract found in Feature 13 (and its use for flavoring instead of intoxication is questionable). Parts of two stoneware jugs were found in Feature 12, and a tablespoon or serving spoon was recovered from Feature 14. The small number of artifacts indicative of food storage, preparation, or consumption found in the laborers’ habitations suggests that those activities occurred elsewhere at Marion or in the Lake Fork Canyon.

Feature 22 was slightly different than most of the other laborers’ habitations primarily because of the small number of associated artifacts found there, especially tobacco tags and buttons. In addition, the presence of an inkwell suggests that at least one of its occupants was literate. Finally, Feature 22 was the only one that contained evidence of an associated stove. In most respects, however, it appeared to represent a laborers’ habitation, and its form and artifacts fall within the range of suspected laborers’ habitations found throughout Lake Fork Canyon.

Field Bosses’ Habitations

Based upon their associated artifacts, Features 1, 2, 4, and 10 have been interpreted as the habitations of individuals of higher status than the laborers. Three of the four are tent platforms virtually identical to other such features found at Marion. The fourth, Feature 4, was probably once a rock-walled structure similar in design and construction to Feature 22.

The three tent platforms fell within the size range of those discussed in the previous section, and covered between 120 and 300 square ft (11 and 27 square m). Feature 10 was slightly different than the other two, and had an unusual rock alignment and depression near its center and the remains of a short, collapsed rock wall on its west side (Figure 27). Excavation in Feature 10 failed to determine the significance of the interior anomalies.

The original form of Feature 4 was unclear. Recent rock fall at the base of the talus slope had covered about 50% of the feature, and excavation in that area was impossible. Nevertheless, the structure appears to have had tall rock walls on its east and west sides, while its adjacent sides may have been of either rock or logs. The standing rock walls in Feature 4 were less than 2 ft tall at the time of the 1983 investigations, but as at Feature 22, they probably once stood at least 3 ft (1 m) high. Feature 4 measured about 20 x 14 ft (6.1 x 4.3 m), and probably had an entrance on the south wall, perhaps near the southwest corner. Like Feature 22, Feature 4 also had an earthen
Figure 27. Plan of Feature 10, showing distribution of excavation units, rock wall, and depression and line of rock near center.
floor. While the type of roof could not be determined with certainty, the small number of nails found within the structure suggest that it too had a log, branch, and dirt roof.

Several categories of artifacts including bottle glass, personal items, and horse-care material indicate that Features 1, 2, 4, and 10 served a different function than that of the laborers' habitations (Appendix B). As has been indicated, the average minimum number of bottles for the four features was 4.0, or five times the figure for the laborers' habitations. In addition, the contents of the bottles, including beer, dry gin, and bourbon or another fancy spirit, suggest a higher status for their consumers. The small number of bottles recovered from the laborers' habitations may mean either that those individuals did not drink beer, wine, or other liquor or that they frequented saloons outside the camp where liquor was purchased by the drink, not by the bottle. In contrast, it seems likely that the men who lived in Features 1, 2, 4, and 10 were able to buy liquor by the bottle and were also afforded the luxury of drinking in the privacy of their own shelters, segregated from rowdy laborers.

The personal items from Marion (exclusive of most pieces of clothing) are very clearly concentrated in the above four features. The types of artifacts found in this category include two dimes, a pocket-knife, a carpetbag handle, a decorative box hinge, and 10 tobacco tags from Feature 1, while an eraser, a button hook, a fancy sleeve or collar button, and eight tobacco tags were recovered in Feature 2. A dime, a watch chain, a tobacco tag, and a tobacco pipe were found in Feature 4, and a pencil lead, a watchkey and chain, two pieces of hardware from a decorative box, and nine tobacco tags were recovered from Feature 10. The money, watch parts, stationery items, the fancy sleeve or collar button, and the pocketknife (Figure 28a) are items more likely to have been associated with men of higher status than that of unskilled laborers. Likewise, the watch parts and stationery items are compatible with the supervisory responsibilities presumed for the structures' occupants (see below).

Most of the artifacts from Marion that are related to horse care or use are also associated with the four field bosses' habitations. A possible decorative button from horse tack was found in Feature 1 (Figure 28b), and a snowball hammer used to remove ice from horseshoes (Smith 1966:252-253) was recovered in Feature 4. Four other decorative buttons similar to the one from Feature 1 were found in Feature 10, together with two fragments of horse tack. While such may represent only limited evidence for the use or ownership of horses by individuals living at the above locations, the restricted distribution of these few artifacts in the three features is clearly of interest. Horseshoe nails were found at several different locations throughout the site including Features 2, 4, 10, 12, 14, and 15. However, except for those found in Features 2 and 4, the nails had not actually been used in fastening horseshoes, and there was no clear correlation between these artifacts and the use or care of horses.
Figure 28. Select historic artifacts from Marion, a) pocket knife (Feat. 2), b) two views of decorative button possibly from horse tack (Feat. 10), c) another decorative button but with cotter pin instead of nail (Gen. Surf.), d) Elgin milk can seal (Feat. 7), e) two views of artifact tentatively identified as "tie end" (Feat. 6), f and g) contrasting handle decorations (plain spoon fromFeat. 14 fancier fork fromFeat. 1).
Implicit in the discussion above is the assumption that horses would be owned, used, or cared for by bosses, not laborers. According to Munson (1978:46), who worked on a railroad construction crew in the Black Canyon in 1881, horses were scarce and expensive, and neither he nor his traveling companion could afford to own and care for one at that time. Assuming that the same situation existed eight years later in the Gunnison country, common laborers living at Marion would not have been able to afford horses.

The horse-related artifacts found at Marion are so few in number that it seems doubtful that work horses were actually housed and cared for on-site, and the artifacts may instead indicate the ownership or care of individual horses. Where such animals would have been kept overnight is unclear. While Feature 24 (discussed below) would have served as a convenient location, subsequent disturbance has obliterated any possible evidence of that function.

Finally, two other artifacts point to a higher status for the occupants of Features 1 and 4. The fork from Feature 1 has a cast iron handle that is clearly sturdier and better decorated than other table cutlery recovered from the site (Figure 28f,g). Additionally, the only clay pipe found at Marion was recovered in Feature 4. All other tobacco paraphernalia recovered from the 1889 occupation of the site were tobacco tags.

Other artifact classes in the Marion collection are more subtle indicators of superior status, and in fact only suggest that the occupants of Features 1, 2, 4, and 10 were in some way different from those of the other structures. Buttons are a case in point. Two types of blue glass buttons were found in Feature 10, and are the only non-white glass buttons found at Marion with the exception of two unusual glass buttons from Feature 1 that were clear with gold stripes. The latter are 30 lignes and could have come from a coat, shirtwaist, or dress (Hunt 1984). With the exception of a 32 ligne pearl button found in Feature 22 and a 32 ligne rubber button from Feature 12, Feature 2 was the only one that contained coat buttons. Three rubber buttons of different designs were recovered from that structure. While no exceptionally fancy buttons were associated with any of the features at Marion, the rarer types were more often associated with one of the four bosses' habitations than they were with the other features.

If the above artifacts support interpretation of Features 1, 2, 4, and 10 as bosses' habitations, there are certain other data and artifacts from the structure locations that do not. Bosses, enjoying a relatively higher status, presumably had more pleasant living arrangements that would logically have included a larger habitation space than that afforded the laborers. Yet the large quantity of some categories of artifacts collected from the bosses' habitations suggests that as many men may have lived there as occupied the laborers' habitations. At least 10 shoes and 30 buttons were recovered in Feature 2, representing the largest collection of shoes and one of the larger collections of buttons from any single feature at Marion. All of the shoes
that could be identified were of the workboot variety, and there seems to be little doubt that the size of this collection of footwear correlates with several occupants.

The range of artifacts recovered from Features 1, 2, 4, and 10 suggests that the responsibilities of their inhabitants included field supervision of the grading and blasting crew. First, the status of those individuals appears slightly higher than that of the laborers, as indicated by a greater number of personal items and horse-care artifacts at the above four locations than at other features. Stationery items were concentrated at these four habitations, but they were few in number. This suggests that, while record-keeping was one of the duties performed on-site, it was not as important as other tasks. In seeming contrast, many of the clothing artifacts from those four features indicate that the occupants frequently wore work clothes, and in fact, the heel of one boot has been crudely repaired with horseshoe nails (Figure 29). All habitations examined contained buttons from work pants or vests. Likewise, suspender parts and plain grip guides from pants or vests were found in almost every habitation feature. The remains of clothing from Features 1, 2, 4, and 10 are not significantly different from those at the laborers' habitations.

These two lines of evidence suggest that the occupants of the four features were responsible for the day-to-day supervision of the laborers who lived at Marion. This archeological evidence is compatible with an historic account concerning the difficulty in distinguishing the field bosses' habitations and material culture from those of unskilled laborers. Shields (1926-1927:51) remarked that a boss who lived with a 75-man grading crew along the Northern Pacific Railroad in North Dakota "fared little better" than the laborers in his living arrangements.

The occupants of Features 1, 2, 4, and 10 may have also included padroni who were responsible for interpreting directions to the labor force. Likewise, surveyors employed by the Denver and Rio Grande Railroad might also have lived at those features, and it would be expected that the associated artifacts would reflect their relatively higher status and fieldwork responsibilities.

Ovens

The remains of four domed stone ovens, Features 25, 26, 27, and 28, serve as the only clear archeological evidence of the Italian ethnicity of the Marion inhabitants. The ovens, which were used primarily for baking bread, are a standard feature in all but one railroad construction camp (5GN1725) identified in the Lake Fork Canyon. No archeological excavations were conducted at these features.

Feature 25 is the best preserved of the four Marion features, and its doorway and most of its walls are still intact. This oven was partially excavated into the toe of the talus slope at the edge of the
Lake Fork River, and its doorway faces the stream. Although roof fall obscured most of its floor, the diameter of Feature 25 was estimated to be about 5 1/2 feet. The nearest identified habitation was Feature 19.

Feature 26 lies on the south side of the gully that cuts through the site, and was constructed atop a stone platform apparently built to provide a flat base. The platform is most visible on the south side of the feature (Figure 30), and the doorway of the feature faces the ravine. The nearest habitations are Feature 14 on the opposite side of the gully and Feature 22 further up the gully and on the same side as Feature 26. Two artifacts found nearby Feature 26 include a piece of purple bottle glass and an evaporated milk can.

Feature 27 lies immediately south of Feature 22, a laborers' habitation, and was built into the steep hillside on the south and east sides of that structure. While its doorway has collapsed, it apparently faced in a westerly direction. The top and most of the walls of Feature 27 have also collapsed, but its interior floor appears to have been about 4 1/2 ft in diameter.

Finally, Feature 28 lies in the same area of the site as Features 26 and 27. This oven has collapsed completely and now appears simply as a circular pile of rocks. Situated on the north side of the gully, Feature 28 was constructed on comparatively flat ground, and was not excavated into the hillside as were Features 25 and 27. Its doorway faced south to the gully, and it appears to have been approximately the
Figure 30. Profile of partially collapsed stone oven Feature 26, showing approximate position of floor.

same size as Feature 27. The two nearest habitation were Feature 5 to the southwest and Feature 22 to the south.

The four stone ovens had walls 1 1/2-2 ft (0.5-0.5 m) thick, while their inside diameters were 4 1/2-5 1/2 ft (1.4-1.5 m). The stone in the features was dry-laid, and residual earth and gravel between the rocks and around the bases of the features suggest that they were capped with such material in a manner similar to that indicated by a local informant (Pete Venturo personal communication 6/83). Single large blocks of stone formed the lintels over the doorways of Features 25, 26, and 27. No vent was observed in any of the four ovens at Marion, but as at other more complete features in Lake Fork Canyon, each must have had a small hole near the top at the back to regulate draft.

All four ovens lay at the south end of the main historic occupation at Marion, three near the side canyon and one immediately adjacent to the Lake Fork River. Despite their proximity to drainages, however, it is unlikely that their locations were dictated by water sources. The side canyon at Marion has probably not carried more than a trickle of water in the past hundred years except perhaps during spring runoff.
Possible Commissary

The function of Feature 7 was difficult to determine because so few associated artifacts were found there. It was perhaps the largest structure in the camp (Figure 31), measuring about 26 x 16 1/2 ft (8 x 5 m) on the interior. Its walls were delimited by rock on all four sides, laid highest on the east side where the feature was partially excavated into the talus slope. The rock along the other three sides probably never lay more than three courses high. Feature 7 had a slightly irregular shape, and its entrance appears to have been east of center along the south wall.

A surprisingly small number of artifacts were found in Feature 7 given its large size. This material included two wire nails, a piece of copper wire, three upholstery tacks, baling wire and a bale tie, a pen tip, nine can seals, the handle and lid to a lard bucket, a drill bit fragment, six shell casings, fragments from at least one shoe, four buttons, and one collar button. This collection is similar in content to that from Feature 22, and the architecture at Feature 7 more closely resembles that of Feature 22 than it does any of the tent platform features. It is also possible that Feature 7 had an interior stove, based upon an ash dump found nearby at Feature 31 (see below).

The nine milk can seals found in Feature 7 may indicate that it served as a commissary. The seals are known as McDonald Seals and bear the embossed inscription "Elgin Brand Condensed Milk" (Figure 28d). The Elgin Condensed Milk Company of Elgin, Illinois operated between 1887-88 and 1894, and used such seals on their condensed milk cans (Botsford 1891; Monson 1983). It is possible that the milk was purchased and consumed at Feature 7, the seals falling where they were removed. However, the associated cans were not recovered anywhere on-site.

Storage Structure

Feature 11 at the eastern edge of Marion was clearly the site of an historic structure, but excavation there produced very few artifacts. Such negative data have been interpreted to indicate that the feature did not serve as a habitation, but was rather some sort of storage area. A rock face formed the back wall of the 9 x 10 ft (2.7 x 3.0 m) feature. A single course of dry-laid stones was exposed on the east side during excavation and a line of rocks was observed on the ground surface on the north side. While the evidence was ambiguous, it appeared that an entrance lay along the north wall, perhaps just west of center.

Three one meter squares were excavated on the interior of Feature 11 and two on its exterior. Three cut nails and two pieces of foil were found in the unit excavated in front of and downhill from the presumed entrance, but the five artifacts offer no clue to the feature's function. However, its position away from most of the habitations sug-
Figure 31. Plan and profile of Feature 7, showing distribution of excavation units and recorded artifacts.
gests a storage role. Typically, the powder magazine at a railroad camp "stood off by itself at some distance from the other structures and from the work itself" (Kyner 1960:268) on the off-chance of an accidental explosion. Feature 11 is certainly in an appropriate position for such, but no artifactual evidence was recovered that supported a powder magazine function, and it seems more appropriate to tentatively interpret this feature as a storage unit.

Dumps

Two trash dumps were recognized at Marion, one apparently associated with Feature 10 and the other possibly associated with Feature 7. The former deposit, designated Feature 15, appears to represent a sheet trash deposit rather than a segregated dump. The latter, Feature 31, was a single use ash dump and small artifact concentration 11 1/2 ft (3.5 m) beyond the east side of Feature 7.

Feature 15 lay at the base of an area of rocky slope wash, and was situated 20 ft (6 m) southeast of Feature 10. Trash found in four units excavated outside the southwest corner of Feature 10 (Figure 27) was probably part of the same dumping activity that produced the sheet trash in Feature 15.

The most common artifacts in Feature 15 were those representing hardware and clothing categories. A minimum of eight cut nails, eight wire nails, one tack, one Elgin can seal, sections of at least one rectangular purple glass bottle, three pieces of leather strap apparently from horse tack, some bailing wire, a tobacco tag, a .44 cartridge, one boot, and three buttons were recovered from six excavation units placed in the feature. These artifacts have been interpreted to represent the remains of a trash dump, for while the range of artifacts found in Feature 15 was consistent with those from laborers' habitations, most of the feature was covered with rock, none of it linear or otherwise indicative of either a foundation or a clearing.

Elgin seals similar to the one from Feature 15 were found elsewhere only in Feature 10, suggesting that the two features were directly associated with one another. The position of the trash deposit relative to Feature 10 suggests that the entrance to the latter lay on either its south or west side. The Elgin seal from Feature 15 had been reused as a nailshield.

Feature 31 was an anomalous rock that stood on end in the middle of the site and appeared to mark something, perhaps a claim corner. Subsequent excavation in the area of the standing rock revealed an ash dump and various associated artifacts. The significance of the rock remains unknown, but it had been intentionally wedged in its present position with smaller rocks. It measured a total of 41 in (1.04 m) tall, of which slightly less than half was buried.
The ash around the base of Feature 31 covered 50 square in (325 square cm), was 1-1 1/2 in thick, and at one location overlay a large (12 x 5 1/2 in; 30 x 14 cm) slightly blackened rock (Figure 32). While the latter marked the lowest elevation of the ash dump and the position of most of the feature's artifacts, there was no indication that it was other than natural, and its blackened surface may simply indicate in situ burning. The small quantity of ash observed in Feature 31 suggested only a single use.

Historic artifacts found at Feature 31 include two pieces of flat glass, three small pieces of brick, 13 cut nails, three wire nails, two wood screws, a straight edge razor, part of a purple patent medicine bottle, a glass button, a grip guide, several pieces of melted bottle glass, and a molar and partial right ischium from an immature Bos taurus. The latter had been sawn through the acetabular branch at a right angle to the obturator foramen (Appendix A). The presence of flat glass is of particular interest, for the only other location in which it occurred on-site was Feature 5, one of the tent platforms interpreted to have been occupied by laborers. The three pieces of glass suggest that a structure with a window existed somewhere in the vicinity of Features 5 and 31.

Other Site Features and Attributes

Three other areas at Marion, Features 9, 21, and 24, have unclear functions. A fourth, Feature 16, was designated during the 1982 field season, but work at the site in 1983 indicated that Features 15 and 16 were actually a single feature.

Feature 9 was a small depression (6 x 7 ft; 1.8 x 2.2 m) that lay in an artificial terrace immediately above Feature 12. An excavation unit was placed in the center of the depression and another two were excavated on the terrace nearby, but only nine artifacts were recovered. These included four cut nails, a pen point, a railroad spike, and three pieces of shoe string. The shape of the feature and the small number of associated artifacts suggest that the depression actually represented a borrow pit from which earth was taken to build one of the many tent platforms.

Feature 21 was a thin scatter of artifacts that lay in a flat protected area at the south end of the site. No evidence of a structure was found there, although the few artifacts recovered resemble the collections from the laborers' habitations. Artifacts from Feature 21 include a bucket, two food cans, a bullet, a 1947 penny, three suspender grips (Figure 26a,b), a safety pin, and five unidentifiable pieces of leather, metal, and cloth.

Feature 24 was a large (26 x 19 1/2 ft; 8 x 6 m) flat area adjacent to the railroad grade at the north end of the site. Its position suggests that it may have been the location of the siding that reportedly existed at Marion (Chapter 4 this report). However, it may also
once have served as a habitation area either during the 1889 railroad construction period or in subsequent occupations. Some of its associated artifacts date to the late nineteenth century, and include cut nails, two wash basins, and a suspender grip. Other more recent artifacts from Feature 24, such as crimped cans and pieces of a jar, indicate that the area has served as a casual dumping spot used by recent visitors.

There are several noteworthy remains from the 1889 occupation at Marion that are neither structures nor dumps and were not assigned feature numbers. These include a rock wall at the edge of the cut through
the talus slope above the railroad grade (Figure 19), several trees that have been modified, a possible trail in the northern part of the site, and a small flat area near Feature 26 that was not investigated.

The wall lies below Features 10, 13, and 15, and was made of rock laid one course high along the upper edge of the cut bank. The function of the wall was not clear, but two possibilities exist, those of ground clearing and erosion control. Both explanations may probably be discounted, however. In the former case the ground surface elsewhere at the site was only cleared of rock where laborers intended to erect a structure, and such activities were typically concentrated in the immediate vicinity. The long rock wall in question apparently did not result from such work since no tent platforms were identified near it. Likewise, there is no evidence that the railroad construction crews were concerned about erosion at a site which they intended to occupy for only a short time. The wall is in an inappropriate position to have actually retarded erosion, and it obviously served a function different from that of the dry-laid rock retaining wall built several hundred meters upstream from Marion to retard rockfall from the talus slope above it.

Trees at Marion may on occasion have served as storage areas and perhaps as camp furniture, and were incorporated as elements of rock structures in other sites in Lake Fork Canyon. Baling wire wrapped around a large Blue spruce growing near Feature 1 suggests that something hung by the wire at this location. A stump adjacent to Feature 6 was trimmed at the base, probably to make way for the tent there, and may also have been used as a stool. Its trunk was cut 27 in (75 cm) above the ground surface, and was so situated at the edge of the feature that it would have made a convenient chair.

Access to many of the features at Marion lay via a trail that extended from the railroad bed across Features 24 and 12 and up to Feature 4. Features 1, 2, 3, 7, 8, and 9, lay on either side of the trail. While other smaller paths may have branched off this main trail and served the other features, no physical evidence for such was observed.

The possible habitation locus near Feature 26 was not investigated in 1983 because of time constraints. This feature appears as a small flat area beneath a large Ponderosa pine 3 m south of Feature 26, a stone oven. The area was not outlined with rock, and only a few pieces of broken glass were found near it. If indeed the location was a railroad camp feature, it was one of only a small number identified on the south side of the ravine that bisects the site. The only other structures in the general area were the Feature 26 and 27 ovens, Feature 11, a storage facility, and Feature 22, a habitation. The segregation of features in the northern part of the site distinguishes Marion from other railroad camps in the Lake Fork Canyon, locations in which most of the available living space was occupied. The southern part of the Marion camp appears to be no more steep or rocky than the northern side, although there is a dense low grove of Gambel oak there.
Additionally, there are several features that might be expected at Marion but which were not found there. No privies were identified at the site, and it is doubtful that any were built there. The ground in the canyon is very rocky and was probably frozen when the site was occupied, and it consequently seems unlikely that the construction crews would have thought a privy necessary considering their anticipated brief stay.

The absence of a privy at a temporary camp such as Marion is also not unusual when viewed in the context of other short-term occupation sites in the mountain areas of Colorado. Privies have generally not been identified at other railroad construction camps in the West, except for two possible privy features found at 5ST2 (Buckles 1976:204, Table 26). Additionally, privies have rarely been found at any other short-term camps such as the charcoal production sites, construction sites, or mining camps reported from the Twin Lakes/Leadville area of central Colorado (Buckles 1978:630). Buckles has suggested that patterns of human waste disposal during the nineteenth century at short-term occupation sites were considerably different than those at permanent sites, and this, along with other distinctive site attributes including dump segregation, reflects the lack of "commitment" to permanence, esthetics, and hygiene in an area.

Similarly, with the possible exception of Feature 15, there were no segregated trash dumps at Marion. One informant collected artifacts from a dump in the canyon that may or may not have been Feature 15 (Ann Zugelder personal communication 7/83; analyzed and reported in Table 6), and it is also possible that there was a segregated dump deposited on the bank of the river during the 1889 occupation that has since eroded away.

No hearths were found at Marion, and only one ash dump, Feature 31, was identified. Assuming that stoves were used at Marion, additional ash dumps must have existed on the talus slope at one time. Since these would probably be located outside feature boundaries and slightly away from the habitations, it is possible that the 1983 excavation strategy generally missed that feature type.

Finally, one might expect that a blacksmith shop existed at Marion, as such shops have been reported from other railroad construction camps including 5ST2 in central Colorado (Buckles 1976:204, Table 26) and the Upper Rio Grande Tunnel camp in southwest Texas (Briggs 1974:128-129). The absence of this feature type at Marion relates to a larger research question discussed in the section of this report entitled "Construction Activity Areas."

General Surface Artifact Collection

Artifacts discussed in this section include those recovered in 1982 that were not clearly associated with any particular feature, those from the 1983 field season that were found in or near the former
Table 6. Number of Historic Artifacts at 5GN1664 by Feature and Function.

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<th>Building</th>
<th>Construction</th>
<th>Hardware</th>
<th>Tools</th>
<th>Containers</th>
<th>Household Equip./Furn.</th>
<th>Animal Husbandry</th>
<th>Personal</th>
<th>Food Preparation</th>
<th>Food Consumption</th>
<th>Railroad</th>
<th>Mechanized Transport/Equipment</th>
<th>Recreation/Entertainment</th>
<th>Hygiene/Medicinal</th>
<th>Hunting/Fishing</th>
<th>Clothing</th>
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railroad bed, and those collected by Ann Zugelder in 1967 and returned to the Park last summer. The full range of artifact types from those collections is not discussed here, but some of the more interesting material has been mentioned.

Eleven black powder cans or lids of two types were found. Some contained black powder manufactured by the California Powder Works who first began packaging the explosive in 25-pound metal kegs in 1874. A few others were manufactured by the American Powder Company, which operated between 1868 and 1891 (Van Gelder and Schlatter 1927:271, 289). The powder cans and other blasting equipment found at Marion strongly suggest that rock blasters were present at the site. Those other artifacts include the drill bar fragment from Feature 7, two empty blasting caps from Feature 10, and copper wire from Features 4 and 7.

Pieces of at least 86 food cans were collected from the surface of the site, and ranged in size from a No. 1 (6 oz) small milk can to five-pound Armour Packing Company lard buckets (Figure 33). By far the most common size was the No. 2 1/2 (30 oz) can. At least 25% of the collection were completely soldered, hole-in-top cans and clearly dated to the railroad occupation. A significant proportion of the general surface cans were completely crimped and apparently date to recent occupations by campers.

Another well-represented artifact class in the collection was that of bottle glass. The remains of at least 23 bottles were recovered, including three wine bottle green, one apple green, five aqua, one light green, one milkglass, five brown, and seven clear or purple bottles. The preponderance of clear, purple, and aqua bottle glass, mostly in the shape of small, rectangular, panel bottles, indicates that the use of patent medicines at Marion was not uncommon. The proportion of the local population that used such quasi-medicinal products cannot be determined from the general surface collection, but the only two patent medicine bottles associated with historic features were found in Feature 2, a bosses' habitation.

Only one piece of white dinnerware was found at Marion. The undecorated rim sherd was from the Zugelder collection, and no horizontal provenience could be recorded. The general absence of this artifact type from the Marion collections may serve as further evidence that the site was a camp occupied by laborers and field bosses, but not by important individuals such as contractors Scullan and Stacy.

Anomalous Artifacts

Several bottle glass fragments at Marion have been deliberately flaked, but their form and context suggest manufacture by historic site occupants or recent visitors, not by aboriginal inhabitants. Although few in number, the flaked glass artifacts and a pecked stone have been described because they are unique. Five of the glass pieces appear to have been experimentally flaked. On Specimen #366 in the general sur-
face collection, for example, flakes were removed from the exterior face of a broken bottle base at a location that would have been difficult to use as a tool (Figure 34a). Three other pieces of glass were modified such that they could have served as tools. Specimen #191 from Feature 1 (Figure 34b) was retouched to a concave edge, while a more ragged edge was flaked on Specimen #471 from Feature 6 (Figure 34c). The unifacial flaking on one edge of a third specimen (not illustrated) is less regular than that of the other two, but the piece could have been used for scraping.

The trapezoidal, worked surface of the pecked stone from Feature 14 (Figure 34d) measures about 60 x 80 mm and is covered with approximately 50 indentations. These are small, rounded, shallow depressions arranged randomly except near the center, where they form a small ring. Here again, the function of the piece is unclear.

The cultural affiliation of makers of the flaked glass artifacts and the pecked stone cannot be determined, but it is unlikely that the glass artifacts are of aboriginal origin. The Ute were forcefully removed from the area after the Treaty of 1880 was signed and prior to the Euro-American occupation of 5GN1664, the latter component
Figure 34. Four unusual artifacts from Marion.
   a–c) flaked bottle glass (Specimens #366, #191, #471), and d) pecked stone.
   (Artifacts to scale)
responsible for the glass at the site. There were occasional Ute hunting expeditions to Colorado during the late 1800s, but these involved small groups of people and there is no documentation that any such group visited the Lake Fork Canyon (Vandenbusche and Smith 1981:80). Similarly, the pecked stone does not appear to be the result of aboriginal food preparation, judging from the pattern and uniform size of each pit. No similar aboriginal artifacts have been reported in western Colorado, and it seems more likely that a metal chisel of some sort produced the pits.

All of these artifacts may be the result of play by a site visitor after the Marion camp was abandoned. However, they were found in both surface and excavated contexts, suggesting that their manufacture related to the earlier historic occupation of the site instead of its more recent use by park visitors. The glass and pecked rock were not concentrated in any one area.

Railroad Construction Activity Areas

Identifying Feature Functions

Interest in the spatial arrangement of 1889 railroad construction activity areas in Lake Fork Canyon developed from questions regarding the overall organization of such an operation. Activities typically associated with the blasting and grading aspects of railroad construction appeared to be of three types. The first were those activities related to day-to-day construction along the road bed itself. Evidence for these activities was essentially linear in distribution, and lay along road bed and associated cut and fill areas. The second type of activity included that of the specialists' who essentially facilitated the heavy blasting and grading work. These activities would have included all administrative functions, tool maintenance and storage (including blacksmithing), and livestock care. The third type of evidence was that left by the personal maintenance activities of individuals involved in the construction operation. Structures associated with this third type included, but were not limited to, habitations, commissaries, dining halls, and cookhouses.

The spatial distribution of these activities across the landscape would also generally be of three types. The first would be primarily confined to the railroad bed. The second, by comparison, would have been even more highly localized because of the types of jobs performed and since only a small proportion of the work force would have been involved. The third would also be localized because of the types of activities involved. However, its evidence would be more widespread than that of the second group because all of the work force would have been represented by remains of personal maintenance activities.
It was understood at the outset that the identification of railroad construction activity areas would ultimately depend upon the identification of feature functions, and this was not an easy task in actuality. Historical archeologists have traditionally depended upon three sets of variables to identify such function, those of artifact assemblage, feature form, and feature location.

Functional analysis might begin with a determination of the range of feature types that could conceivably have existed at a nineteenth century railroad construction camp, and Buckles (1976:78-83,214; 1983:217) has accomplished this through the use of historic documents. Solid archeological evidence might also be used, where a list of artifact types, feature forms, and/or feature locations reflective of each feature type would be constructed. For example, cultural material such as clinkers, blacksmithing scrap, and fragments of broken tools would be defined as indicative of a blacksmith shop feature type. An unusually large number of beer and spirits bottles potentially would be reflective of a saloon or associated dump.

Of the three sets of variables, the analysis of artifact assemblages associated with specific features should initially provide the most reliable data for the identification of feature function. This is primarily due to the fact that archeologists have historically expended greater effort in the analysis and interpretation of artifacts than in analysis of feature form or location. Unfortunately, many artifact assemblages are ultimately too small to be useful. Others may contain material that yields ambiguous information that is not diagnostic in terms of artifact function or social status and provides little information relating to feature function.

In such instances structure attributes may be used to supplement feature function identification. In southwestern Texas, for example, Briggs (1974:45) identified a number of cleared areas surrounded by rock alignments as tent platforms, while the spatially associated smaller circles of rocks were identified as outdoor hearths.

Finally, circumstances exist in which the location of a feature may be indicative of its function. For example, the presence of sparse structural and artifactual remains in an isolated area of a site, perhaps a hollow or sink, might suggest a location where livestock were kept. Occasional poles, baling wire, and horseshoes and horseshoe nails might be all that remain of a livestock corral. Conversely, a small, solid structure built off to one side of a camp might represent a powder magazine, its location as well as its form suggesting its function (DuPont de Nemours and Company 1922).

In summary, artifact assemblages, feature forms, and feature locations may be utilized in the interpretation of feature function. In turn, the identification of feature function may be employed to facilitate an understanding of the arrangement and significance of activity areas in a construction operation.
Historic and Archeological Evidence for Segregation of Activity Areas Within Camps

Historic and archeological information has documented that both specialists' activities and personal maintenance activities were on occasion spatially segregated within construction camps. Historic accounts of railroad grading camps from the late nineteenth and early twentieth centuries offer information about the presence of activity areas within the camps despite the primary focus of most of their authors upon aspects of railroad camp life other than the arrangement of living and work features. Munson (1978:34) related one of the most complete descriptions of structure location as he recalled the arrangement at a railroad camp near Marshall Pass, Colorado. He explained that the dining tent adjoined the cook shack, and that nearby were tents for the office workers, paymasters, surveyors, top bosses, and others. These men had their sleeping quarters next to their work tents, and the rest of the men in camp lived in tents "farther away." Other writers identify additional spatially separated activity areas, including the powder magazine that lay off to one side of the camp (Kyner 1960:268; Patterson 1980:13) and tents occupied by the contractor's family, who lived separated from the unskilled laborers (Kyner 1960:118).

An examination of the available maps of archeologically recorded railroad construction camps also indicates that most exhibited a certain degree of physical separation of functionally-specific activity areas, although the degree of segregation is highly variable. The observations have been based upon visual examination and not upon any statistical test of dispersal. Because most of the recorded sites have been disturbed to some extent, statistical tests would probably detect segregation caused by that disturbance rather than by cultural preferences.

Briggs (1974) and Buckles (1976) have presented the most comprehensive discussions of function segregation at railroad camps, and also provide fairly detailed maps of camp features. Briggs examined two camps in southwestern Texas, the Tunnel #1 Camp, which was occupied between December, 1881 and July, 1882, and the Langtry Camp, which was occupied in the late spring of 1882. Thirty-five features were recorded at the Tunnel #1 Camp, and feature function was interpreted by analysis of feature form and associated artifacts. A major habitation locus was identified at the center of the site, and most of the features there were tent platforms. Immediately west and downhill lay a mixed residential and business district where most of the structures were rock-walled. Businesses and activities represented include a possible general store, animal care, a blacksmith shop, a presumed administrative building, and an open air restaurant and saloon. Finally, on either side of a road leading to the east end of the site and beyond lay a possible hotel and another possible restaurant and/or saloon (Briggs 1974:Fig.19). The habitation structures identified at the west edge of the site in the same area as several businesses were interpreted to have housed families instead of single men. The segregation of
broad categories of residential and administrative functions at the Tunnel #1 Camp is thus quite apparent.

Only five features were identified at the Langtry Camp, however, and all appeared to be habitations, several of which had associated hearths (Briggs 1974:Fig. 8). These features represented only about 15% of the total area of the site, but the remaining 85% had been disturbed or destroyed and spatial analysis at Langtry Camp was thus impossible (Briggs 1974:44).

Site 5ST2 in central Colorado was a camp occupied during the summer of 1881 by graders for the Denver and Rio Grande Railroad, and possibly between August, 1883, and October, 1884 by Denver, South Park and Pacific laborers (Buckles 1976). The large size of this camp is attributable both to the probability that it contains two separate railroad components and to the presumed lengths of those occupations. Identification of functionally-distinct areas in 5ST2 was complicated by a 30 m wide swath of disturbance that bisected the site where a highway had been built. While this destruction hindered spatial analysis, the site still contained evidence of separate activity areas. Domiciles were identified in all portions of the camp, 60% of them located in a cluster along a steep hillside at the southwestern edge of the site. Livestock were quartered on the opposite side of the creek near one of two blacksmith shops. The commissary, identified through analysis of excavated artifacts, was situated in the southeastern part of the site in the same area as four domiciles, four baking ovens, and other domestic features, all near the creek. The commissary was by no means isolated from these domestic features, and assuming that the presence of the ovens indicates that nearby habitation features were occupied by Italian laborers, the commissary was close to the workers' quarters.

Buckles has stated that, "The community [5ST2] appears to have been segmented with domiciliary, food preparation, and service areas" (Buckles 1976:215). However, based upon the small size of the surface collections at most domiciles and upon the non-diagnostic nature of those artifacts, it would appear that his interpretation of segregation of domiciles and food preparation areas is not adequately supported. Only three features at 5ST2 were identified as food preparation loci in addition to the eight baking ovens found on-site. Two of those three food preparation features and three ovens were clustered in the southwestern part of the site, the location Buckles identified as a food preparation area. However, four ovens and the third food preparation feature lay in the southeastern corner of the site in the same area as the commissary. This concentration of multiple feature types in a fairly small area indicates that all three activity areas lay in close proximity, not segregated.

Segregation of features of different functions may also be indicated at the Trona Pinnacles Railroad Camp, 4-SBr-1223, in southern California (Cornerstone Research 1981). This camp was occupied in 1913 by about 200 men of several nationalities. Different feature forms, but not functions, have been identified on the site map. However, segrega-
tion of several forms suggests some segregation by function. For example, the distinctive rock cairns were confined to the east edge of the site near the railroad grade, and probably served a unique function in an area isolated from other portions of the site. Hay/manure concentrations and twisted wire bundles, apparently livestock-care features, were recorded on a high terrace at the northwestern corner of the site. While not completely isolated from the tent/structure foundation outlines, the livestock-care features lay north of the major concentration of structures. Finally, two adjacent rock-lined enclosures lay isolated from the tents, and were unique features situated near the rock cairns.

A map of a 1914 railroad camp occupied by Mexican laborers working for the Death Valley Railroad also suggests that feature form and location may be used to define possible special activity areas (Sutton 1982). No information is available concerning the character of associated artifact assemblages at this site, however. A segregated dump was identified near the central south side of the camp, and it in turn was bordered on the north and west by several small structures. There was a slag pile and a "large clearing with metal boiler plates" at the far west edge of the site, and six of the seven identified rock cairns were concentrated on the east beyond most of the features. Assuming that similar feature form indicates similar function, at least three activity areas might thus be identified for the Death Valley Railroad camp.

Of the five railroad camps reported by Kranzush et al. (1982:Appendix E) near Kremmling, Colorado, only one, 5GA700, contained more than two recognizable features. Six small features were identified at that site, four of which appear to this writer to represent ovens. A small can dump lay to one side of the camp. Evidence for function segregation within 5GA700 other than the segregated dump is limited due to little information on individual feature function.

Anderson (1983) recorded 16 groups of railroad camp features at Golden Spike National Historic Site, Utah. The groups correspond to the sites in the Lake Fork Canyon, and each contains several features. However, it is not possible to recognize function segregation from available maps (Tune and Henderson 1977), and Park Ranger Jon James (personal communication 1/15/84) has suggested that special activity areas at the Golden Spike sites may not be detectable with surface data alone.

Three other railroad construction camps that have been recorded by archaeologists, Joso Trestle Bridge Camp in Washington (Wegars and Sprague 1981), Fenelon in Nevada (Turner 1982), and Red Station in Wyoming (Fawcett and Erickson 1983), contain insufficient remains to address the question of function segregation. Site disturbance at the abandonment of Joso Trestle Camp made subsequent identification of structure locations difficult. Associated trash dumps, which represented the main recorded and excavated features, could not be clearly matched with any particular feature type. At Fenelon, Turner (1982:33) found no clear evidence of the work crew encampment, although historic
documents indicate that such a camp existed at the site. Finally, only four railroad camp features remain at Red Station, (Fawcett and Erickson 1983), too few to provide information about possible function segregation.

This section has focused upon the segregation of activity areas within camps because that is the type mentioned most often in historic accounts and archeological reports. However, Cornerstone Research (1981) has addressed the possibility of segregation between grading camps (see below). This problem has not been discussed in other archeological reports, probably because multiple camps of the same age and in the same locale have rarely been examined as a group.

Segregation of Activity Areas Within and Between Camps in Lake Fork Canyon

The historic resources in the Lake Fork Canyon area appear to offer a unique opportunity to use archeological data to examine in detail the possible segregation of features and functions between camps. While it is not the purpose of this report to describe the eight other

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Legend for Figures 35 through 42.
railroad camps recorded in the canyon, certain background information about 5GN1692, 5GN1693, 5GN1694, 5GN1695, 5GN1696, 5GN1698, 5GN1699, and 5GN1725 facilitates the discussion of possible function segregation between those locations. Figures 35-42 are sketch maps of the eight sites, and illustrate the number and types of features observed at each location. They also indicate the arrangement of the features in relation to each other and to site topography.

The eight sites vary in size from at least 10 features covering approximately 22,000 square ft (2,000 square m) at 5GN1725 to four features covering 1,700 square ft (150 square m) at 5GN1695 and 5GN1699. Most of the structures in these sites are of dry-laid stone masonry, and many still stand in good condition and display considerable architectural detail. Associated diagnostic surface artifacts at the Lake Fork Canyon sites are fairly scarce, however, even at those sites that
Figure 36. Sketch map of 5GN1693.

Figure 37. Sketch map of 5GN1694.
Figure 38. Sketch map of 5GN1695. Note the small number of features and their position in the talus slope.

Figure 39. Sketch map of 5GN1698, one of the larger Lake Fork Canyon camps.
are well-hidden from the casual visitor. This situation has admittedly restricted the dimensions of the study of segregation of function.

Just as at Marion, most of the sites in the canyon were established upon alluvial fans. There are significant exceptions, however, in which the camps were actually built into talus slopes or on high benches. All of the camps observed, including two that were identified but are not yet formally recorded, lie within 65 ft (20 m) of the railroad grade or the Lake Fork River. They are situated on both sides of the stream, and access to work areas from the west bank sites may have been gained by walking across the Lake Fork when it was frozen.
Archeological investigations at the eight sites were limited to completion of a site form (including recording details of feature size, form, and associated artifacts), photography, and preparation of a sketch map. No excavations were conducted at the sites, and it is consequently difficult to make conclusive statements regarding feature or site function. For lack of better information, tentative identification of individual feature function at the eight sites was based most often upon feature form and associated artifacts. These criteria were apparently successful in identification of approximately 85% of the features' functions. Form by itself was particularly useful in the identification of ovens, possible fireplaces, and habitations with associated hearths and/or sleeping platforms.

There was no discernible evidence of segregated activity areas in any of the sites except 5GN1693 and 5GN1675. In the case of 5GN1696, this was partially due to on-site disturbance. The limited size and small number of features at 5GN1695 and 5GN1699 made discernment of segregation there unlikely.

Sites 5GN1693 and 5GN1725 displayed segregation of what appeared to be specific activity areas, but the precise nature of those activities could not be determined based upon surface data alone. Most of the features at 5GN1725 were interpreted as habitations based upon distinctive attributes such as associated fireplaces and sleeping platforms. Two features at the site did not follow this pattern, and instead probably housed some type of work activity. They lay segregated at the north end of that site. The only segregated dump identified in the canyon lay in 5GN1693, and the adjacent position of two large, substantial structures suggested the presence of an administrative or business center at the west end of that site.
While there appears to be little segregation within the sites in Lake Fork Canyon, there was slightly more evidence for function segregation between the camps. In most cases, the feature types and consequently the camp functions could not be determined with certainty, but there appears to be little doubt that the different camps in the canyon served different purposes. The various sizes of the nine camps certainly suggest that they served different functions. Sites 5GN1695 and
5GN1699 each possess only four features that contain two or three and one habitation respectively. These two sites contrast in size with Marion, where perhaps as many as 20 structures (excluding stone ovens) stood, and with 5GN1693, where there were at least nine or ten structures.

The specific functions of the small, isolated habitation sites 5GN1695 and 1699 (Features 1 and 2 at 5GN1696 might also be included in this group) are unclear. Historic records, however, offer one suggestion. Smallpox was reported in the Lake Fork railroad camps by the Gunnison Review-Press in May, 1889, and the isolated habitation sites may have served as pesthouses for smallpox victims.

Other evidence of camps serving different functions may be reflected in the range of architectural styles present at sites in the canyon. Most of the habitations at Marion were tents, while the other camps along the Lake Fork contained stone-walled structures, partial dugouts, and/or stone and log structures. These differences may be attributed to different contractors or subcontractors or to laborers of different ethnic groups. Segregation on the basis of ethnicity is suggested by the varying number of stone ovens observed in the nine recorded camps. The Italian-made ovens were found at most of the nine sites along the river (refer to the following section "Italian Railroad Workers in Lake Fork Canyon"). However, their absence at one site, 5GN1725, and the presence of only a single oven at a large Lake Fork site, 5GN1694, suggests that Italian immigrants were not the only ethnic group represented in the canyon labor force. It further implies that in at least certain instances the Italian immigrants were segregated from other laborers at different camps. Finally, the presence of a distinctive feature type, that of the horseshoe-shaped stone features at 5GN1694 that might have been fireplaces, also suggests segregation on the basis of ethnicity since it was at that camp that only one standard-sized stone oven was found.

While segregation of special activity areas between sites probably occurred in the Lake Fork Canyon, it is problematical whether the full range of essential services are reflected in the archeological remains thus far recorded along the river. For example, no blacksmith shops have yet been found, although more than one probably existed in the section of the canyon that has been surveyed. Likewise, no feature could be clearly identified as a commissary or a cookhouse/dining hall, although such would have been necessary at one or more of the sites. Finally, no livestock care features were identified at the sites, suggesting that teamsters kept their animals upstream at Gateview or elsewhere along the river where feed was readily available on the ground or for sale.

This idea of segregation of activities between railroad grading sites has been proposed previously by Cornerstone Research (1981). About the Trona Railroad in southern California, Cornerstone Research (1981) wrote:
Because there were several major camps located along the right-of-way of the Trona Railroad (of which the Pinnacles is one), and because the rolling bunkhouses were not used, nor was the Trona bunkhouse constructed until after the completion of the railroad construction, it is possible that there were segregated socio-ethnic camps. It is also possible that the several camps were used for specialized labor, such as that associated with the maintenance of stock herds, a blacksmith's shop, or the railroad bed construction crews [Item 8, p. 1].

In contrast with the Lake City Branch, the Trona line crossed open terrain and the size of their camps was not restricted by rugged topography. However, Cornerstone Research inferred above that it was desirable to have specialized camps to reduce the expense of building and maintaining certain special activity areas. For example, it was of questionable necessity to have a blacksmith at each camp along the Lake Fork, particularly when the sites lay so close together in the canyon. It would also have been more economical to establish one large corral and hay stackyard or barn and one livery to serve a large number of camps than to duplicate those facilities near each work site.

Taken together, the above observations may be used to develop a hypothesis that certain task functions were segregated in certain camps. It appears that, in specific circumstances, railroad construction activities not tied to actual construction along the road bed occurred in camps of two types. The first of these were main camps that housed several activities, primarily those of specialists. Structures at the main camps included the blacksmith shop, field bosses' habitations, payroll and general administration office, and a cookhouse, and dining hall or commissary. Personal maintenance activities may have also been included but were not essential elements of the main camps. Local saloonkeepers and prostitutes established their businesses at or near the main camps if the contractor allowed them to do so.

The other type of camp was the satellite camp, where personal maintenance activities were segregated or where livestock care activities occurred. Structures at personal maintenance satellite camps primarily consisted of habitations for unskilled laborers and rock blasters. If Marion is any indication, the satellite camps were also occupied by field bosses responsible for supervising the day-to-day grading work. Satellite camps were established at distances of a mile or more from the main camp or camps, but were sufficiently close to permit needed supervision and to gain access to necessary services such as that of the blacksmith.

Some sites in Lake Fork Canyon clearly fall within the category of satellite camps. Marion is among these, as are 5GN1695 and 5GN1699, the two smallest camps described previously. None of the nine recorded Lake Fork camps clearly appears to represent a main camp. However, while perhaps 40% of 5GN1696 has been disturbed by natural and cultural post-abandonment processes, its location suggests that the site was a
center of railroad construction business and administration in the canyon. The alluvial fan on which the site lies is one of the largest in the canyon, and 5GN1696 may actually have been part of a larger complex that covered both sides of the river. Site 5GN1693 may also have been a main camp, since its size and diversity of features suggest that special activities were carried out there. Alternatively, the main camps in Lake Fork Canyon may simply not yet have been recorded, since an estimated 70% of the canyon railroad construction sites remain unrecorded. (This estimate is based upon the density of known camps along the east side of the canyon between Marion and Madera. Sites should occur with similar frequency along the west side and in the lower half of the canyon. In the latter case, evidence of those railroad camps may have been inundated by Blue Mesa Lake).

Discussion

If the above model of main and satellite camps in Lake Fork Canyon is accurate, was that situation unique, or in what circumstances might one expect to find similar arrangements of activity areas? In answer, the situation along the Lake Fork is not unique, although neither is it universal. As mentioned previously, Cornerstone Research suspected segregation of certain activities along the Trona line in southern California, and although they did not identify main and satellite camps, the model may well fit their data. Conversely, some very large sites have been mentioned in historic accounts and recorded during archeological survey, and in those all specialist and personal life maintenance functions were housed in the same camp. Several such large camps have been identified in the historic literature. Kyner (1960:150, 213-216) has described the Kilpatrick Brothers camps in Idaho and also one that he himself established in northwestern Nebraska. Munson (1978:34) stayed at a large camp in the Royal Gorge in Colorado, and 5ST2 in Colorado was a very large site that apparently housed all administrative, specialist, and personal maintenance activities during D & R G construction there.

There are at least three circumstances that might be responsible for an arrangement of main and satellite camps. First, available living space might restrict the size of the camps and therefore the number of functions served at each location. Second, the difficulty of grade construction might affect camp size and arrangement. Third, the arrangement may have been part of a contractor's attempt to reduce travel time between habitation and work sites.

While the first possibility initially appears to have been the case in the Lake Fork Canyon where steep terrain still restricts development, camp arrangement was apparently not solely dictated by the amount of available space. Although there were apparently no topographical restrictions upon site placement and size along the Trona line, Cornerstone Research found evidence of the same sort of function segregation that was observed in the narrow Lake Fork Canyon. A con-
tour map of the Trona Railroad area illustrates fairly flat terrain with plenty of available building space.

Second, in areas with great relief like Lake Fork Canyon, the grading operations were often extremely difficult because so much rock and earth had to be blasted away or hauled to fill ravines. In order to maintain forward progress on the line and avoid unnecessary delays behind the blasting crew, contractors may have employed multiple blasting crews who worked simultaneously at several locations along the line. To reduce travel time between these various work and habitation sites, the blasters and graders would have built and lived in several habitation camps at several locations along the grade. Yet there was no similar need to also house specialists’ activities at each of those camps.

One reason that certain camps such as Kyner’s in Nebraska may have been larger and had most activities segregated in one camp was the danger from Indian attacks on the grading crews, especially those on the Plains (Davis 1948:19, 74). However, no such danger was present in Lake Fork Canyon or other areas after 1890, so that expensive large camps (and increased travel time between work and living places) would no longer be necessary for reasons of security.

Finally, Buckles (1983:214) has noted that "crew camps varied greatly according to their roles in construction, environments, time of year, backgrounds of the crews, policies of the particular contractors and railroads, and other variables." Whether or not these factors, aside from the policies of contractors, actually played a role in the segregation of functions between main and satellite camps in Lake Fork Canyon remains unanswered.

Conclusions

The arrangement of specialist and personal maintenance activity areas on the railroad construction project in the Lake Fork Canyon is in part reflected in the segregation of feature types within camps. However, surface data are limited, and the degree of segregation of feature type cannot be determined with certainty given current information. The study of several sites dating to the same time period that lie in the same locale has facilitated the theoretical interpretation of surface archeological remains as evidence of function segregation between sites. Again, however, the evidence is not as clear as might be desired because feature function could only rarely be determined. Segregation of feature type in Lake Fork Canyon may be attributed to one of at least three factors: special activities; considerations of public health; or ethnicity. The first factor is apparently responsible for the system of main vs. satellite camps, while the latter two determined who inhabited certain satellite camps.
Italian Railroad Workers in Lake Fork Canyon

Two lines of evidence indicate the Italian ethnicity of unskilled laborers who lived at Marion. First, Vandenbusche (1980:159) reports that during the 1889 phase of construction, most of the unskilled laborers in the canyon were Italian. Second, the stone ovens at Marion and other railroad camps along the Lake Fork are of the same form as those built by Italians in other parts of the West.

It was initially hoped that other aspects of material culture in addition to the ovens would provide evidence that the sites were built and occupied by Italian immigrants. The history of Italians in railroad camps in the West was examined prior to the start of the 1983 field season to determine those ways in which the archeology at Marion might reflect ethnic composition. The results of that research have been summarized previously in the section of this report entitled "Historic Railroad Construction." Differences between the expectations identified during historic research and the observed artifacts and features at Marion and other Lake Fork Canyon sites will be discussed in this section, together with exploration of possible reasons for the differences between the expected and observed data.

Ovens

The ovens in the Lake Fork Canyon (Figure 43) conform in general size and shape to other Italian ovens described in the archeological literature. Costello (1981:22) reports on the stone ovens test-excavated along Angel Creek in central California that were built by Italian miners during the 1860s.

Constructed of local schist, the ovens average two meters, or about six feet, in diameter. Where intact, they rise approximately 1.5 meters in height and are dome-shaped with a flattened face on one side where a small doorway is located. Stones were mortared with mud and the oven floors were made either of packed earth or fitted stone.

At 5ST2 in central Colorado, Buckles (1976:237-250) recorded eight domed stone ovens similar to those at Marion. The interior floors of Buckles' features ranged in diameter from 4 1/2 to 6 ft (1.3-1.8 m). For the three features for which he describes floors, one lay on bedrock while the other two were fitted stone floors.

Examination of historic and modern photographs of outdoor ovens associated with different cultural groups indicates that the domed stone ovens in Lake Fork Canyon differ significantly from most attributed to non-Italian peoples. One exception, however, is the Greek oven pictured in Figure 44. A similar oven, illustrated in Figure 45, was built by immigrants of unknown ethnic affiliation during construction of the Northern Pacific Railroad.

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The Italian and Greek ovens contrast clearly with three other types of ovens. Those reported by Patterson (1980) and Briggs (personal communication, Spring, 1983) in Texas were built with dressed stones (Figure 46), probably by German immigrants (Patience Patterson personal communication 5/4/84). Mexican outdoor ovens are similar in shape to the Italian ovens but were made of adobe (Figure 47). Ovens used by the Pennsylvania Dutch are square structures that were sometimes built as part of a larger outbuilding (Long 1964:17-18). The latter were considerably larger than the Italian ovens, measuring 12 x 8 x 8 ft (3.7 x 2.4 x 2.4 m), and their roofs were traditionally of planed timber and projected beyond the front wall of the feature.

This brief survey of oven styles supports the assumption that the ovens in Lake Fork Canyon are of a distinctive Mediterranean style, dissimilar to Mexican or northern European ovens. Certainty about Italian affiliation is based on style and the fact that no other Mediterranean cultural group worked in large numbers on western railroads during the late nineteenth century.
Figure 44. Bread baking operation at a 1909–1910 Greek railroad camp in Oregon. Photograph courtesy of the Lane County Museum, Eugene, Oregon.
Figure 45. Historic photograph of man baking bread in earth oven. (From Wood 1968: , reproduced with permission of the author.)

Figure 46. Elongated, domed stone oven from 41VV588, Texas. (From Patterson 1980:cover, reproduced with permission of the author.)
Expected Archeological Site Attributes

Four aspects of material culture were examined on the chance that they might reflect Italian ethnicity at archeological sites. First, artifacts made in the home country might indicate Italian-ness just as distinctive Chinese goods mark sites where Chinese immigrants resided (Chace 1966). Second, aspects of vernacular architecture might prove useful as indicators of ethnicity (Rock 1975:1). Third and fourth, Italian laborers' preference for preparing their own food might be reflected in both the types of features at camps and in the food remains deposited there.

Distinctive Artifacts

Almost no Italian artifacts have been found in archeological sites supposedly occupied by Italians. While Buckles (1976) suspected the presence of Italian laborers at one railroad construction camp in central Colorado because of the stone baking ovens there, he recognized no Italian-made artifacts in the cultural material from that site. Briggs (1974) found one Italian button at a Texas railroad camp occupied by Italians, Mexicans, and/or Germans, and Jeff Hantman (personal communication, March 16, 1983) found Italian wine bottles and remains of a
shoe shop at O’Rourke Camp, an early twentieth century Bureau of Reclamation dam construction camp east of Phoenix, Arizona. However, those artifacts were the only material that could be positively identified as Italian despite the fact that many of the employees housed at the dam construction campsite were known to be Italian. Shoulder seals from Fernet-Branca Bitters bottles are the only Italian artifacts that were found in sites occupied by Italians in the Cortez Mining District in Nevada (Gene Hattori personal communication, March, 1984).

Thus, although many of the Italians who worked on railroad construction projects were newly immigrated, apparently little of their material culture reflected their ethnicity. Musmanno (1965:89) explained this relationship.

Every immigrant carried with him two pieces of baggage. One bulged with clothing and food (cheese, salami, bread) so that he might make a neat appearance in America and maintain life until he obtained remunerative work. The other bag was equally large but not bulky, it was not even visible to others. It was crammed full with the heritage of his culture, the traditions of his land and his religious devotion. The first bag was often depleted of its contents before the Italian got a job or even after he obtained an ill-paying one. But the second bag sustained him and supplied him with the courage and fortitude to go on regardless of deprivation, hardship, and rebuff.

Architecture

Because Italian-made artifacts are very rarely found at historic sites occupied by Italian immigrants, it would be useful to be able to recognize the ethnic character of the site by means of some other type of archaeological evidence. The architecture of such historic sites would appear to be a logical place to look for such evidence, but the exact nature of Italian immigrant vernacular architecture in rural settings has not been determined. A limited literature search of archaeological reports and other publications on dry-laid stone vernacular architecture (Allen 1969:17-79; Briggs 1974:118-129; Buckles 1976:221-236; Greenwood 1982; Society for Historical Archaeology 1982; Anderson 1983) does not provide clear evidence that architecture can be used to identify Italian-ness at an archaeological site.

The dry-laid stone architecture from 5ST2, a railroad construction camp occupied by Italians during the early 1880s, displays fairly distinctive characteristics including the types and condition of materials used, the arrangement of contiguous dugouts, doorway lintel construction, and the preponderance and opportunistic use of stone in construction (Buckles 1976:221-236; Figure 48). There are similarities between these archeological features and the historic architectural features reported from southeastern Italy (Allen 1969:17-79). In Italy, field shelters made of stone are thick-walled and may be round or rectangular
in shape. They have flat or gabled dirt roofs and small doorways, but if they have windows such are very small. The Italian field shelters often have a single stone lintel over any wall openings.

However, these Italian sites also exhibit similarities with dry-laid stone structures whose ethnic association is either uncertain or is clearly not Italian, such as those at Promontory, Utah, which were occupied by Anglo-Americans, and at some Texas camps occupied by Mexicans, Italians, and/or Germans. It appears that architectural styles such as the positioning of structures against large rock outcrops, single-stone lintels above doorways or fireboxes, and contiguous dug-outs cannot be used alone as key indicators of Italian ethnicity. It is possible these are a cluster of pan-European architectural traits.

These examples indicate that extensive research is necessary to determine whether or how Italian ethnicity is actually reflected in vernacular architecture. Until this research is conducted, other aspects of material culture must be relied upon to provide evidence of Italian-ness at sites occupied by Italian immigrants.
Certain Feature Types

Because unskilled Italian immigrant laborers were fairly independent in their living arrangements, both the types and internal features of structures found at Italian laborer camps should also reflect considerable variation. If each man was responsible for his own cooking, the camps would have neither a cookhouse nor a dining hall. Instead, individual habitation features would have contained hearths or stoves for cooking. Each archeological habitation that had a hearth or stove should therefore contain evidence either as flecks of charcoal or tin stove fragments inside the feature or as an ash pile outside the entrance where contents of the stove would have been periodically dumped. If the men cooked in groups, as Rossi (1892:251) has indicated, then the Italians would have had their own cookhouse and perhaps their own dining hall. In either case, the commissary would be an essential feature and probably contained more supplies at Italian camps than it did at others. In addition to supplying such personal items as tobacco, boots, and patent medicines, the padrone-run commissary would have carried food and cooking utensils, perhaps even cooking and heating fuel (wood or charcoal).

Food Preparation

For reasons previously mentioned, the Italian laborers selected low cost, low quality foods that were not particularly nutritious. It is therefore unlikely that remains of food luxuries such as condiment bottles or canned seafood would be found in historic Italian railroad camps. Likewise, faunal remains from the Italian camps should reflect the fact that meat was rarely consumed, and those bones found in the site would represent inexpensive cuts. Assuming that the laborers could not afford weapons to hunt and kill big game, the only wild game that they could have procured for themselves would have been small mammals or game birds (although the padrone may have provided large wild game through his commissary).

Observed Archeological Attributes at Marion

Italian immigrant preferences for certain living conditions, material possessions, and foods suggest that four types of evidence (excluding ovens) theoretically might reflect Italian occupation at Marion. These include Italian-made artifacts, details of housing, certain feature types, and food remains. Unfortunately, the circumstances of Italian occupation are sufficiently variable and the remains at Marion are sufficiently ambiguous to preclude clear evidence for Italian occupation of Marion.

First, no Italian-made artifacts were recognized in the Marion assemblage. This situation was expected, however, and the absence of such artifacts cannot be used as evidence that Italians did not live on-site.
Second, historic accounts of Italian railroad camps are rare and contain little information about unique, Italian-made structures that might have been built there. While the rock structures in Lake Fork Canyon are similar to those temporary features that have been recorded in Italy, no effort has been made in these investigations to explore vernacular architecture in other Mediterranean countries or elsewhere in Europe. The Lake Fork features resemble those recorded by Buckles (1976) at 5ST2, which was also probably occupied by Italians. But photographs and descriptions of rock structures at several other railroad camps in the West indicate similarities between those features and the structures at the Lake Fork sites, and in the former case the ethnic affiliation is either unknown or German, Mexican, or Anglo-American. Thus, while the Lake Fork structures may be Italian, one cannot discount the possibility of other ethnic origins.

Third, the presence, absence, and/or contents of commissaries, dining halls, and cookhouses could conceivably indicate whether Italians occupied a particular camp. However, the variability in methods of food preparation among Italian immigrants on large construction projects depended upon their personal preferences, and the presence or absence of non-Italian laborers in camp obviously make this line of investigation almost futile. The only camp structure that might offer some clear evidence of Italian ethnic occupation is the commissary. Assuming that the Italians did indeed prefer to cook for themselves individually or in a group(s), they would have obtained their food at such a location. If other arrangements prevailed, little if any food would have been sold in the commissary because it all would have been provided through the dining hall.

Finally, food remains in Italian-occupied laborer camps logically should reflect the men’s poverty and frugality. The food cans recovered from Marion are all of the size and shape used for fruit and vegetable preservation. No meat or fish containers or kitchen sauce bottles were recovered and only one bottle of flavoring extract was found. Few bones were recovered, and one of the three identifiable pieces was from wild game, an antelope. Of the two other bones, one was from the innominate from a cow (loin cut) while the other was from the back of some type of cervid. The small faunal collection is thus ambiguous, including both inexpensive meat as well as a possible prime cut. Overall, however, the food remains do not contradict the assumption that Italian immigrants occupied Marion.

The largest structure discovered at Marion may have been a commissary, although that identification is tenuous. The only food remains found at that structure were milk can seals, and such are certainly not strong evidence of a commissary that catered to Italians. Consequently, the presence and contents of a commissary at Marion cannot be used to help identify the ethnic affiliation of the railroad camp inhabitants.
Conclusions

In conclusion, the ovens remain the best archeological data supporting the historic report of Italian immigrants at Marion. The remains of mostly inexpensive food items are compatible with that report, but the other three lines of evidence, Italian-made artifacts, housing, and certain feature types, do not provide diagnostic information.

Toward Developing a Mean Artifact Date Formula

One value of the historic artifact assemblage from Marion, apart from its usefulness in the determination of feature function, is the fact that it was deposited during a very short period of time that has been specifically documented in historic accounts. Because of this control, the temporally diagnostic historic artifacts in the collection may be used to evaluate and refine a relatively new technique for dating late nineteenth century sites, that of the mean artifact date formula.

One of the more substantive analytical techniques devised for historic artifacts within the last 15 years has been the mean ceramic date formula, which was first proposed by South (1972a). He devised the formula to take into account the quantity of several datable ceramic types in calculating a median date of occupation for the site in which those artifacts were found. While the earliest critiques of the formula were sometimes skeptical and identified several potential and real problems (South 1972b), the popularity of the technique since its introduction has been indicated by the frequent references made to it in the historic archeological literature (Lewis 1976:82-84; Turnbaugh and Turnbaugh 1977; Bastian 1982; Smith 1983).

The idea of using a dating formula for available artifacts has considerable appeal, more so than the time lines that many historic archeologists have used. Time lines do not allow the analyst to take into account the numbers of artifacts per class or type, only their presence or absence. However, South (1977:214), among others, has clearly demonstrated the superiority of quantified data over presence-absence information for historic sites.

The technique was primarily designed to date sites having eighteenth century British ceramics, since those artifacts had previously been dated with relative precision by Noel Hume (South 1977:209). It is still used primarily in dating sites of that general age and/or containing those artifacts. Yet beginning with the formula's introduction, archeologists have tried to use artifacts other than eighteenth century British ceramics to estimate a median artifact date for their sites, employing formulae and computations virtually identical to those of South.
South himself used Goggin's (1968) data on Spanish majolica from 23 sites in the New World, including Florida, Texas, Arizona, the Dominican Republic, and Venezuela, to construct a formula that identified mean majolica dates for those sites (South 1977:238-252). The formula was used to date four other reported sites that were not part of the original formula development, and it was also employed to date different, stratified components within the original 23 sites. In most instances it proved to be very accurate.

Using previously dated bottle types and two regression equations, Carillo (1974) was able to identify median dates for a wide range of individual bottles. He used this information in turn to identify median dates of site occupation for six eighteenth century sites, most in the eastern United States. His median dates corresponded favorably with those calculated using the mean ceramic and pipe date formulae.

Bonath (1978) also attempted to use the mean majolica date at St. Augustine, Florida. The date that he calculated using South's formula did not compare favorably with the median historic date for the site, however, and Bonath believed that the difference could be explained by changes in trade patterns during the site's occupation (Bonath 1978:91). Finally, Grange (1984) used a similar formula for proto-historic Pawnee and Arikara ceramics and obtained satisfactory results.

Historic archeologists working primarily with nineteenth century sites have likewise explored the possibilities of using a formula similar to the mean ceramic date formula to estimate median dates for site occupation (Smith 1983:171-173; McLeod 1984:71). Importantly, they have also begun to examine classes of artifacts other than ceramics that might be useful in determination of median dates. Grange experimented with different ways to calculate a mean date and range of site occupation for a residence at Ile aux Noix, Quebec (Grange 1980). Calculations were made for individual mean dates for ceramics, bottles, pipes, and window glass, and two composite dates were derived. Hill (1982) used bottles alone to examine manufacture-deposition lag at four sites across the United States. Fawcett and Erickson (1983) reported their use of a median artifact date formula at a late nineteenth century railroad station in Wyoming. Bottles, cans, and ceramics were analyzed, but specifics of formula application were not included in their report. Finally, Kornfeld suggested using three classes of artifacts, nails, bottles, and cans, in his attempt to date several dismantled, undocumented historic structures at a late nineteenth century mining camp in south-central Wyoming (Kornfeld 1983).

Similar attempts to use nonceramic artifact classes to calculate median dates of site occupation will continue to appear in the literature with increasing regularity. That nineteenth century ceramics have only rarely been used in calculation of median ceramic date formulae is a reflection of two important facts. First, good tight dates for nineteenth century ceramics are only beginning to be compiled (Derven 1980; Gates and Ormerod 1982; Price 1982; Smith 1983:171). Second, and especially at rural frontier sites in the West and Midwest, the amount of
ceramic material found on-site is often very small, and small sample size can lead to deceptive median dates.

While there is a need for dating formulae that use artifacts other than ceramics, the identification and dating of such alternative artifact types can present problems. This will be demonstrated in the subsequent discussion using artifactual material from Marion and different median dates and computations for mean artifact date formulae. The exercise may serve to illustrate the types of problems that exist and the decisions that must be made in developing a formula that will accurately estimate the median date of occupation for any given nineteenth century site.

Before presentation of the Marion data, Hill’s, Kornfeld’s, and Grange’s computations and results using nonceramic artifacts should be further examined. Hill used a mean bottle date formula as part of her research into the phenomenon of manufacture-deposition time lag. She proposed several hypotheses about which cultural factors would affect time lag in deposition of bottles found at four historic sites (Silcott in Washington, Edgewood in Georgia, Custer Military Dump, Michigan; and the Steamship Bertrand, Nebraska) occupied at various times between 1865 and the 1920s. In order to identify lag, she calculated the median manufacturing date for all bottles for which initial dates of manufacture were available. She used individual bottles with datable maker’s marks, form, consignees (Bertrand only), seals, labels, and patents. Other attributes that might have been examined, such as color and method of manufacture, were not used to date bottles that lacked distinctive, datable labels. She then modified South’s mean ceramic date formula to identify mean bottle manufacturing dates and compared them with archival information regarding the various sites’ dates of occupation. Hill found that her hypotheses were supported using this technique. Bottles that had different contents exhibited varying time lags depending upon whether their contents were fresh, were in frequent use, or were beverages of several types.

Kornfeld’s modification of the mean ceramic date formula was an attempt to estimate the dates of occupation for several features in South Pass City, Wyoming (Kornfeld 1983). No historic documentation of the dates of the dismantled features was available, and Kornfeld was unable to verify his formulae by comparing his calculated results with historic median dates. His work did, however, illustrate that different artifact classes in the South Pass City material produced different median dates, and he suggested that the discrepancy was perhaps due to differences in curation and maintenance of space. If Kornfeld is correct, then bottles, for example, would consistently yield a mean date older than that of cans for nineteenth century frontier sites throughout the West.

Grange (1980:69-71) experimented with several different methods for estimating the period of occupation at the Thomas McVey House in Ile aux Noix, Quebec. Historic documentation of the site had indicated that it was occupied between 1812 and 1862. Twenty-four types of cer-
amics, 13 datable bottle attributes, seven datable pipe attributes (based on trademarks and style), and the window glass were examined in several different dating analyses to create a "combined archeological model" that would estimate the site’s period of occupation independent of the historic information. Two of the dating techniques that Grange used were calculations for composite or mean multiple-artifact dates. The first was based on a combination of median manufacture dates for datable ceramics, bottles, and pipes, and the latter on those three plus the date suggested by the window glass. The first composite date was 1824±29, which was 13 years earlier than the historic median date. However, the second formula yielded a date ten years later than the first, and very close to the historic date. Grange used these results plus those from 11 other dating methods to identify an archeological estimate of 1810-1852 for the McVey house. The estimate compares favorably with the 1812-1862 estimate based on historic documentation.

In order to develop mean artifact date formulae for nineteenth century sites, archeologists should obviously focus upon assemblages from historic sites that have precise documentation for their dates of occupation. Information about the relationship of a site to external economies would also be desirable in order to identify circumstances that might skew the data in unexpected ways, such as conditions of trade embargos or wartime scarcity (Bastian 1982:141). One might also focus upon those sites that had minimum time lag between manufacture and deposition, for example, where recycling was at a minimum, where the site lay near an industrial center that produced, distributed, or retailed the most current goods, and where there was a rapid turnaround in merchandise because of a large or expanding population and consequent high demand for goods.

Marion offers several advantages for a study of this type. First, historic documents have pinpointed the period of occupation for the site between January and May, 1889. Second, the manufacture-deposition lag often witnessed at the consumer and recycling stages of artifact production and use (Hill 1982:294-296) would apparently have little effect on a median date calculated at a site occupied for such a short period of time and by such a transient population. In fact, archeological evidence of recycling at Marion was confined to 23 artifacts dating to the railroad construction camp occupation.

Third, at the marketing stage Marion again appears to be a good selection for this type of analysis. While the population of Gunnison County in 1889 was neither as large nor as rapidly expanding as it was in the frenetic early 1880s (Vandenbusche 1980:60, 148), the influx of construction laborers on the Lake City Branch increased the local population by as much as 10%. The resultant high demand for goods, many of which were purchased locally, should have been manifested in a high turnover of shelf merchandise. This would have reduced lag at the marketing stage for Marion artifacts.

Finally, although Marion cannot claim a preferred location near a major manufacturing and distributing center in the United States, lag
was at least minimized at the distribution stage because the site was situated near a major rail line. The nearby Denver and Rio Grande Railroad connected at Ogden, Utah and at Denver with other railroads coming from major population centers in the West and Midwest.

A final preferred characteristic for a test site would be the presence of a large artifact assemblage to eliminate problems of small sample size. Unfortunately, Marion has a very small artifact collection and there are few datable artifacts from the site that can be positively identified with railroad construction features. While this is unfortunate, the small sample size does not detract substantially from the results of this study, but instead simply serves as a caution that other sites need to be examined before the Marion results can be considered conclusive.

Analysis of the Marion data proceeded by the use of multiple median artifact date calculations. Several problems were encountered during the analysis. There is a certain discrepancy in the literature concerning the initial and terminal dates of manufacture for several artifact types, even common ones. Additionally, selection of artifact classes and attributes to define types to be used in median artifact date formulae will continue to vary with the investigator. Next, several nineteenth century artifacts have been used in essentially the same form from the time of their first introduction until the present. Different artifact types regularly produce dates too early or too late for the known period of occupation. Finally, there exists the question of whether archeologists should combine the results of a median nail date formula, for example, with those of a median bottle date formula to produce one median multiple-artifact date.

The first point is well-illustrated by review of several sources of information regarding the dates of manufacture for cut and wire nails. Nelson (1968) states that cut nails possessing perfected machine-made heads and cut from opposite sides were first made in the late 1830s and their manufacture has continued until the present time. He noted, however, a substantial reduction in the number of cut nails manufactured during the late nineteenth or early twentieth centuries when wire nails became the dominant nail type. Fontana and Greenleaf (1962:54-55) date cut nails from 1830-1890 and wire nails from 1855-1980. Buckles et al. (1978:439-440) assign cut nails the same dates as Fontana and Greenleaf, but date wire nails from 1880 to 1980. Kornfeld (1983) used 1850-1900 as the dates for cut nails and 1887-1980 for wire nails when he calculated a median artifact date formula for South Pass City material.

Not wishing to be left without a divergent opinion, this writer has calculated initial and terminal dates for cut and wire nails based upon the graph published in Gillio et al. (1980:4). Their illustration indicates that manufacturers of well-made cut nails controlled between 20% and 100% of the nail market from 1830 to 1900, while wire nail manufacturers controlled 20%-100% of the market between 1888 and 1980.
Different median dates for the production of cut and wire nails were calculated using the initial and terminal dates recognized by each author summarized above and have been illustrated in Table 7. These medians vary by as much as 17 years, and the significance of those differences is made particularly apparent when the dates are applied to an archeological data set such as the one from Marion. A total of 175 cut nails and 65 wire nails were recovered from the railroad camp features at Marion. This proportion of cut to wire nails correlates with a date of 1889 in the Gillio et al. graph, the exact year in which the railroad camp was in fact occupied. Four of the five mean nail dates calculated using the information from Table 7 underestimate the actual date of Marion’s occupation. The mean nail date calculated using Nelson’s median dates for cut and wire nails is 1886, using Fontana and Greenleaf’s median dates is 1875.4, Buckles et al.’s is 1882.6, Kornfeld’s is 1891.0, and Rossillon’s is 1883.7. Clearly, consistent use of accurate initial, terminal, and median dates is necessary for generation of a useful mean artifact date.

The second problem encountered during this research with the Marion material concerns the selection of artifact classes and attributes to define the types employed in the mean artifact date calculations. Ideally, archeologists should select artifacts that accumulate and are discarded with regularity throughout the occupation of the site or feature.

Bottles and cans are common artifacts that are readily disposable. Yet within the class of bottles, it is difficult to select single datable attributes for use by historic archeologists who pursue a wide range of regional and temporal interests. Hill used makers’ marks, patent dates, labels, and shipping crates to date the bottles in her study. She chose not to examine color or method of manufacture, which are reflected in such features as pontil marks and applied finishes,
both of which are datable attributes. Kornfeld, on the other hand, used only the color of bottle sherds to identify types for his analysis (the bottle glass recovered at the South Pass City features may not have exhibited distinctive datable attributes such as makers' marks, seals, or embossed patent numbers).

Hill's technique of counting individual bottles with distinctive marks and Kornfeld's method of counting bottle sherds of certain colors were both used to calculate median bottle dates for the Marion material. However, there were few artifacts at Marion bearing distinctive marks that were clearly associated with features of the railroad construction occupation, and only five bottles could ultimately be so dated. These produced a median bottle date of 1892.2. When the color of the Marion bottle glass, primarily purple and aqua sherds, was examined, a median bottle date of 1898.1 was generated. Thus color alone was a poor alternative to identifying a mean bottle date by use of makers' marks. Unfortunately, makers' marks are not always common in site collections, and small sample size may not produce reliable results.

Other relatively common artifacts that archeologists might wish to use in median artifact date calculations present a different kind of problem. Wire nails, clear bottle glass, and crimped or sanitary tin cans were first manufactured in the late nineteenth or early twentieth centuries and are produced in essentially the same form to this day. Undecorated whiteware presents a similar problem, having been manufactured continuously since the 1840s (Smith 1983:172). Generation of median dates of manufacture for these artifact classes is thus fraught with difficulties. If the calculations illustrated in Table 7 were to be made 20 years from now, for example, they would indicate that the median dates for wire nail production were ten years later than those indicated in Table 7 because, instead of figuring 1980 as the "terminal date," future researchers would have a "terminal date" of 2000. Consequently, it seems best to ignore those artifact types that have been manufactured continuously until the present.

Different artifact types often produce dates consistently too early or too late when compared with the actual mean historic date or with dates of other artifact types. Kornfeld (1983) found that the mean can and mean bottle dates from South Pass City were almost always later than the mean nail dates. Mean bottle dates were in turn usually slightly earlier than mean can dates. Kornfeld suggested that differential curation and maintenance of space were responsible for such incompatibility. However, the major reason that mean nail dates are often earlier than those calculated with other artifact types is that the patterns of accumulation and deposition of nails are rarely constant through time. Nails used in construction will rapidly accumulate on a site when structures there are first built and occupied, and will occasionally accumulate later if additions or new structures are built. At a large number of sites, the original building episode represents the most active phase of construction, and those nails used in construction will indicate an initial date for site occupation, not a median date. This same observation has been made by archeologists who
have evaluated window glass for dating purposes, for window glass also generally identifies the initial date of construction (Moir 1982:3). Nails, like window glass, should therefore be avoided in calculation of a mean artifact date.

The disparity between median dates of nails, bottles, and cans from South Pass City suggests the need for a technique of weighting the results of each mean artifact date computation either by figuring index dates (South 1977:239-240) or by averaging the results. Kornfeld, Grange, and Fawcett and Erickson have attempted to determine acceptable dates by simply averaging the various calculated mean artifact dates. They combined the median dates for all datable artifact types, including nails, bottles, cans, ceramics, pipes, and/or window glass, to calculate a mean multiple-artifact date. Each artifact was weighed equally regardless of completeness or function.

The usefulness of this weighting technique could not be evaluated with Kornfeld's data because no independent documentation of the features' dates existed. Grange obtained mixed results, and his first composite mean date, figured using mean dates for ceramics, pipes, and bottles, was about 10 years older than the expected mid-range based upon historic information. His second date used artifacts of the above three classes plus window glass and approximated the estimated historic mid-date of occupation (Grange 1980:105-106, Table 13). Fawcett and Erickson found that the technique underestimated the age of their site by more than 10 years (Fawcett and Erickson 1980:155).

Calculating a mean multiple-artifact date might best include a differential weighting of each artifact class represented in the formula. Such an alternative method of weighting was first proposed by Jelks (1972:175-176), who suggested that weighting might be based upon the length of time that each artifact was manufactured.

Jelks' proposal was incorporated into the date formula calculations for Marion, where artifacts were weighted on the basis of the number of years each was manufactured. Weights were intuitively assigned, and those artifacts of a type made for less than 15 years were given the highest weight of 5, while those made for 60 years or longer were assigned a weight of 1. The artifact types and weights used have been indicated in Tables 8 and 9. The formulae for calculating the mean multiple-artifact dates both with and without weighting are presented in Table 10. The latter formula is the same as that used by South (1972a:217) and most others for mean ceramic date calculations and by Kornfeld (1983) and Grange (1980:71) in their mean multiple-artifact date calculations.

The results of the calculations are encouraging. The weighted date calculated for the Marion occupation is 1891.6, while the unweighted date is 1892.9. Both dates lie within four years of Marion's documented date of railroad occupation.
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</tr>
<tr>
<td>Armour Packing Co.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tobacco tags</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>round (Lorillard)</td>
<td>1870</td>
<td>1920</td>
<td>1895</td>
<td>Campbell 1964:104</td>
</tr>
<tr>
<td>horseshoe (Drummond)</td>
<td>1877</td>
<td>1893</td>
<td>1885</td>
<td>Briggs 1974:177; Robert 1949:147</td>
</tr>
<tr>
<td>black powder cans</td>
<td>1874</td>
<td>1930</td>
<td>1902</td>
<td>VanGelder &amp; Schlatter 1927:289; DuPont de Nemours &amp; Co. 1922:7</td>
</tr>
<tr>
<td>tobacco pipe</td>
<td>1855</td>
<td>1900</td>
<td>1878</td>
<td>Sudbury 1979:156–158; Thomas &amp; Burnett 1972:7–8</td>
</tr>
<tr>
<td>U.M.C. primer tin</td>
<td>1867</td>
<td>1912</td>
<td>1890</td>
<td>Hatch 1956:110, 209</td>
</tr>
<tr>
<td>pen tip</td>
<td>1871</td>
<td>1891</td>
<td>1881</td>
<td>New York City Directory</td>
</tr>
</tbody>
</table>
Table 9. Weighting System Used in Mean Artifact Date Computations for Artifacts from Marion.

<table>
<thead>
<tr>
<th>Period of Manufacture</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14 years</td>
<td>5</td>
</tr>
<tr>
<td>15-29 &quot;</td>
<td>4</td>
</tr>
<tr>
<td>30-44 &quot;</td>
<td>3</td>
</tr>
<tr>
<td>45-59 &quot;</td>
<td>2</td>
</tr>
<tr>
<td>&gt;60 &quot;</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 49. Popularity of three different can types between 1890 and 1930.
Table 10. Mean Multiple-Artifact Date for Marion.

<table>
<thead>
<tr>
<th>artifact type</th>
<th># of artifacts</th>
<th>median date</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>soldered tin cans</td>
<td>17</td>
<td>1886</td>
<td>3</td>
</tr>
<tr>
<td>crimped tin can</td>
<td>1</td>
<td>1945</td>
<td>1</td>
</tr>
<tr>
<td>Elgin Co. milk can seals</td>
<td>9</td>
<td>1891</td>
<td>5</td>
</tr>
<tr>
<td>Colo. Gls. Wrks. bottle</td>
<td>1</td>
<td>1888</td>
<td>5</td>
</tr>
<tr>
<td>Cunningham &amp; Co. bottle</td>
<td>1</td>
<td>1893</td>
<td>4</td>
</tr>
<tr>
<td>DeSteiger Gls. Co. bottle</td>
<td>1</td>
<td>1888</td>
<td>4</td>
</tr>
<tr>
<td>A.M. Alger, Druggist, Salida</td>
<td>1</td>
<td>1897</td>
<td>4</td>
</tr>
<tr>
<td>Colo. bottle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Price's Spec. Flav. Extr. bottle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Armour lard bucket</td>
<td>1</td>
<td>1908</td>
<td>2</td>
</tr>
<tr>
<td>round tobacco tags</td>
<td>55</td>
<td>1895</td>
<td>2</td>
</tr>
<tr>
<td>horseshoe tobacco tags</td>
<td>9</td>
<td>1885</td>
<td>4</td>
</tr>
<tr>
<td>black powder cans</td>
<td>6</td>
<td>1902</td>
<td>2</td>
</tr>
<tr>
<td>tobacco pipe</td>
<td>1</td>
<td>1878</td>
<td>2</td>
</tr>
<tr>
<td>primer tin</td>
<td>1</td>
<td>1890</td>
<td>2</td>
</tr>
<tr>
<td>I.B.T. &amp; Co. pen tip</td>
<td>1</td>
<td>1881</td>
<td>4</td>
</tr>
</tbody>
</table>

\[
\text{Mean Multiple-Artifact Date (with weighting): } Y = \frac{\sum_{i=1}^{n} X_i (f_i)(w_i)}{\sum_{i=1}^{n} f_i (w_i)} = 1891.6
\]

\[
\text{Mean Multiple-Artifact Date (without weighting): } Y' = \frac{\sum_{i=1}^{n} X_i (f_i)}{\sum_{i=1}^{n} f_i} = 1892.9
\]

where \(X_i\) = the median date for the manufacture of each artifact type

\(f_i\) = the frequency of artifacts within each artifact type

\(w_i\) = the weight assigned to each artifact type, and

\(n\) = the number of artifact types in the sample.
A standard deviation of 7.2 years was calculated for the unweighted mean multiple-artifact date. This indicates that according to the mean artifact date formula, there is approximately a 70% probability that Marion was occupied between 1884.3 and 1898.7 (weighted dates). In fact, Marion was occupied within the range specified by one standard deviation.

The research reported here illustrates several issues involved in the development and use of a mean artifact date formula for nineteenth century sites. Until archeologists can agree upon initial and terminal dates for artifact types, particularly those manufactured and used until the present, researchers using different calculations will produce different results. This problem may be resolved when archeologists have accumulated evidence that certain median artifact dates are more accurate site date indicators than are others. The present study serves only as one test of the accuracy of median artifact dates proposed and used in Table 8.

Nails should not be used in calculating mean artifact dates because they may accumulate rapidly at the earliest occupation of a site but only sporadically, if at all, during the subsequent occupation. Like window glass, nails provide fairly reliable information about the date of initial, not median, occupation.

A mean multiple-artifact date formula will probably produce the best results for the majority of sites. At Marion, where all datable artifacts from good proveniences were used, the mean date fell within four years of Marion's documented occupation. It would appear that, by employing a wide range of datable artifacts to produce a mean multiple-artifact date for a site, the effects of differential curation, maintenance of space, and scarcity due to trade embargo or other economic restrictions may be reduced.

Weighted median artifact dates, calculated on the basis of how long each type was manufactured or widely used, provide mean dates slightly closer to documented historic dates than do unweighted dates (Table 10). At Marion, the difference between the two dates was not significant, however, so further work is necessary to determine the usefulness of weighting.

Finally, a mean multiple-artifact date formula should not be used exclusively when other good dating techniques are available. At Marion, the proportion of cut and wire nails at railroad construction features accurately reflected the 1889 initial date of occupation. Also, the calculation of a mean artifact date should obviously not be used in lieu of adequate archival research. At Marion, the historic record still provides the most accurate information about the period and length of occupation.
Figure 50. Bottles that provided chronological information about Marion. a) Colo. Glass Works apple green beer (?) bottle (1887-88), b) amber base to a second Colo. Glass Works bottle, and c) A.M. Alger clear medicine bottle (patented 1894).
Summary of Railroad Construction Occupation

Marion was one of many railroad grading camps established along the Lake Fork Branch of the Denver and Rio Grande Railroad during its construction in the winter and spring of 1889. Archeological remains indicate that Marion was a large camp compared to others thus far identified in Lake Fork Canyon. Thirty cultural features were identified and investigated at the site during the 1982 and 1983 Center field seasons, and 26 of those were associated with the railroad construction operation.

The artifactual remains recovered from Marion were fewer than anticipated, suggesting that it was initially occupied for a very short period of time and/or that the pattern of refuse disposal was such that few discarded artifacts remained on-site. Despite the small number of artifacts recovered, approximately 2,900 fragments, these data still provide the best means to identify the functions of the various camp features.

Tent platforms were the most common feature type at Marion and were primarily the habitations occupied by unskilled laborers and field bosses. Three features had rock walls: Feature 4 was a field bosses' habitation; Feature 7 was a possible commissary; and Feature 22 was a laborers' habitation. One feature was built against a rock face near the eastern edge of the site and may have served as a storage area. Four oven features were constructed entirely of stone and are now in various stages of collapse. Features 15 and 31 were the only dumps found at Marion, and both were small.

The artifacts from the site reflect the plain lifestyle of the unskilled laborers. Clothing fasteners were the most common personal items represented, while other personal items are limited to tobacco tags and a few stationery supplies.

Marion is the only railroad grading camp in the United States that has been extensively excavated. The archeology and history of this site and the other recorded railroad camps in Lake Fork Canyon provide useful insights into a number of subjects ranging from grading operation organization to Italian ethnicity as reflected in the archeological record and calculation of mean artifact date formulae.

First, investigation of the archeology and history of Marion and other railroad sites have permitted construction of a model of camp organization in which the specialist and personal maintenance activities were divided between main and satellite camps. The main camps consisted of high supervisory and more expensive positions, including perhaps those of the contractor or his representative, payroll clerk, commissary manager, blacksmith, and/or livery keeper. Satellite camps included habitation camps and camps for livestock care.

Second, Vandenbusche (1980:159) has indicated that Italian immigrants formed a major part of the unskilled labor force on the grading
and blasting crews during the 1889 Lake City Branch construction. Archeological investigations at Marion and eight other Lake Fork Canyon railroad construction camps offer little recognizable evidence that the sites were occupied by such immigrants. The stone ovens used for baking bread almost certainly indicate occupation by a Mediterranean ethnic group, but no other features or artifacts could be positively identified as Italian. Careful examination of the dry-laid stone masonry in the Lake Fork Canyon sites and at other sites with dry-stone architecture might reveal a distinctive Italian architectural style and/or construction techniques. Other architectural features that might reflect Italian ethnicity include the lintel stone, rounded or subrounded floor plans, and the construction of two or more adjacent dugouts sharing common walls.

Third, Marion’s well-documented short occupation makes it a good site to use in evaluation of a mean multiple-artifact date formula. More and more, formulae of this type are being employed by historical archeologists in attempts to accurately estimate dates of sites occupied into the late nineteenth century. The accuracy of the different formulae varies substantially. However, the mean multiple artifact date calculated for Marion is very accurate, less than four years from the documented date of occupation.
4. OTHER HISTORIC OCCUPATIONS

Railroad Siding

A siding known as "The Narrows" was apparently established at Marion during the 1889 construction of the Lake City Branch (Vandenbusche and Borneman 1979:45), but no information could be found regarding its function. Because of the rugged nature of the surrounding terrain in the narrow Lake Fork Canyon, it seems unlikely that the siding was established to ship livestock, timber, or ore. Neither was it a logical location where local residents could have accepted freight and distributed it to surrounding areas. If anything, the siding may simply have been built at a location where the railroad could unload material for the section crews that maintained the line. The siding track at Marion probably lay where the toe of the talus slope was excavated in 1889 for the construction of Feature 24. However, investigation there revealed no physical evidence of the siding rails or any loading platform, maintenance shed, or other structures that were conceivably part of the facility.

The Narrows continued to be used as the name for the siding until about 1906, when the location became known as Marion, a name derived from that of a mining company operating in the area (Vandenbusche and Borneman 1979:55). It was marked on D & R G profiles and timetables until sometime between 1913 and 1919, when the siding was abandoned by the railroad (Wadleigh 1906; Ridgway 1919; 1919 Lake City Branch timetable reproduced in Vandenbusche and Borneman 1979:86).

Vandenbusche and Borneman (1979:55) reported that, "A number of cabins used by Italian section laborers on the branch were also located near the siding [Marion]," and oral history data appear to support their claim. One informant, Pete Venturo, who worked on the D & R G line in the Black Canyon during the 1910s recalled that a section crew occupied Marion on a seasonal basis at that time (personal communication 6/83). It is possible that a section house stood at Marion prior to construction of the Barnum Section House four miles upstream. The Barnum house was built sometime before 1919 (Ridgway 1919) and was abandoned by the late 1920s, when the Lake City Branch section crew operated out of Gunnison (Lee Dean personal communication 7/83). If indeed Marion also had a section house, any material that might remain from it was not recognized in the field. Additionally, there was no concentration of artifacts observed at any of the identified features at the site suggestive of a section crew occupation.
History of Mining in the Area

While gold had been prospected in the Gunnison Basin and San Juan Mountains as early as the 1850s, large scale prospecting and mine development did not occur until the Brunot Treaty of 1873 and the Treaty of 1880. The first treaty opened the San Juans for mineral exploration, while the second opened the rest of western Colorado for prospecting and homesteading when the Ute Indians agreed to abandon their territory and to move to the Ute Mountain and Uintah reservations (O'Rourke 1980:50-54; Vandenbusche 1980:9).

On the south side of the Gunnison River, mineral locations in the 1870s and 1880s concentrated around Lake City. However, men in all lines of work were watching for potentially valuable unclaimed mining property throughout the area. As a consequence, E.M. LeProhn, E.S. Allen and D. Dilman discovered some lode property while working as engineering surveyors on the 1889 Lake City Branch construction project in the Lake Fork Canyon downstream from Gateview (Hinsdale Phonograph 3/1/89). Their claims apparently never made them the rich men they had hoped to be, and an archival search in the Gunnison and Hinsdale County courthouses produced no information about their claims, not even location certificates.

The first known mineral discoveries in Lake Fork Canyon between Gateview and Sapinero were thus disappointingly unproductive, and not until ten years later was a more exciting discovery made in the canyon. It came during a time when the worth of the Gunnison Gold Belt, reaching from Cochetopa Creek to the Lake Fork, was finally being realized (Vandenbusche 1980:288), and the belt became the source of much exploration and speculation that peaked in the 1890s.

The discovery of placer gold in the Lake Fork Canyon near Grabiola in 1899 prompted a number of prospectors to search for and locate* placers there. The number of placers located at the time has not been precisely recorded, but more than 100 acres along the creek were claimed. Most of the claims were made near Grabiola and sold to the Lake Fork Placer Mining Company within two months of the first discovery of gold in the canyon. For various reasons, however, the placer mining company never worked their property (Gunnison News 11/3/99, 6/22/00, 8/17/00).

While prospecting during the initial placer gold "rush", prospectors also found and claimed lode property in the vicinity of Grabiola. This discovery did not immediately lead to the location and development

*To "locate" placers means "to...designate the site of (a mining claim...)") (Webster's New World Dictionary 1970).
of many claims. However, about five years later, lode claims had covered a four mile stretch in the Lake Fork Canyon from Gateview north.

Between August, 1904 and October, 1906 more than 25 lode properties were claimed along a three mile section of Lake Fork Canyon around Marion and Vanguard. A more exact number of claims made cannot be determined because county courthouse records do not include plats or precise written descriptions of locations for unpatented mining claims (Claims in the vicinity were identified during archival research by first examining location certificates of a few claims previously known from the area. Often the names of adjacent claims were mentioned in those records, and by examining the records of those adjacent claims and of transactions between claimants, the list of claims grew from only a few to over 25. This technique did not guarantee that all claims in the area were identified during the records search. For example, a drift dug into rock about 600 ft downstream from Marion was undoubtedly an unpatented claim, but no record of it was found.)

Although the Lake Fork Canyon area was covered with claims between 1904 and 1906, little development followed their initial location, and the amount of ore actually shipped was probably quite small. Unless assessment work was performed on the mines and recorded with the county clerk, other prospectors could claim the mining property in question simply by filing a new claim and ignoring any previous ones. No records of required annual assessment work at any of the Marion area lode claims were found in the Gunnison County Courthouse, and it is consequently reasonable to assume that the properties had been abandoned.

With two exceptions, prospecting and development in Lake Fork Canyon were limited to individuals or a couple of partners. One of the larger operations in the canyon began at least as early as 1904 with two prospectors, E. Hyatt and Lewis M. Harrison, who built a cabin on one of their claims, their cabin sometimes referred to as "Camp Vanguard" (Gunnison County Courthouse Book 151:467; 164:256, 165:471). Harrison and another Lake Fork miner, E.C. Kyselka, subsequently formed a New York-based company, the Vanguard Mining and Extraction Company, in an attempt to develop their claims (Gunnison News Champion 7/6/06). No reference was made to the company after its activities were first reported in the Gunnison News-Champion in 1906 (7/6/06), and the operation apparently lasted only one season. A second company, the Marion Mining Company, was also mentioned in the same newspaper article as operating at Marion. The company probably consisted of a small group of men who worked during the 1906 summer season only. Records concerning either the Marion Mining Company or the Vanguard Mining and Extraction Company were not found in the Gunnison County Courthouse or in the incorporation files in Michigan and New York, the home states of the two companies. This lack of records may be due in part to the possibility that neither firm was in operation in the canyon for any length of time.

Three groups of mining claims were made during the early 1950s in the canyon near Marion. These include the Vanguard group of 22 lode
properties discovered in October, 1952 (Gunnison County Book 260:145-152), the Hope placers that were discovered in the spring of 1954 and covered a total of 540 acres (Gunnison County Mining Abstract Book 26:272), and the Red King and Black Jack Nos. 1-12 lodes and placers discovered in the summer of 1954 (Gunnison County Book 260:553; 289:167-172). The Vanguard claims were made along the Lake Fork near Marion, the Hope claims along Lake Fork from 3/4 mi below Marion to 3 mi above Marion, and the Red King and Black Jack Nos. 1-12 on the hillside between Lake Fork and Little Willow Creek. One or more of the Vanguard claims and the Hope No. 5 Placer actually included the site of Marion (Gunnison County Books 260:145-147, 482).

No work was performed at the claims beyond the initial discoveries and perhaps a year or two of assessment, if the lack of disturbance of the ground surface at those locations is any indication. It is more likely that the claims were made not because of a renewed interest in minerals in the area, but instead as a consequence of Federal government plans for the Gunnison River and some of its tributaries. The situation is not unlike that which occurred in the 1960s in the Ridgway area 30 miles to the west of Lake Fork. At Ridgway, a lively interest developed in mineral claims in and near the proposed Ridgway Reservoir, interest seemingly disproportionate to the value of the mineral resources that had been identified by earlier mining operations in the immediate area (Rossillon 1981:15-42-43).

The advantages of making mineral claims in and near Federally-proposed construction lay in the potential to make an argument for the area’s high mineral potential that might eventually prevent construction, or in the payment made to claimants by the government in return for relinquishment of rights to hold and develop valid mineral claims. It is consequently of interest that there was no record of mining interest in the Lake Fork Canyon for almost 50 years until a short time before Congress authorized construction of the Blue Mesa, Morrow Point, and Crystal Dams (70 Stat. 105).

Early Twentieth Century Mining-related Features at Marion

Two features at Marion, Features 23 and 29, post-date the railroad construction camp and may well have been constructed during the local mining "boom" that occurred soon after 1900. Before describing these two features, however, a review of the historic mining activities at Marion may be helpful.

According to the records examined, the lode claim nearest Marion was the Sirock, made by J. Derius Gregory and John Thompson in October, 1905 (Gunnison County Book 161:334). There is no indication on the location certificate whether either claimant actually lived on or near the claimed property. Nevertheless, Gregory, Thompson, Henry Anderson (the latter claimed two properties across the Lake Fork from Marion in 1904), or employees of the Marion Mining Company may have lived at Marion on a temporary or seasonal basis while working existing claims or
prospecting for new ones. Whoever the miners living at Marion were, they probably occupied at least two of the structures identified at the site.

Feature 23 is a collapsed log cabin situated in the gully about 200 ft (60 m) east of Feature 30. The building measured 15 ft by 7 ft 9 in (4.6 x 2.4 m), and was built on the south side of the bottom of the ravine at a point where the gully was no more than 30 ft (9 m) wide. A stone foundation underlay the saddle-notched log walls, and poles lying inside the collapsed structure perpendicular to the long axis of the building suggests that its roof was gabled. The only visible doorway lay in the west wall near the southwestern corner. No floorboards were observed, and the floor of the structure was probably dirt. There was no indication of windows, and other architectural details could not be determined given the poor condition of the feature.

Associated furniture in Feature 23 consisted of a low shelf in the southeastern corner along the east wall, pieces of a cast iron stove, possible pieces of a campstove, and fragments of a wooden trunk with tin straps and corners. Only a few nails were found at the feature, about half of which were cut and half of which were wire. Other than the nails, only three portable artifacts were observed on the ground surface and these lay in the ravine slightly downstream from the cabin. One was a California Powder Works black powder can that had been cut in half across its width, forming an open-topped container about 5 in tall. There was also a 9 1/4 x 9 1/4 x 13 1/2 in rectangular can that had been repaired with a short piece of baling wire. Finally, an ARMOUR PACKING CO. lard bucket was also found. Feature 23 was not excavated because project impact upon the structure appeared to be minimal.

While the portable artifacts around the feature were similar to those found in railroad camp features at 5GN1664 and elsewhere in the Lake Fork Canyon, and while there were more cut nails present than might be expected at a 1904-1906 site, other aspects of Feature 23 indicate that it was indeed occupied after the railroad camp was abandoned. First, all of the railroad camp features at Marion lie within 45 ft (14 m) of one another, yet Feature 23 is 200 ft (60 m) from the nearest feature, Feature 30. Second, while there has been differential preservation at the site, Feature 23 was a log cabin, and none of the other features at Marion appear to have been so constructed. In fact, although in several instances structure walls at Marion are believed to have consisted of logs atop high stone foundations or walls, none of the buildings at any of the nine identified railroad camps in Lake Fork Canyon appear to have been log cabins set on stone foundations. Also, 95% of the logs used in building construction at the railroad camps were axed, not sawed as they were at Feature 23. Finally, the presence of a trunk and cast iron stove at Feature 23 suggests a stronger "commitment" (Buckles 1981) than displayed at any railroad camp features identified thus far in Lake Fork Canyon. The presence of the lard bucket, black powder can, and cut nails is problematical, but may be explained by secondary use of abandoned yet still useful artifacts.
Schiffer 1978:38). No artifacts clearly indicative of miner occupants were observed on the surface around Feature 23, although this situation is not unusual at mining camp sites in the Rocky Mountain West (Buckles 1978:542; Fawcett and Francis 1981:Appendix 2) and certainly does not preclude miner residency.

Feature 29 represents the remains of a second structure at Marion that may date to the 1904-1906 mining activities in the canyon. It was once a frame building situated on the eastern side of the site at the edge of the talus slope. A rock slide, hopefully after feature abandonment, destroyed and displaced the building, and all that remains are small pieces of milled lumber, posts, and sheets of metal that may have been roofing material. This debris, plus a handful of associated artifacts, lies scattered over and under about 300 square ft (90 sq. m) of recently fallen talus.

Excavations at Feature 29 were limited to four 1 x 1 m units placed where the surface artifacts were concentrated and where there were the fewest rocks. Two of the excavation units lay over a 6 x 9 ft (1.8 x 2.7 m) depression surrounded by fallen rock. The depression was apparently natural. No flat living surface was encountered, the sediments were mottled, and structural materials lay at various angles to the horizontal, some individual pieces (and some telegraph wire) having one end at the surface and the other buried 20 cm below the surface. This orientation of subsurface artifacts was similar to that observed for the surface material that had been scattered by the rock slide. The artifacts were encountered at depths as great as 35 cm below the existing ground surface, and give some idea of the degree of mixing and burial of cultural materials that occurred during the slide.

Boards associated with Feature 29 that had measurable widths and thicknesses were 2, 3 3/8, and 4 3/4 in wide and 3/4 and 7/8 in thick. The post fragments, 5-6 in in diameter, appear to have been used at the corners of the structure to support board walls. Pieces of galvanized telegraph wire were found at the feature also, and were mostly straight or slightly bent except for two pieces that were twisted together. Their structural relationship to Feature 29 is unclear.

The predominance of wire nails in the feature indicates a construction date of 1895 or later. Because only wire nails and milled lumber were used in Feature 29, its occupation may be slightly younger than that of Feature 23, although both appear to date to the early 1900s. As with Feature 23, there is no direct evidence of a miners' residence there, but the history of the area strongly suggests such an explanation.

One artifact found in a small rock cairn at Feature 6, a feature associated with the railroad camp occupation, may date to one of the mining episodes and indicate feature re-use. It is a clear medicine bottle embossed with the words "A.M. Alger, Druggist, Salida, Colo." (Figure 50). Alger was in business between 1883 and 1901 (J.R. Ives
Publishing Company 1883-1901) and the bottle was patented in 1894, so the artifact was apparently deposited at the turn of the century.

Other Mining Features in Lake Fork Canyon

Evidence of mining is common elsewhere along the Lake Fork, mostly as discovery cuts made in the steep sides of the canyon, and several drifts or tunnels are visible from the canyon road on either side of the river. Two of these lie opposite Vanguard (5GN1696) and one lies about 600 ft downstream from Marion. There is also a recent prospector’s pit at 5GN1692, and claim corner markers were observed at 5GN1696.

Three features remain from the turn-of-the-century mining episode at 5GN1696, Camp Vanguard (Figure 40). A cabin at the site measures 39 x 20 ft (12 x 6 m) and is probably the remains of a frame building set on a short stone foundation. The size of the structure and its associated artifacts (including bottle glass, ironstone fragments, a homemade colander, some food cans, coal and clinkers, and tobacco cans) suggest that the building was both a residence and a workshop. Two dumps, one on either side of the cabin foundation, contain primarily domestic trash. One contains a can collection dating slightly earlier than that of the other dump, but all three of the Camp Vanguard features appear to date between about 1905 and 1920.

Two features at 5GN1698 (not illustrated in Figure 39 but about 200 ft [60 m] northeast of the other features) are mining-related. These include a mine entrance with a small ore dump and a possible residence, and appear to date after 1900.

Finally, an unrecorded log cabin site in Lake Fork Canyon was probably also associated with early twentieth century mining and prospecting. It lies on the west side of Lake Fork perhaps 150 ft (45 m) upstream from 5GN1694.

Recent Occupations

Current use of the Marion area includes fishing, boating (primarily kayakers), picnicking, and sightseeing. With the exception of kayaking, such activities have probably occurred at Marion for the past 30 years or more. Artifactual remains from these recent occupations are fewer than might be expected, possibly due to Park maintenance activities over the past several years. Tin cans and beer bottles are the most common recent artifacts left behind by seasonal visitors to the canyon.

Artifacts from three separate features plus several artifacts that were unassociated with any recognized cultural features provide additional evidence of these recent occupations. Test excavations at Feature 20 revealed that the depression there (Figure 19) was merely the
result of past railroad and roadbed construction and maintenance. As­
associated artifacts included a fishing lure, beer bottle fragments, a
tall juice can, a motor oil can, and a food jar and apparently repre­
sent the remains of a single fishing trip within the past few years.
Comparatively recent artifacts at Feature 24, near a parking pullout
and toilet, and at Feature 19, near a picnic table and camping space,
were probably also left by fishermen and picnickers who visited the
area within the past 30 years. Finally, several artifacts collected
from the site surface in 1982 are fairly recent and are probably the
remains of short, seasonal visits. These include a clear bottle base
dating after 1938, a clear jar screw-top finish, 16 crimped tin cans,
two coffee cans including one used for gun target practice, and one Sir
Walter Raleigh and one Prince Albert tobacco can.

The distribution of these artifacts indicated that most recent ac­
tivity at the site has concentrated within 60 ft (18 m) of the roadbed
and the river. Two notable exceptions to this pattern occurred at Fea­
tures 5 and 30. At the first feature, recent visitors built a large
stone fire ring at the base of a quartzite boulder. No modern arti­
facts were associated with the 3 ft 4 in x 2 ft 7 in (1.3 x 0.8 m)
ring. At Feature 30, a single course wall of rock was built, again at
the base of a large boulder. The wall enclosed an area slightly more
than 8 square ft (0.7 square m). Although the large rock was fire-
blackened, there was considerably less charcoal in the ground below it
than was present in the Feature 5 fire ring. Feature 30 is an unusual
feature, and lies on a very steep slope (Figure 51). Its use as a mod­
er fire hearth is therefore questionable. The artifacts found in two
test pits excavated behind the rock wall at the feature gave no clue to
its function or date. They include a mother-of-pearl button, a rotten
piece of wood that may have been milled, and a .38 cartridge found 20-
30 cm below the surface. Artifacts found in a test pit excavated about
11 ft (3.4 m) south of and below the low wall appear to pre-date the
feature and may have been displaced from their original positions by
the rock slide(s) at the site. These include two black powder can lid
fragments found 10-20 cm below the ground surface.
Figure 51. Profile of Feature 30. Two units excavated beneath overhang and one in steep slope below.
5. SITE SUMMARY

Archeological investigations were conducted at 5GN1664, the site of Marion, during the 1982 and 1983 Center field seasons in Curecanti National Recreation Area, Colorado. The site lies along the southern edge of the Park on the east bank of the Lake Fork River, a tributary of the Gunnison. It was investigated as part of a planned campground development which will involve direct and indirect impacts to cultural resources in the area.

Archeological research at Marion was designed at first to investigate the remains of the nineteenth century railroad construction camp there, but excavation revealed a more complex site with at least three prehistoric and four historic components. In addition to the archeological investigations, subsequent historic research was conducted to shed light upon construction and operation of the Lake City Branch of the Denver and Rio Grande Railroad as well as upon mining activities at Marion and elsewhere in the Lake Fork Canyon.

Projectile point typologies and four radiocarbon dates were employed to differentiate the aboriginal components at 5GN1664. The earliest component dates to 2,047±48 radiocarbon years B.P., and is represented by the remains found in and below historic Feature 13. The second component dates to 1,060±46 years B.P., and was revealed during excavation in historic Feature 21. Finally, a Late Prehistoric occupation of the site is indicated by distinctive projectile points of comparatively recent age. Discrete clusters of artifacts in Features 6, 12, 14, and 31 may indicate other aboriginal occupations, but their ages could not be determined in the absence of temporally diagnostic artifacts.

The small number of aboriginal artifacts found in each of the two radiocarbon-dated components indicates that both occupations were short term and probably involved a small group of people. The site appears to have been a field camp, perhaps occupied by nuclear or small extended families.

Lithic artifacts were the most common aboriginal material found on-site. The lithic collection is dominated by quartzite, although cryptocrystalline silicates are also well-represented, especially in the tool classes. A diversity of projectile point styles were found in each of the two radiocarbon-dated components. They range from large, corner-notched points and a McKean-like point in the 2,047 B.P. component in Feature 13 to large, medium, and small corner-notched points in the 1,060 B.P. component in Feature 21. The latter component was clearly the site of quartzite tool manufacturing activities. Tertiary quartzite flakes, a modified flake, several unnotched biface or preform fragments, and a few notched bifaces represent various stages in the manufacture of projectile points there.
Five hearths were excavated at 5GN1664, two in Feature 13 and three in Feature 21. With the exception of Hearth B in Feature 21, all were unlined, basin-shaped pits filled with fire-cracked rock and charcoal. Hearth B in Feature 21 was not confined to a pit, but instead was a concentration of charcoal that was well-defined at its surface but thin and mixed with sediment toward the bottom. The two radiocarbon dates from the hearths in Feature 13 are similar enough to indicate contemporaneous use of the firepits at about 2,047 B.P. The dates from Hearths B and C in Feature 21 are also contemporaneous, but approximately 1,000 years later than that of the Feature 13 component.

Bone recovered from Features 13 and 21 is generally very fragmentary, and only limited faunal interpretation was possible. Elements from mule deer, antelope, and bison were positively identified, but a minimum number of individuals could not be calculated. The condition of the bone, the associated artifacts, and the character of the hearths made it impossible to identify methods of animal butchering or animal food preparation.

The most important contributions of the prehistoric research at 5GN1664 relate to the examination of a site in a small tributary canyon away from the Gunnison River, and to the tight dates on two distinct, non-overlapping components of a Late Archaic site in the Colorado Rocky Mountains. The dates for two components at the site may eventually be used to more accurately characterize Late Archaic subsistence and settlement patterns (field camps and larger habitations) and artifact assemblages (temporally diagnostic projectile point styles) in the Gunnison Basin.

At least four historic components were recognized at Marion. The most visible is that of the railroad grading camp which dates to 1889, when the Lake City Branch of the D & R G was finally completed. Marion was one of perhaps as many as 50 camps in the Lake Fork Canyon that housed various aspects of the grading and blasting operation in the winter and spring of that year. The site was apparently only inhabited for a short period of time, perhaps for less than one month, and was then abandoned in favor of a similar camp further up the canyon and closer to the worksite.

Thirty historic features were identified and investigated at Marion, 26 of which were associated with the 1889 railroad construction episode. Tent platforms were the most common feature found, most of which were probably occupied by unskilled laborers. Four field bosses' habitations were also identified, and four ovens, a possible commissary, a storage area, and two dumps were investigated.

Although the number of artifacts dating to the railroad construction occupation was quite small, the artifacts still provided the best leads to feature function identification. The small artifact assemblage apparently reflects both the short period of occupation and the inhabitants' few belongings.
The artifacts and features at Marion and eight other railroad camps recorded in Lake Fork Canyon plus historic research about the Lake City Branch and railroad construction in general have prompted examination of three subjects of interest wider than simple site-specific research. First, a model has been constructed for the organization of activities at railroad construction camps. Three types of activities have been identified: actual grading field work; administrative tasks; and personal maintenance activities. The segregation of the latter two activities at different camps in Lake Fork Canyon is suggested by the virtual absence of recognizable administrative features at the nine railroad camps recorded to date along the Lake Fork. Most if not all of the sites fall into the category of satellite camps where personal maintenance activities predominated. Main camps that might include such features as a payroll office, supervisor’s office, blacksmith shop, livery, and commissary have not yet been identified in the area.

The second topics examined were the role of Italian laborers in large construction projects in the late nineteenth and early twentieth centuries together with the archeological evidence of Italian ethnicity and labor practices. Italians reportedly occupied the Lake Fork Canyon camps, and the presence of distinctive stone ovens at most of the sites there supports this. Other aspects of material culture were examined to determine whether they might also indicate the ethnicity of site occupants, but this research met with little success. Distinctive Italian-made artifacts have rarely been found in association with camps known to have been occupied by Italian laborers, apparently due to the men’s poverty and frugal nature. The dry-laid stone architecture observed in the canyon may offer a clue to Italian ethnicity, but its use as a body of culturally diagnostic traits awaits more systematic review of the literature as well as rigorous field and document research. Considerable variability in food preparation techniques at railroad camps occupied by Italians and/or non-Italians disallows using those techniques and preferences to identify Italian-ness.

Third, because Marion was occupied for a short, well-documented period of time, it was used as a test site for the development and evaluation of mean artifact date formulae. These formulae may in turn be used to precisely date other historic sites for which the period of occupation cannot be sufficiently documented. Difficulties with developing such formulae have been discussed in some detail, and the conclusion has been drawn that a multiple-artifact date is less susceptible to error caused by artifact recycling or by other factors of manufacture-deposition time lag. The formula used with the Marion material employed all datable artifacts associated with railroad construction camp features. Over 100 artifacts met these criteria, although over half of those belonged to one artifact class, that of tobacco tags. The mean multiple-artifact date fell within four years of Marion’s documented occupation. These results are encouraging and offer direction for future work with mean multiple-artifact date formulae.

In addition to the railroad construction occupation, three other historic components exist at Marion. The first was the railroad siding
operated by the D & R G between 1889 and about 1915. The siding itself probably lay at Feature 24, but neither archeological nor historical information explained why it was built at such an isolated spot. The second component was that of early twentieth century mining, and was represented in the archeological record by Features 23 and 29. The former was not examined in the field because campground development impact was predicted to be minimal there. The latter has been almost completely destroyed by a rock slide. The Marion Mining Company reportedly worked in the Marion area, perhaps cutting the large drift just downstream from the site. However, if the miners actually lived at Marion, it was only for a few seasons at most. The third component is the most recent and involves use of the site by kayakers, fishermen, and sightseers. Remains of their visits to the site include fire rings, modern tin cans, and bottles.

This report makes several contributions to the field of historical archeology as the result of historic and archeological work at Marion and the other Lake Fork Canyon sites. First research involved an intensive investigation and discussion of a series of railroad camps occupied at approximately the same time and for the same purpose. Second, all of the railroad camp features at Marion except the four ovens and one habitation were examined through subsurface testing, making work at Marion the first large-scale excavation of a grading camp. The third contribution is the construction of a conceptual model of the segregation of railroad construction activity areas in main and satellite camps. And last, examination of the Marion artifact assemblage has led to an evaluation of a mean multiple-artifact date formula. The formula may be useful to others studying late nineteenth century historic sites where traditional dating techniques such as the analysis of historic documents, ceramics, and window glass have proven inadequate.
6. MANAGEMENT RECOMMENDATIONS

Curecanti National Recreation Area has recently taken several management actions to protect and interpret cultural resources at Marion and the other railroad construction camps in Lake Fork Canyon. Continued resource protection and maintenance through site patrol and interpretation should encourage preservation for many years.

Excavations at Marion entailed complete mitigation of development impacts to all recognized railroad camp features. However, the collapsed log structure, the four stone ovens, and the prehistoric remains at the south end of the site were not exhaustively investigated and their preservation in their present state for possible future archeological research and for public interpretation is desirable. First, Feature 23, the log cabin at the east edge of the site, was not excavated because it lay outside the limits of the Gateview development. It may represent the remains of a turn-of-the-century camp that can offer archeological information about the early mining period in the Lake Fork Canyon, including perhaps the significance of recycled materials from the abandoned railroad camps. Second, the four bread ovens at Marion were examined during the 1983 field season and require no further analysis. Still, preservation of these features is encouraged because of their interpretive value, for the ovens constitute the only visual reminder of the ethnicity of the railroad laborers. Third, the concentration of aboriginal features and artifacts at the far south side of the site (Feature 21) was not completely excavated and might produce additional significant information about the 1060 B.P. occupation. Unexposed features may remain in this location that could yield information about the character of the occupation which could not be fully addressed by the materials recovered in 1983. For example, the extent of butchering and the methods of food preparation might be revealed in yet unexcavated materials from Feature 21.

Preservation of these three groups of historic and prehistoric archeological materials is probably best accomplished by routine patrol of the site by informed park personnel. Rangers should be aware of the archeological and interpretive significance of these features and should inspect them periodically to insure preservation in their present states. A recent visit to the site (September, 1984) revealed that someone has been digging, apparently with a shovel, in the backfilled excavation units at Feature 21. This situation should be monitored to insure that this destruction does not occur in unexcavated archeological deposits.

Under a cooperative agreement with the Montrose District of the Bureau of Land Management (Curecanti National Recreation Area 1984), the park has instituted an interpretive program relating to the construction of the Lake City Branch and other historic events in the canyon. To date, this program has involved the placement of several interpretive signs at Marion, 5GN1696 (Camp Vanguard), and 5GN1693. Park personnel have also constructed a short trail through the latter
site, so that area visitors may view some of the more substantial structures remaining from the railroad construction period. This program will probably further the preservation of Marion and other railroad camps on both National Park Service and Bureau of Land Management property, under the assumption that an informed public has a heightened interest in preserving visible reminders of its cultural heritage.

In addition, the Lake Fork Canyon railroad camps, including Marion, appear to be eligible for nomination to the National Register of Historic Places. Their inclusion on the Register would demonstrate the commitment of the National Park Service and Bureau of Land Management to an active preservation program for the sites. The Lake Fork Canyon district nomination could be facilitated by entering it as an amendment to the 1975 nomination of the Denver and Rio Grande Narrow Gauge Trestle at the Cimarron Development Area (Gilbert 1975). Like the trestle, the railroad camps' significance stems in large part from their association with the D & R G narrow gauge railroad system which played an important role in Gunnison area history.
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A total of 2893 bone fragments were examined from the three sites. Of these 2659 were determined to be too fragmentary to assign to any taxon other than "undetermined mammal." Two hundred and thirty four were recognizable from the family level on one hand to specific level on the other, the former being more common.

Even if some of the specimen bags had not been labeled "hearth" it was obvious that the bulk of the bone scrap (burned and calcined) was in a condition usually associated with hearth or firepit features.

In some instances, where a partial molar tooth was encountered, it was possible to state that it was representative of either a bighorned sheep (Ovis canadensis) or the pronghorned antelope (Antilocapra americana) but not the mule deer (Odocoileus hemionus). In the former two animals the teeth are "pillared" without a cingulum, or swelling, at the gumline. In the deer a cingulum is present. Even a small, elongated piece of enamel, from root to crown, will establish a close taxonomic category but will not separate sheep from antelope. If the possibility exists that domestic sheep and goats are present then these two groups have to be included in the artiodactyls with pillared teeth.

The fragments, labeled Bison, are from a prehistoric provenience but would not be diagnostic enough to separate them from domestic cattle (Bos taurus) if found in an historic context.

Only one sawed bovid bone was identified. This fell within the size range of a small domestic cattle (Bos taurus). The bone appeared to have been cut with a mechanical, metal saw.

There were no remains of fish, amphibians, reptiles, or birds present in any of the recovered bone fragments.

Only two definite pieces of worked bone are present. One from 5GN1664 (Feature 21) was the butt end of an awl. The other, in two pieces, from 5GN247 was the polished, pointed end of an awl. They both appeared to have been manufactured from artiodactyl metapodials and are similar to many, similar, complete awls that are common to many prehistoric cultures in the western United States.

In most site analysis it is possible to arrive at the minimum number of individuals (MNI) present at the site. This is a useful deduc-

* The detailed descriptions of faunal material from 5GN247 and 5GN42 from Olsen's report are not reproduced in this appendix.
tion, allowing for an evaluation of those animals most preferred by the inhabitants of the site. However, since almost all of the bone, from all sites represented, was from either firepits, hearths, or the vicinity of such features, almost all of the bone fragments were too undiagnostic for any meaningful MNI listings. In most instances it wasn’t feasible to even attempt to estimate which limb bones were represented, or how many, or even whether small or large mammals were present. The numbers of small fragments or splinters were tabulated but only to indicate the percentage of the pieces of bone in this unrecognizable condition. It is likely that much of the bone was reduced to this fragmentary category by the action of heat, rather than by human intent. This is evidenced by the vast majority of fragments that show some form of burning or by being calcined from prolonged periods in a firepit or hearth.

5GN1664 (Feature 13) Prehistoric

There were 1022 bone fragments that couldn’t be determined beyond the category of small, undetermined, mammal. Thirty-six fragments were identified at least to family category.

**Odocoileus hemionus**, mule deer. Medial position of ulna, lateral terminal phalanx ("hoof"), sesamoid and two molar tooth fragments, cingulum present.

**Odocoileus hemionus**, mule deer or **Antilocapra americana**, pronghorned antelope. Fragment of shaft of femur, unfused distal condyle of metapodial of immature individual.

**Artiodactyl, gen. et. sp. indet.** Fragments of long bone shafts, humerus shaft (spiral fracture) and fragments of metapodials.

5GN1664 (Feature 21)

There were 1585 undetermined fragments and 135 that could be identified at least to family category.

**Antilocapra americana**, pronghorned antelope. Symphysial surfaces of both left and right mandible.

**Odocoileus hemionus**, mule deer. Articular condyle of left mandible, distal end of femur.

**Bison bison**, bison. Nearly complete right metatarsal (possible female).

**Odocoileus hemionus**, mule deer or **Antilocapra americana**, pronghorned antelope. Portion of auditory meatus, first lower right
premolar, numerous long bone splinters and fragments, fragment of femoral shaft and incomplete lunate (fore foot).

Artiodactyl, gen. et. sp. indet. Numerous long bone splinters and fragments, distal end of metapodial, sesamoid, skull fragment, molar root.

Spermophilus cf. S. lateralus, golden mantled ground squirrel. Right mandible with dentition.

Eutamias quadrivittatus, Colorado chipmunk. Left and right mandibles.

Ammospermophilus leucurus, white-tailed antelope squirrel. Left mandible and right tibia.

Rodent, gen. et. sp. indet. (?ground squirrel) calcaneum.

5GN1664 (Features 3, 4, 5, 8, 10, 11, 12, 14, 17, 22, 29, 31)

There were 20 undetermined bone fragments from these proveniences and 19 that were determined to the family level or better.

Antilocapra americana, pronghorned antelope. Distal epiphysis of right femur, proximal 1/2 of shaft of right tibia, proximal epiphysis of right tibia (all immature individual); small tooth fragments.

Bos taurus, domestic cattle. Partial right ischium of innominate sawed through the acetabular branch at a right angle into the obturator foramen with a metal saw, fragment of molar.

Artiodactyl, gen. et. sp. indet. Unfused vertebral disc, undetermined splinters of limb bone shafts.


* It is entirely possible that some or all rodent remains may be fortuitous, due to the burrowing habits of these animals.
APPENDIX B. ARTIFACTS FROM LABORERS’ AND FIELD BOSSES’ HABITATIONS

Laborers’ Habitations

Feature 3
29 nails (22 cut, 7 wire)*
  2 wire handles (to lard buckets?)
  1 pan handle
  2 baling wire
  4 food cans
  2 black powder can lead plugs
  1 .44 (?) cartridge
  2 shoes
  2 buttons
  1 buckle
  2 bone fragments (right femur and right tibia from an immature Antilocapra americana)

Feature 5
  1 window glass
  1 stoneware body sherd
  4 tobacco tags
  1 evaporated milk can (recent)
  1 purple bottle (body sherd)
  1 shoe
  6 buttons
  1 piece of cloth
  13 unidentified fragments (metal and foil)

Feature 6
  2 nails (1 cut, 1 wire)
  1 axe wedge
  3 baling wire and ties
  3 tobacco tags
  2 bottles (1 amber [beer] and 1 purple [medicine])
  1 .22 short cartridge
  2 shoes
  11 buttons
  1 suspender strap tip
  8 unidentified fragments (leather, rubber, wire, metal)
  2 unidentified complete objects (metal)

* These numbers reflect calculations for minimum numbers of individual nails, bottles, cans, buttons, and shoes.
Feature 8
3 nails (2 cut, 1 wire)
1 tobacco tag
1 unidentified fragment (metal)
1 unidentified complete object (metal)
1 bone scrap

Feature 12
1 tent stake
65 nails (40 cut, 25 wire)
1 copper rivet
1 telegraph line insulator (patented 1883, 1884)
1 lamp chimney
5 baling wire
2 horseshoe nails
20 tobacco tags
1 spindle file (not collected)
2 stoneware jugs
3 food cans
2 bottles (1 amber [body sherds] and 1 purple)
3 shoes
11 buttons
1 tie ends
2 suspender strap tips
10 unidentified fragments (leather, metal, wood, plastic)
4 unidentified complete objects (metal, leather, stone)
3 bone scrap

Feature 13
12 nails (7 cut, 5 wire)
1 wood screw
5 tobacco tags
2 bottles (1 amber [body sherd] and 1 purple [flavoring extract])
1 wax bottle stopper
1 food can
1 shoe
6 buttons
1 unidentified fragments (leather and wood)
1 wooden ball (function unknown)

Feature 14
15 nails (9 cut, 6 wire)
2 wood screws
9 tacks
1 upholstery tack
1 horseshoe nail
5 baling wire and ties
1 spoon
1 purple medicine bottle
1 food can
1 black powder can lid
Feature 14, continued
2 cartridges (.40-65 and .22 short)
1 lid to primer tin
2 shoes
46 buttons
3 suspender grips (1 patented 1884)
3 grip guides
1 clothing fastener
32 unidentified fragments (leather, rubber, and metal)
1 pecked stone
2 bone fragments (limb bone frags from a large mammal)

Feature 17
1 cut nail
2 sawed bone fragments (of vertebral disc from immature cervid)

Feature 18
no artifacts found associated

Feature 19
not examined in the field

Feature 22
2 electric wire
8 cut nails
1 file
4 food cans (1 possibly used for roofing)
1 baling wire
1 tobacco tag
1 aqua glass inkwell
1 railroad spike
3 buttons
1 D-ring
14 pieces of cloth (plain weave)
27 unidentified fragments (leather, metal, wood, cloth)
2 bone scrap

Field Bosses' Habitations

Feature 1
2 tent stakes
1 cut nail
2 rivet and burr
1 can lid
2 tacks
2 upholstery tacks
1 lamp chimney
1 aqua linament bottle

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Feature 1, continued

8 baling wire
1 decorative button (from horse tack??)
10 tobacco tags
2 dimes (1869 and 1884)
1 pocket knife
1 carpetbag handle
1 decorative box hinge
1 fork
4 other bottles (1 green [flask], 1 amber, and 2 purple)
3 .32 short cartridges
3 shoes
10 buttons
18 unidentified fragments (leather and metal)
1 Ovis sp./Capra hirca left calcaneus fragment
   (immature)

Feature 2

2 tent stakes
21 cut nails
3 tacks
6 horseshoe nails
3 baling wire
8 tobacco tags
1 eraser (patented 1886)
1 button hook
6 food cans
1 jar lid (recent)
5 bottles (1 aqua [patent medicine], 2 amber, and 2 purple
   [including 1 patent medicine])
10 shoes
30 buttons
1 suspender strap end
1 grip guide
1 piece of cloth
1 sleeve or collar button (patented 1884)
5 pants rivets (Levi-Strauss)
66 unidentified fragments (leather, rubber, metal, wood, glass)
1 unidentified complete object (metal)
9 bone fragments (3 long bone frags from dog-to-sheep-sized mam-
mals, 1 long bone frag from deer-sized mammal, 1 tibia shaft
frag and 1 diaphysis frag to right femur from an artiodactyl,
1 right femur frag from Ovis canadensis/Odocoileus hemionus,
1 right scapula frag from Ovis aries/Capra hirca, and 1 prox-
imal right femur from immature Odocoileus hemionus

Feature 4

1 electric wire
4 nails (2 cut, 2 wire)
1 washer
1 snowball hammer
4 horseshoe nails
Feature 4, continued
10 baling wire and ties
 1 tobacco tag
 1 tobacco pipe
 1 watch chain
 1 dime (1887)
 2 food cans
 5 bottles (1 green [beer or soda water], 2 amber [1 probably dry gin], and 2 purple [possibly bourbon or fancy spirits])
 1 lead bullet
 1 shoe
 15 buttons
 2 buckles
 1 grip guide
 8 pieces of cloth (twill weave, wool blend)
 1 suspender strap tip
 2 pants rivets
 4 unidentified fragments (leather and metal)
 1 unidentified complete object (metal)
 1 burned bone scrap

Feature 10
55 nails (42 cut, 13 wire)
 1 tack
 1 9 in. length of lightweight chain
 2 horseshoe nails
 7 baling wire
 2 horse tack
 6 decorative buttons (from tack??)
 9 tobacco tags
 1 pencil lead
 2 watchkey and chain
 2 decorative box hardware
 4 food cans (2 pieces recycled into nail shields)
 2 blasting caps
 1 black powder can lid
 2 bottles (1 amber and 1 purple [body sherd])
 1 shoe
 30 buttons
 1 buckle
 1 grip guide
 1 suspender strap tip
 1 snap
 2 eyelets
 5 tie ends
 8 unidentified fragments (leather, metal, and plastic)
 4 unidentified complete objects (metal)
 1 bone scrap