NPS Form 10-900-b
(Jan. 1987)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

RECEIVED
OCT 20 1988
NATIONAL REGISTER

National Register of Historic Places Multiple Property Documentation Form

This form is for use in documenting multiple property groups relating to one or several historic contexts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. For additional space use continuation sheets (Form 10-900-a). Type all entries.

A. Name of Multiple Property Listing

Mines of Spain Archaeological Property Group

B. Associated Historic Contexts

Prehistoric contexts:

Eastern Archaic Tradition in the Mines of Spain (9000 B.C.-450 B.C.)

Mississippi Basin Woodland in the Mines of Spain (450 B.C.-A.D. 1250)

(see continuation sheet)

C. Geographical Data

Mines of Spain State Recreation Area, Dubuque County, Iowa

[X] See continuation sheet

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards for Planning and Evaluation.

James E. Jacobsen SHPO — 10-10-88

Signature of certifying official — Date

Chief, Bureau of Historic Preservation

State or Federal agency and bureau

I hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

John Knoerl — 11/21/88

Signature of the Keeper of the National Register — Date

B. ASSOCIATED HISTORIC CONTEXTS

Historic Contexts:

Indian Contact, Conflict, Dispossession Along the Upper Mississippi and Lower Missouri River Valleys (1720-1860)

Mining and Bulk Products: Lead Mining in the Mines of Spain (1830-1914)

Special Purpose Settlements: Lead Mining Communities in the Mines of Spain (1830-1860s)

The Changing Iowa Farm: The Agricultural Rural Community in the Mines of Spain (1836-1925)

General Manufacturing: Lumber Milling (1860-1890s)

Boosterism in Iowa: A Celebration of Community Roots (ca. 1870-1940)

C. GEOGRAPHIC DATA

The 1273 acre Mines of Spain State Recreation Area lies less than one-quarter of a mile south of the City limits of Dubuque: roughly south of the Illincis Central Railroad line, east of U.S. Highway 52, north of an unnamed creek which empties into the Mississippi River at Massey Station, and west of the Mississippi River. Containing an irregular west boundary, the land management unit varies between 0.125 to 1.125 miles in width and is 3.375 miles in length. It is located in portions of sections 4, 5, 6, 8, 9, and 10, T88N, R13E (Mosalem Township) and a small portion of the southeast corner of secton 1, T88N, R2E (Table Mount Township).

The Mines of Spain Recreation Area is located within the Paleozoic physiographic region (Prior 1976). The Paleolzoic Plateau is found in the northeastern most corner of Iowa and in adjacent regions of Illinois, Wisconsin, and Minnesota. This area is generally described as the Quad-State Region of the Upper Mississippi River Valley which also falls within the driftless region (Pruszko 1983).

The land surrounding the Paleozoic Plateau has been shaped primarily by Pleistocene age glacial deposits which have been subsequently eroded into the gently rolling landscape so characterisitc of the Midwest. The Paleozoic Plateau is anomalous in that it has been only minimally influenced by glaciation. Its terrain is dominated by deeply dissected bedrock of Silurian, Ordovician, and Cambrian age.

The uplands consist of both pre-Wisconsin and Wisconsin age landforms. The pre-Wisconsin landscape generally occurs above 700 feet in elevation and consists of gentle to moderately sloping, concave risers stepping up and away from valley floors. These risers are remnants of pre-Wisconsin plains, slopes, and valleys. Remnants of the Lancaster Plain occur above 800 feet with a prominent upper level at 870 feet and a lower level at 820 feet. Two major pre-Wisconsin benches occur below the Lancaster Plain at 750 and 700 feet in elevation.

As the Wisconsin stage set in about 75,000 years ago with a cooler, moister climatic regime, the broadly meandering channels of pre-Wisconsin age underwent entrenchment. As a result, the Wisconsin landscape is comprised primarily of steep slopes and bluffs and various bench and terrace remnants. Talus slopes formed in many places and exposure of the underlying carbonate rock to periglacial phenomenon caused large blocks to detach, thus forming overhangs and creating rockshelters. Some rockshelters were formed by stream undercutting. Bench-terrace remnants which are the record of a complex history of downcutting and stream capture in the region occur at 650, 640,

630, 620, 610, and 605 feet above sea level.

The Holocene landscape consists primarily of alluvial and fluvial landforms in the bottomlands. In some cases, they cover the Wisconsin landforms which are as much as 630 feet in elevation. The most extensive Holocene feature on the landscape is the loess-derived soil. This occurs on Holocene, Wisconsin, and pre-Wisconsin landforms in deposits up to 50 cm. to 70 cm. thick. It is the Holocene deposits which contain most of the cultural remains in the Mines of Spain Area.

During late Pleistocene/early Holocene times (ca. 12,000 to 10,000 B.P.), the native vegetation was dominated by spruce forests. Pine-birch forests emerged about 10,300 years ago as the climate warmed, to be replaced by essentially modern native vegetation communities about 9,500 years ago (Abbott 1983). In the uplands are found mesic deciduous forest dominated by oak, hickory and other species. Dry mesic and dry deciduous forests are found on valley slopes where soils are thin and runoff rapid. Oak and hickory are predominate here also, but cedar glades may be found. Wet mesic forests are found in the bottomlands where soils are deep and runoff is received from the slopes above. Maple and other species flourish in the lowlands. The variation in forest types is controlled primarily by soil depth and type, drainage characteristics, and slope steepness.

Concomitant with the diversity in forest type is a diversity of small flora and fauna (Prior 1984). The same factors which control the forest types also serve to create many micro-ecological areas, including isolated and very limited patches of prairie which support grasses and flowering plants that are rare and in some cases endangered in this part of Iowa. The forests suport healthy populations of white-tailed deer, and woodlands in the floodplains provide important nesting habitats for migratory raptors. In human terms, the end results is a region with a wide variety of available resources.

The Mississippi River, which borders the eastern edge of the Mines of Spain Area, constitutes a significant geographical feature of the area. It is this river which created the alluvial flats and terraces in the bottomlands. It also is a source of permanent water and supplies a significant diversity and quantity of biotic resources. In addition, it represents a major conduit of transportation, communication, and trade in both prehistoric and historic times.

While the geologic formations of the Mines of Spain Area are found throughout the Midwest, their exposure on the Paleozoic Plateau is significant in that geologic resources were made accessible for exploitation. Regional warping of the Paleozoic age created a pattern of fractures and joints in the carbonate rock which allowed for the hydrothermal emplacement of lead-zinc ore,

including the mineral galena. It is the galena which was mined prehistorically and historically, an activity which gave the Mines of Spain its name and early fame. Chert deposits in the carbonate rock were available for prehistoric utilization, as was clay in the alluvial deposits of the bottomlands.

Thus, the Mines of Spain Area represents a uniqe, highly diverse geographic region in the Upper Midwest. A highly varied set of geologic and biotic resources were available for exploitation both historically and prehistorically.

E. STATEMENT OF HISTORIC CONTEXTS

Contents of the Statement of Historic Contexts

Introduction

The Mines of Spain Archaeological Property Group represents those identified significant prehistoric, historic archaeological, and historic properties encompassed by the boundaries of the Mines of Spain State Recreation Area. The 1273 acre state recreation area stretches southeast from the Illinois Central railroad line south of the City of Dubuque, Iowa along the Mississippi River almost to Massey. It is a part of the 290 square mile Spanish land grant claimed by Julien Dubuque. Partially supported by a grant from the Department of the Interior, the Iowa Department of Natural Resources purchased the Mines of Spain from the City of Dubuque in 1980 and gained the adjacent E. B. Lyons Nature Center in 1983.

The 218 properties within the Mines of Spain include such prehistoric archaeological sites as camps, villages, rock shelters, and mound groups, primarily dating to the Archaic and Woodland cultural periods; historical archaeological sites such as a Mesquakie village and the trading post of Julien Dubuque; and historic sites including lead mine shafts, adits, pits,

and smelters, lead mining communities, and a rural community containing farmsteads and a lumber mill. The property group also contains a commemorative property, the Julien Dubuque Monument.

This diverse group of sites relates to two prehistoric and six historic contexts and three prehistoric and five historic property types. They are organized spatially by a land management unit, the Mines of Spain State Recreation Area. This multiple property nomination is thus devised to protect a high concentration of documented and potential archaeological sites within an arbitrary land management unit, organize disparate data to facilitate the formulation and investigation of research problems, and assist the overall planning process of the Department of Natural Resources in the physical development of the recreation area and interpretation of cultural and natural manifestations within its boundaries. While the Mines of Spain Area possesses a high number and variety of sites, their cultural affiliation and precise function often remain unclear. Thus, the refocusing of research goals through the nomination procedure is intended to point future studies toward the investigation of internal site composition, their functional interpretation, and site interrelationships within and between specific regional prehistoric cultural traditions and phases of cultural historical development.

Current Land Use

The Mines of Spain Area is currently dedicated as a State Recreation Area under ownership of the Department of Natural Resources of the State of Iowa. However, the federal government holds fee title to a narrow 3.2 acre tract south of Catfish Creek and east of the railroad (tract no. AA33b). As such, these lands do not and will not receive heavy development. Current standing structures and objects within the area include the recently acquired E.B. Lyons Nature Center and Preserve, the Julien Dubuque Monument (13DB116), and several deteriorating outbuildings (13DB73 and 13DB195).

Located on the northwest edge of the Mines of Spain Area, the 37 acre E.B. Lyons Nature Center contains several modern buildings now housing the Department of Natural Resources office and interpretive center for the Mines of Spain Area, a nineteenth century chapel, and numerous historical and prehistorical archaeological remains. The property was purchased in 1972 by the City of Dubuque through the Lyons Trust Fund for development as a nature preserve and sold to the state in 1983. While now a part of the Mines of Spain Area, this tract is not currently included within the proposed multiple property nomination since archaeological surveys conducted in 1987 remain incomplete. Two other private inholdings have been proposed for state acquisition. It is the intent of this multiple property nomination to amend

the multiple property listing as additional lands are added to the State Recreation Area and additional inventories are completed.

Standing on the northeast corner of the Mines of Spain Area, the Julien Dubuque Monument lies within the proposed nomination boundaries. The state has also recently acquired this property from the City of Dubuque. The public gains access to the monument through a black-topped road. Signs interpret the monument to visitors.

The Department of Natural Resources is committed to the protection, enhancement, and interpretation of the Mines of Spain Area's natural and cultural resources. It intends to accommodate pedestrian, "passive, non-intensive recreation" which is "...compatible with the sensitive resources of the site..." such as picnicking, open play areas, nature study, hiking, and bow hunting. In the future, it intends to restore previously disturbed natural areas such as agricultural fields, a former stone quarry, and off-road vehicle-damaged areas (Department of Natural Resources n.d.).

Modern land use prior to and continuing for varying periods after the creation of the State Recreation Area in the 1980s includes agriculture, a limestone quarry at Horseshoe Bluff, several sand quarries, and logging. In the first half of the twentieth century, sparsely utilized woodlands and farms covered much of the Mines of Spain Area. Major logging activity ceased in the 1880s. Considerably less intensive utilization focused upon walnuts during the 1950s only. While the farmsteads have not operated in the recent past, the Deparment of Natural Resources has rented 236 acres of fields planted in corn, oats, and hay since 1982. It specifies a no-till policy for planting and contour farming sensitive to the effects of erosion and eventually intends to phase-out these fields. The relatively recent wash-out dam and pond, 13DB231, is a modern intrusion occurring before the Department of Natural Resources land ownership. In operation from the 1940s to the recent past, the gravel and sand quarrying (13DB279 and 13DB280) operations at Horseshoe Bluff hollowed the interior of the bluff leaving an exterior shell which obscures the quarry operation on the interior from some directions. The Department of Natural Resources is currently attempting to minimize the effects of these disturbances through the installation of wetlands immediately adjacent to one quarry (Department of Natural Resources n.d.). Additional intrusions include electric transmission lines and one bulk petroleum pipeline as well as modification of the Mississippi River shoreline initially by railroad grading which began in the 1870s and was continued by the Army Corps of Engineers. Little if any natural shoreline remains (Aley and Aley 1985; Hartman 1987). There is no COE management or fee area along the Mines of Spain Area shoreline.

Past land use has aversely affected some archaeological sites. Quarrying from

the 1940s to 1982 destroyed site 13DB15, the Horseshoe Bluff Mound site. The site once contained about 15 mounds (Till 1977; Straffin 1973; Prior 1980; Aley and Aley 1983). Located in cultivated fields, sites 13DB3, 13DB9, 13DB10, 13DB17, 13DB18, 13DB44, 13DB60, 13DB63, 13DB61, 13DB62, 13DB78, 13DB80, 13DB85, 13DB89, 13DB94, 13DB96, 13DB163, and 13DB164 have suffered some erosion and vandalism in the past (Abbott 1983). Since 1982, these fields have been seeded to deter erosion (Abbott 1982b). On the other hand, such cultivation led to initial site recognition (Straffin 1983). Looting of the three larger of five conical mounds also impacted site 13DB47 near the confluence of the Mississippi and Catfish Creek (Till 1977: 342). Other mounds such as 13DB46 were excavated by Richard Herrmann in the late nineteenth or early twentieth century (Till 1977: 342). Finally, the construction of a gravel road about 1966 to the area of the Julien Dubuque Monument destroyed several conical mounds associated with site 13DB43. A portion of one mound remains (Till 1977: 339). While such site destruction is clearly unfortunate, given the high number of sites in the Mines of Spain Area, overall site disturbance is relatively minimal.

Thus, sites within the Mines of Spain State Recreation Area now receive protection as lands under the management of the Department of Natural Resources. Lands adjacent to the park may experience considerable industrial and residential development as the City of Dubuque expands to the south (Prior 1980; Aley and Aley 1985). Thus, the Department of Natural Resources preserves a large number of historic and prehistoric archaeological sites within its 1273 acre tract in the Dubuque area which is notably rich in cultural resources. By 1986, the National Register recognized 154 contributing architectural and historical resources consisting mainly of standing structures in two historic districts in the City of Dubuque. However, no properties with archaeological associations which speak to the themes considered within this proposed nomination have been listed in Dubuque County.

Prehistoric Contexts

Introduction

The prehistoric cultural sequence of the Mines of Spain follows the general pattern for the Midwestern United States (cf. Griffin 1978; Overstreet 1985; Boshardt and Overstreet 1981). However, the Mississippi River and the Paleozoic Plateau represent significant geographic features of the region which are likely to influence the sequence in ways unique to the area. Much of the following discussions derive from archaeological work conducted along the river, both as pure research and as cultural management programs implemented as a result of hydrologic and land transportation projects. While not all of the cultural stages are presently identified in the Mines of Spain Area, it is important to understand the entire sequence to place the stages which are present in their proper prehistoric context. Furthermore, future research may result in the identification of previously unrecognized stages.

Stanley and Stanley (1986) have recently conducted an overview study of the entire prehistoric sequence in Allamakee County, Iowa (see also Stanley 1988). Table 1 outlines that sequence. The area of the Stanley's study is a part of the Paleozoic Plateau which lies some 50 to 70 miles north of the Mines of Spain. The sequence in Allamakee County parallels the sequence in the Mines of Spain Area.

The Stanleys used the concept of "mode of production" as an analytic and organizational tool in describing the cultural stages and culture change in the region (Stanley and Stanley 1986: 15-17). This concept states that humans are integrally linked both to the natural world from which they must obtain resources and to other members of the social group of which they are a part. The utilization of resources in the environment is accomplished by social labor, that is the labor of the group. The level of social organization required to utilize resources is determined by the kind of resources being extracted and the method of extraction employed. In the Upper Mississippi River Valley, two modes of production are represented. The generalized hunting and gathering lifeway is accomplished with social organization at the level of small, mobile family bands. These bands coalesce and disperse readily and leave behind small, generalized and ephemeral sites. The second mode, generalized hunting and gathering supplemented by intensive horticulture, focuses on producing resources from the land. This requires larger groups than just the nuclear family but still calls for coalesence and dispersal of groups. The resulting sites will be more highly specialized in function and more restricted in their location relative to specific resources or resource areas.

CULTURE PERIOD	APPROXIMATE PERIOD OF TEMPORAL EXTENT
Paleo-Indian	12,000(?)-9,000 B.P. 10,050(?)-7,050 B.C.
Early Archaic	9,000-6,500 B.P. 7,050-4,050 B.C.
Middle Archaic	6,500-4,000 B.P. 4,050-2,050 B.C.
Late Archaic	4,000-2,400 B.P. 2,050-450 B.C.
Early Woodland	2,400-1,850 B.P. (Prairie Phase and 450 B.C. - A.D. 100 Ryan Complex)
Middle Woodland	2,100-1,600 B.P. (McGregor Phase) 150 B.C. - A.D. 350
Late Woodland	1,650-700 B.P. A.D. 300 - A.D. 1,250
Early Late Woodland	1,650-1,300 B.P. A.D. 300 - A.D. 650
Late Late Woodland	1,300-700 B.P. (Keyes Phase) A.D. 650 - A.D. 1,250
Oneota/Ioway	1,000 B.P. - contact (Orr Phase) A.D. 950 - contact

Table 1: Approximate dates for the prehistoric and protohistoric cultural periods in northeast Iowa.

The Mines of Spain Area contains a high density and diversity of prehistoric archaeological sites which include both large and small open-air sites, rockshelters, and mounds. They are sites which have been produced by both modes of production described above and have been identified primarily with the Late Archaic and Late Woodland culture periods respectively. While there are a number of unaffiliated sites, it is possible that with further investigation many of them could be assigned to a cultural period.

Paleo-Indian Culture Stage in Northeast Iowa

No clear evidence yet points to the presence of sites affiliated with the Paleo-Indian (10,050[?]-7,050 B.C.) period in the Mines of Spain Area. In northeast Iowa, the Paleo-Indian culture period is evidenced only by isolated finds of fluted Clovis and Folsom projectile points (Stanley and Stanley 1986: 19-20). It is possible that some of the unaffiliated upland sites in the Mines of Spain are Paleo-Indian sites. Recent geomorphological investigations in the Turkey River drainage, a major northeastern Iowa river valley, indicate that sites older than 5000 B.P., Paleo-Indian and Early to Middle Archaic, may be at or near the surface on terraces or deeply buried to a depth of about 3 to 15 meters under alluvial fans and aprons in valleys (Hudak 1988).

The Eastern Archaic Tradition in the Mines of Spain (ca. 7,050 B.C.-450 B.C.)

The emergence of the Archaic cultural stage generally coincides with a shift from coniferous to deciduous forests following the last glacial recession and a warming of the climate. As the large game of the late ice-age perished, hunting shifted to smaller game. Settlement patterns were still those of very mobile, small bands, but greater social integration of the bands probably existed. The Archaic divides into early, middle, and late periods. Because they are difficult to differentiate through reconaissance survey information, Archaic sites frequently could not be assigned to a period.

Early Archaic (7,050 B.C.-4,050 B.C.). Diagnostic artifacts include bone tools and projectile points that may be lanceolate, slightly lanceolate or side- and corner-notched. Ground stone tools such as axes and celts suggest woodworking, and manos and metates which are generally used for grinding seeds are present. There was a reliance on bison in the western prairies and white-tailed deer in the eastern woodlands as major food resources. The settlement pattern appeared to be one of small, extended family bands which coalesced and dispersed on a cyclical basis as they exploited seasonal resources.

Middle Archaic (4,050 B.C.-2,050 B.C.). It appears that the Middle Archaic

stage differs little from the Early Archaic in northeastern Iowa. Research in the Illinois River Valley suggests that the difference lies in subsistence-settlement patterns. The Middle Archaic saw a reduction in mobility and a greater dependence on seasonal exploitation of those resources which were most abundant. Increased exploitation of aquatic resources also seems to have occurred in this period.

Late Archaic (2,050 B.C.-450 B.C.). The Late Archaic is a period of rising regionalism and increasing sedentary occupation. Long distance trade is inferred from the presence in northeast Iowa of copper from the Lake Superior region. The wide variety of projectile points includes lanceolate, stemmed, and both corner- and side-notched types. Red ochre, ground hematite used as a pigment, and human interments in cemeteries and mounds appear for the first time. Only the Late Archaic has been differentiated from the generalized Archaic period within the Mines of Spain Area.

With the development of more complex mortuary rituals, increased sedentism, and population expansion, there occurred a rise in the exchange of raw materials and finished goods in both regionally contiguous and distant locations. Galena from the Upper Mississippi Valley was exploited in its surrounding region and to a limited extent in communities of the western Great Lakes and as far east as Ontario and as far south as the lower Mississippi River. During this period, it is often found in association with burials (Walthall 1981: 11, 37, 43). However, although the Mines of Spain Area may have well served as a source area in this extensive exchange system, there is currently no evidence for this involvement.

From the Late Archaic onwards, there is an increasing presence of prehistoric sites. Specifically referring to the Paleozoic Plateau, Mallam (1984: 18) states that sites "literally blanket the terraces of river valleys, streams and uplands." Archaic sites tend to be ephemeral in nature and may have disappeared with little trace or be lacking in diagnostic artifacts. This suggests that unaffiliated sites, especially upland lithic scatters, at the Mines of Spain may, in fact, be affiliated with the Archaic. In addition, there may be Archaic sites buried in bottomlands.

Mississippi Basin Woodland in the Mines of Spain (450 B.C.-A.D. 1,250)

The Woodland stage of cultural development also divides into early, middle, and late periods with the late period again subdividing into early and late phases. The hallmarks of the Woodland period include pottery, burial mounds, and cultivated plants (Alex 1980: 122).

The Woodland stage developed locally from the Archaic stage. It seems

probable that increasing population leading to greater pressure on resources also resulted in a shifting mode of production with a more complex social organization. Woodland settlement patterns were still fairly mobile, but the presence of mounds suggests that there was a ritualistic integration of mobile groups. And, ceramics and cultigens indicate at least semi-permanent settlements. The Middle Woodland period saw the influence of the Hopewell interaction sphere.

Early Woodland (450 B.C.-A.D. 100). Little is known about this period in northeast Iowa perhaps because the transition from the Late Archaic to the Middle Woodland was so rapid that little archaeological evidence remains. There are no clearly identified Early Woodland sites in the Mines of Spain Area.

The Early Woodland is called the Ryan complex in northeast Iowa and is recognized by an incised-over-cordmarked pottery known as Spring Hollow Incised. This pottery resembles Black Sand Incised from Illinois and a thick-walled, flat-bottomed, cordmarked pottery from Illinois and Minnesota known as Marion Thick. These pottery types are heavy, grit-tempered types which Stanley and Stanley (1986: 23) suggest would be difficult to transport. They infer a relatively sedentary lifeway associated with these ceramics.

Turkey-tailed and stemmed projectile points, the use of red ochre, and mound construction are also associated with the Early Woodland. The Ryan mound group in Allamakee County and mound 43 of the Sny Magill Complex and mound 38 of the Turkey River mound group in Clayton County are at least in part associated with the Early Woodland. Mounds and mound groups in the Mines of Spain Area have been associated only with the generalized Woodland stage and have not yet been assigned to periods within the stage.

Middle Woodland (150 B.C.-A.D. 350). The Middle Woodland in northeast Iowa emerged as the Hopewell interaction sphere and spread its influence throughout the region. The Hopewell interaction sphere was a network of social, economic, and political relationships to varying degrees spanning wide distances and affecting discrete regional cultures (Stanley and Stanley 1986: 25; Stoltman 1979). The primary features of its presence are a mortuary cult that includes large burial mounds, elaborate burials of certain individuals, and the long-distance trade of exotic materials such as marine shell, copper, mica, obsidian, and shark and grizzley bear teeth as well as the spread of common stylistic design elements. Northeast Iowa stood on the northern periphery of the Hopewell area of influence. Settlements were relatively large and semi-permanent and occurred in major river valleys where intensive exploitation of resources took place. It is possible that horticulture was also practiced.

In northeast Iowa, the Middle Woodland is known as the McGregor phase. Manker and Synder corner-notched projectile points are found, and the ceramics are grit-tempered with bosses, dentates, punctates, and cord-wrapped stick impressions (Stoltman 1979). Burial mounds occur in three forms (Logan 1976: 146): 1) mounds with central, rectangular subfloor pits; 2) mounds containing alignments of rocks over or around burials with no central pits; and 3) mounds with cremations or burials encased in mucky clay with pits and enclosures absent.

During the Middle Woodland, the quantity of Galena traded by prehistoric populations rose tremendously. In addition to this rise, new methods of extraction appeared. The presence of large nodules at Middle Woodland sites indicates mining as well as surface collecting. And, rather than occurring in ceremonial sites, Galena occurred most frequently at mound sites. Exchange occurred primarily in sites associated with the Ohio Hopewell, the Scioto and the Tennessee Valley (Walthall 1981: 12-13, 41-42).

The degree of influence exerted by the Hopewell remains unclear. Key elements such as Hopewellian style ceramics, mounds, and status burials are absent, suggesting that the influence may not have been great. There are no clearly identified Middle Woodland sites in the Mines of Spain Area.

Late Woodland (A.D. 300-A.D. 1,250). The Late Woodland period divides into early and late phases. The Early Late Woodland is marked by the demise of the influence of the Hopewell interaction sphere on the local culture. Its late phase represents a flourescence of the local culture (Benn 1980). Manifestations of the Late Woodland period have been identified at numerous locations in the Mines of Spain Area including camps, villages, single mounds, mound groups, other burial forms, and rockshelters (Abbott 1983).

The Early Late Woodland is known as the Allamakee Phase in northeast Iowa. Its emergence from the McGregor Phase is marked by the appearance of Linn Ware ceramics. They are a harder, thinner walled vessel. Settlements appear to have become less sedentary once more, and Stanley and Stanley (1986: 26) suggest that Linn ware was more suitable for use by mobile bands. Ceramic types include Levesen Dentate Stamped, Cord-wrapped-stick Stamped, Spring Hollow Plain, Spring Hollow Cord-marked, and Lane Farm Cord Impressed.

The construction of mounds continued during the Allamakee phase. Again, there are three types of mounds (Logan 1976: 157): 1) mounds with subfloor pits or floors with humus removed which contain extended or bundle burials, pots with burials or rock alignments with burials; 2) mounds with subfloor burial pits, evidence of fire, bundle burials, rock alignments, and Linn ware pottery; and 3) mounds with crematory units.

Mallam (1984: 18) suggests that since the complex social organization of the Hopewell was unsuited to the basically egalitarian social framework of people in northeast Iowa, Hopewellian ideology was discarded. The Allamakee phase seems to be a time of more dispersed settlement into the interior.

The Late Late Woodland (A.D. 600-A.D. 1,250) is known as the Keyes phase in northeast Iowa (Mallam 1976). It is best characterized by effigy mounds as well as linear, conical, and compound mounds found throughout the Paleozoic Plateau. Small triangular notched and unnotched projectile points are found, and grit tempered Madison ware ceramics emerge. Madison Fabric Impressed constitutes over 80% of the Madison ware pottery found, but Madison Plain and Madison Punctated and Collared types are also known. Although Late Late Woodland populations exploited a variety of resources, corn became an increasingly significant element of subsistence. Concomitantly, populations became more sedentary to meet the restrictions which horticulture placed upon mobility.

Settlements are described as small bands which seasonally coalesced and dispersed in a manner which appears to parallel earlier prehistoric periods. However, in the Late Late Woodland, this population concentration focused on areas with high potential for cultivation, probably in alluvial floodplains. Despite the mobile settlement pattern, the mounds indicate a common socially integrative ideology. Mounds may have symbolized the territorial integrity of particular social units (Stanley and Stanley 1986: 29).

Oneota (A.D. 950-contact)

The Late Late Woodland is followed by and overlaps with the Oneota, a Mississippian culture stage. The Oneota period, known as the Orr phase in northeast Iowa, represents a significant departure from previous patterns of settlement and subsistence (Henning 1970). It has been suggested that the Oneota represent an intrusive or diffusive element from the south, but Stanley and Stanley (1986: 31) cite linguistic evidence indicating an indigeneous development out of Late Woodland cultures (cf. Henning 1970).

Oneota subsistence emphasized horticulture, but also included hunting and gathering. Horticulture was not as important in Oneota economy as it was in the cultures of the middle and lower Mississippi (Riley 1987; Smith 1978). The material remains are diverse and include bison and scapula hoes, triangular projectile points, and manos and metates. Shell-tempered ceramics appear for the first time and may represent a technological breakthrough for boiling corn in large vessels. Large horticultural villages are most common for Oneota settlements, but small hunting camps also exist. It is generally felt that the Oneota emerge in protohistoric and historic times as the Ioway,

Oto, and Missouri groups (Wedel 1959).

Historic Contexts

Amerindian Contact, Conflict, Dispossession Along the Upper Mississippi and Lower Missouri River Valleys (1720-1860)

Cultural Historical Development of the Mesquakie

The context dealing with Amerindian-Euro-American contact specifically examines the cultural-historical interrelationship between the Mesquakie and the Dubuque lead and fur trading establishment in the Mines of Spain Area. Because of the potential significance of the data contained within the relevant properties, the manifestations are viewed from a regional perspective including the upper Mississippi and the lower Missouri river valleys.

An historical group identified as the Mesquakie occupied the lower peninsula of Michigan and possibly Ohio prior to 1640. During their drive to dominate fur bearing territories, the Iroquois and Huron displaced Central Algonkian groups including the Mesquakie, Sauk, Kickapoo, Mascouten, Potawatomi, and Miami to Wisconsin and northern Illinois. The Mesquakie located in the Green Bay region by 1667. The Miami settled on the Mississippi south of the Wisconsin in this period. The Illini occupied the Illinois and Des Moines river valleys. Located on the upper Iowa River prior to early 1700s and on the Des Moines and Iowa rivers again after 1760, the Ioway and the Dakota to the north both increasingly resisted the entrance of these newcomers (Callender 1978: 636; Schermer and Kurtz 1986: 53; Overstreet 1984: 81; Stanley and Stanley 1986: 32-33; Kay 1977: 88). With the conclusion of the Iroquois Wars by the French in 1701 and the opening of a fur post at Detroit in 1702, the Miami and the Illini with other Central Algonkian tribes moved east away from the Mississippi. The Dakota again utilized the Mississippi region below the Wisconsin as their hunting territory by 1700 (Schermer and Kurtz 1986: 53). Thus, the upper Mississippi River Valley and the Great Lakes region generally experienced a series of intertribal wars in part stimulated by French. This intervention resulted in continually shifting alliances and tribal movements.

For the most part, Europeans entered Wisconsin after this general movement to the area across the Great Lakes. Reaching at least the Fox-Wisconsin portage and reporting the presence of lead mines to the west by 1634, Jean Nicolet preceded the Mesquakie. Pierre Radisson followed the Fox and Wisconsin, later a well-established route through Wisconsin, and traveled south along the Mississippi. He noted the presence of lead mines in the Dubuque region in ca. 1662 (Swisher 1945: 306; Schermer and Kurtz 1986: 52). Others such as Marquette and Joliet in 1773, Hennepin in 1687, Nicholas Perrot by 1682, and Pierre Le Sueur in 1700 acquainted European nations with the upper Mississippi

region, its lead mines, fur bearing animals, and other natural resources (Straffin 1973; Auge, Gibson, and Klein 1986: 3, 7). Perrot and, for a briefer period, Le Sueur, traded and extracted lead from mines in the Dubuque region by the 1690s. Le Sueur was associated with the D'Iberville exploration for mineral and other resources of Upper Louisiana. Anthony Crozat gained a monopoly for mining privileges in Louisiana which included the entire Mississippi Valley in 1712. His successor, Phillipe Renualt, did mine a small amount of lead along the Meramec Valley and adjacent areas in Missouri intermittently from 1720 to 1741 (Auge, Gibson, and Klein 1986: 6; Straffin 1973; Schermer and Kurtz 1986: 54; Jillson 1924: 45).

Although Europeans were aware of and utilized the lead mines of Missouri and the upper Mississippi Valley including the Mines of Spain prior to 1788, the cost of exploitation proved too great to establish a significant operation. Consequently, Amerindian use of lead resources also remained sporadic until the 1780s (Schermer and Kurtz 1986; Kay 1977: 175; Auge, Gibson, and Klein 1986: 7).

Few traders operated within Wisconsin until 1660 when Green Bay began to attract a more permanent European settlement. Attracted to the Green Bay area by the presence of a new fur post by 1667, the Mesquakie then gradually migrated first along the Wolf and then south and west along the Fox River by 1677 as the Ojibwa moved north from the southern shore of Lake Superior. By this period, their material culture exhibited few trade materials (Callender 1978: 643). Between 1700 and 1740, they then shifted their hunting territory southwest into the lead mining region along the Wisconsin, Wapsipinicon, upper Mississippi, and Des Moines rivers.

By the 1670s, the Mesquakie attempted to dominate the French fur trade as middle men. Fought between 1712 and 1737, the Fox Wars resulted from Mesquakie efforts to control the Fox waterway to the west and to oppose French trade with their enemies, the Dakota, and French efforts to check tribal conflict. Defeated by the French and reduced in numbers, the Mesquakie began to retreat down the Wisconsin River about 1737 and occupied the lower Wisconsin River Valley. Mesquakie and French emnity continued through the eighteenth century (Speth 1986; Kay 1977: 107, 164; Auge, Gibson, and Klein 1986; Overstreet 1983: 81; Schermer and Kurtz 1986: 55-56; Callender 1978: 643).

After abandonment by the Ioway about 1700, the Dakota Sioux and Miami occupied the Mississippi Valley in northeast Iowa. The Miami participated in the lead trade with Perrot in the 1690s. Amerindians and Europeans were well acquainted with and exploited the lead as well as the fur resources of the upper Mississippi Valley by the early eighteenth century well before the French cession of the Louisiana Territory to the Spanish in 1763. During this

period, those Amerindians present in the upper Mississippi Valley participated in frequent wars stimulated by the eastern movement of Central Algonkians from the Great Lakes area. These and the Fox wars impaired but did not completely interrupt the fur trade in the first half of the eighteenth century.

Although the Mesquakie had entered the Mississippi Valley for hunting purposes prior to the mid-eighteenth century, their villages did not occupy the river valley from Rock Island to Prairie du Chien until after being driven south by their Ojibwa rivals in 1773. Their villages were noted at Prairie du Chien in 1764, at the Mines of Spain in 1780, at the Turkey River in 1805, along the upper Iowa in 1817, and on the Wapsipinicon in the 1820s. By the early nineteenth century, about 1,600 Mesquakie occupied anywhere from three to eight Mesquakie villages in this region. Prairie du Chien served as an important trade rendezvous with Europeans by the 1760s to the 1830s (Schermer and Kurtz 1986: 58-59; Stanley and Stanley 1986: 33; Overstreet 1983: 81; Kay 1977: 105, 161; Callender 1977: 644).

As the British descended the Mississippi River in their ill-fated attempt to seize St. Louis from the Spanish in 1780, they captured a party of 17 Spanish lead miners in the vicinity of the Mines of Spain and remained to protect the area from further enemy utilization. Such activities again attracted attention to the economic potential of the lead mining region. By the early nineteenth century, the Mesquakie objected to the intrusion of Euro-Americans into their territory which included both the west and east sides of the Mississippi. Julien Dubuque who traded within this area after 1783 to 1810 proved the exception. The Treaty of 1832 removed the Mesquakie from northeast Iowa (Auge, Gibson, and Klein 1986: 2, 10; Schermer and Kurtz 1986: 57).

Little is known of the Mesquakie culture during and prior to the eighteenth century. Much of the current data derive from observations made during or after the 1820s (Callender 1978: 644). From their arrival in the Green Bay area in the 1640s and prior to their settlement along the upper Mississippi by the 1760s to 1780s, the Mesquakie participated in a subsistence based heavily upon horticulture and hunting, particularly of deer, elk, beaver, and bison supplemented by limited fishing and gathering of wild foods. Their subsistence base modified slowly in response to their growing involvement in the fur trade in which they participated by the late 1600s (Kay 1977: 31).

The Mesquakie's multi-faceted economy reflects their adaptation to a diverse eastern and central Wisconsin environment, a prairie-forest ecotone with a riverine component and larger prairies to the west (Goldstein 1983). White tailed deer, beaver, raccoon, and black bear occurred in deciduous forest/wetland habitats in the southeast while bison and elk more commonly frequented grassland's in western Wisconsin (Kay 1977: 72-80). The seasonal utilization of their resources included spring, May-June planting of

comparatively large fields of corn, beans, squash, and tobacco in forest or alluvial soils; summer communal bison hunting and gathering; August harvesting; fall fishing and netting of waterfowl; and fall and early winter communal bison hunts and individualized hunting of small fur bearing animals such as beaver and deer as well as bear. Hunting of deer also occurred throughout the year. Since their remains do not appear at known sites in Wisconsin, bison were likely hunted to the west in Iowa or western Wisconsin. The Mesquakie subsisted during the late winter upon stored corn. They may have also lightly participated in maple sugaring in the early spring and harvested wild rice (Speth 1986; Kay 1977: 31-32, 107-14, 120).

Given this seasonal exploitation of their environment, the Mesquakie inhabited semi-permanent, seasonally occupied villages with occasional dispersal of family groups into smaller camps for hunting and other subsistence purposes. They typically located their villages a short distance from the bank of navigable waterways. Historical accounts describe large palisaded villages such as the Belle site in Winnebago County, Wisconsin. It contained rectangular, wall-trenched structures measuring 16 by 20 feet in combination with smaller circular structures which were 12 feet in diameter. The later were associated with charred cattail matting and birch bark. Smaller villages such as one on the Fox River were unfortified and contained "simple bark cabins" (Speth 1986), perhaps not too dissimilar to the lodges described above. The Mesquakie occupied some of the larger villages over a decade but seasonally vacated the village for hunting activities (Speth 1986; Kay 1977: 30, 107, 114).

Mesquakie social organization prior to the 1760s remains poorly understood. They probably divided into exogamous patrilineal clans. A moiety system possessing reciprocal religious and political functions may have also existed. One moiety may have provided a civil leader and the other a war leader (Speth 1986).

The Mesquakie along with the Potawatomie participated as middlemen in the fur trade in the late seventeenth century to the 1730s along the middle Fox waterway (Overstreet 1983: 81). They thus restricted French access to the Dakota to the west (Speth 1986). This dependence upon Amerindian trading intermediaries especially before 1700 typifies the period prior to French penetration into the region. After this period, other groups made contact with French traders either at Montreal or by 1668 at Mackinac and Green Bay obviating the need for the middleman. Green Bay remained the trading center for the Mesquakie until the late eighteenth century. Such a trading situation initially exerted only limited change upon subsistence and material possessions (Kay 1977: 85). As Amerindian control over trade declined in the late seventeenth century, the French occasionally brought trade goods to the villages and began to establish interior posts (Kay 1977: 90-93).

By the 1780s, the Mesquakie had undergone sociocultural change in direct and indirect response to their contact with European cultures. However, the extent of these alterations and their effect on the overall cultural patterns requires clarification. During this period of contact from at least 1780 to 1830, the Mesquakie remained within the same region along the Mississippi River Valley from Prairie du Chien to Rock Island.

The environment in Iowa as compared with that in eastern Wisconsin remained a prairie-forest ecotone with access to riverine sources, but the balance of those resources altered. Adjacent priairie expanses significantly increased. They exchanged relatively extensive oak forests immediately west of the Rock River in eastern Wisconsin for primarily an oak-hickory forest which skirted the prairie along the Mississippi (Goldstein 1983; Prior 1980: 6; Kay 1977: 18). Within this setting, the Mesquakie continued to maintain their heavy reliance upon horticulture as well as hunting of large game animals. The basic elements of the seasonal subsistence system probably remained intact.

An August harvest and acquisition of goods on credit with a trader was followed by two months of fall hunting in their western prairie territory of the Iowa-Missouri river watersheds. During this period, the Mesquakie broke up into small, scattered groups. By winter, they gathered into larger camps along the river valleys. Traders visited winter camps to exchange furs for cloth and ammunition and collect payment for credit. Small hunting parties departed in the early spring until April when the band gathered to return to the summer village for a May-June planting. Males participated in the summer hunt while the remaining inhabitants tended fields and mined lead (Callender 1977: 636).

Historical sources noted extensive corn fields in the Dubuque area as late as the early 1830s (Langworthy 1910 [1855]: 372). Summer fishing declined except during periods of food scarcity (Callender 1977: 636). But, Kirk (1939: 11) noted Mesquakie trade of fish as well as corn to settlers during the 1820s at Galena (cf. Kay 1977: 175). The collection of nuts, honey, milkweed, and berries composed a minor summer activity (Callender 1977: 636). And, the Mesquakie also netted waterfowl (Kay 1977: 188). Like adjacent groups, the Mesquakie placed greater emphasis upon late winter maple sugaring despite the vegetation regime of their location (Kay 1977: 120, 171-73, 284).

The Mesquakie's move to the Mississippi River Valley made small fur bearing animals found in Wisconsin much less accessible. But, they located closer to their western hunting territory which contained large game animals such as deer and elk as well as bison (Kay 1977: 19, 31, 80). While participation in the fur trade often reduced communal hunting, this western location removed reliance on the more individualized fall beaver hunt in which they participated in Wisconsin and heightened the importance of the fall deer and

communal bison hunts in Iowa. Use of the horse by the Mesquakie since the 1820s considerably increased the accessibility of the bison of the Iowa prairie. As the abundance of beaver generally declined throughout the region, fur traders began to place greater emphasis upon deer hides and tallow which were relatively abundant in the eastern Iowa deciduous forest. Groups along the Mississippi River Valley also hunted elk, bear, and muskrat for subsistence (Kay 1977: 120, 174, 284; Speth 1986). By this period, the Mesquakie had extended their hunting to the Des Moines, Missouri, Arkansas, and Kansas river valleys as well as utilizing the Turkey, Iowa, Wisconsin, and Mississippi river valleys. The bison hunts ended by the early 1820s with the depletion of herds (Kay 1977: 153, 170, 270; Callender 1977: 636).

Following their confrontations with the French in the first half of the eighteenth century, the Mesquakie allied with the British. After the Revolution, British fur traders dominated the upper Mississippi River Valley until 1816. Their goods moved from Montreal, Michilimackinac, and Green Bay down the Fox-Wisconsin waterway to Prairie du Chien and finally to smaller posts on the Mississippi. Prairie du Chien traders began to replace Green Bay as a major trading point for furs by 1780. However, traders such as Julien Dubuque dealt with both locations into the early nineteenth century. By the 1780s along the upper Mississippi Valley, furs also went south to St. Louis which had been founded in 1763-1764. As American fur interests organized above the individual and partnership level into companies in the 1820s, St. Louis gained greater dominance in the Mississippi Valley fur trade. Heavy reliance on the fur trade resulted in the replacement of many native products with European trade goods by the mid-eighteenth century (Kay 1977: 17, 145, 154, 177-78, 206-208; Schermer and Kurtz 1986: 77-78; Oglesby 1963; Overstreet 1983: 81; Auge, Gibson and Klein 1986: 10-11).

The effects of the shifts within the Mesquakie economy upon their sociocultural patterns remain poorly interconnected. The historic Amerindian settlement pattern of the upper Mississippi Valley-Great Lakes region generally altered to smaller, frequently shifting villages in the eighteenth century. However, specific reactions varied with each group (Kay 1977: 167, 178; Speth 1986). The need for increasing mobility and emphasis upon individualized rather than communal hunting for the fur trade, de-emphasis of horticulture for many groups, and increasing inter- and intra-group conflict tended to fragment large villages (Kay 1977: 85, 167). However, unlike other groups, the Mesquakie continued to rely heavily upon agriculture, engage in communal hunting, and depend to varying degrees upon the lead trade thus logically requiring less mobility and a greater residential unit. Kay suggests that the number of villages grew from only one or two to four relatively stable villages in the late eighteenth and early nineteenth centuries. However, Kurtz indicates their proliferation up to eight, their frequent movement, and reduction in size to occasionally three to four lodges.

He cites Dakota raids and lead mining as causes for this trend. The apparent reduction in size, shifting, and fragmentation may result from a rise in number, size, and length of occupation of special purpose camps as the Mesquakie exploited a varied resource base at some distance from their main village. By the 1820s, villages north of the Mines of Spain Area were being abandoned as the Dakota pressed south. But, they appear in some instances to have consolidated with villages to the south which bespeaks tribal unity.

Although perhaps growing larger, 20 by 40 to 60 feet, the Mesquakie pole-frame dwellings appear to have maintained the same shape and construction materials. Each unit housed an average of ten individuals within an extended family. By 1820, these dwellings were aligned in an east-west direction in two parallel rows separated by an open area used for village activities. They placed their lodges and adjacent gardens along river bottoms close to higher ground upon which they placed their burials. Graves were grouped by clan and lineage and oriented east-west. Burials generally occurred in an extended position and were accompanied by a few grave goods. The Mesquakie occasionally covered graves with a small wooden shed after burial. Only outsiders were placed on a scaffolding to guard against a claim to Mesquakie territory by relatives (Callender 1987: 638). While fall and spring camps were small, winter camps varied containing from one or two families up to a large cluster, perhaps as large as an entire band. These temporary dwellings were pole-frame, dome-shaped, round or oval structures covered with cattail mats (Callender 1978: 613).

Because eighteenth century Mesquakie social organization has mostly eluded documentation, the extent of change by the nineteenth century is not well understood. For at least one to two years after marriage in at least the summer village, this patrilineal society maintained a matrilocal residence. It also practiced some polygyny by the nineteenth century. How seasonal movements between camps affected this pattern remains unclear. The Mesquakie replaced deceased members with a relative and in the nineteenth century also with captives through an adoption ceremony. The household functioned as an economic unit with its males hunting together (Callender 1978: 613).

Patrilineal, exogamous clans possessed primarily ritualistic functions. Not a corporate descent group, the clan had no control over land ownership or productive property. In time, they lost their exogamy and no longer regarded each other as related kin. Of greater significance in their social organization, the lineages transmitted hereditary, ritual, and political positions.

The moieties acted as dual divisions rather than descent groups. Siblings were assigned to alternating moieties by order of birth. Thus, they crosscut other social divisions helping to maintain a strong tribal unit. The moieties

organized such functions as games, dances, rituals, and warfare. Temporary and permanent voluntary organizations also defined participation in rituals and warfare and other activities outside the descent group. Goddard (1975) suggested that the dual division of the nineteenth century reflected the disintegration of the clan-based moiety and the rise in importance of voluntary warrior societies. Population loss in the eighteenth century resulted in the adoption of captives and the creation of new clans which were not fitted within their moiety structure. Perhaps the resulting de-emphasis of the moiety system may have shifted some religious and reciprocity functions to warrior societies which commonly gained greater importance in the contact period. The increasing significance of these societies provided a new avenue to high status through warfare (Schermer and Kurtz 1986: 57; Speth 1986).

Continuous adjustment to fur trading altered the political system through the period of contact. The Mesquakie did maintain close contact between bands even in the nineteenth century. Political duties at the tribal level which may have duplicated those at the band level were divided between war and peace organizations. They did not in the nineteenth century appear to correlate with the moieties. Both of the groups possessed their own chief, minor chiefs, who may have been clan heads, and other officals. A weak, conciliatory figure, the peace chief maintained nominal authority over the tribe except in periods of stress. He mediated intra-tribal feuds and murder. The war chief acquired leadership during periods requiring more social control. Since he exercised considerable authority within well-defined boundaries, the war chief used force rather than conciliation to maintain order. The position of the peace chief was hereditary within the Bear clan but shifted between lineages. Although the war chief may have once been a hereditary position within the Fox clan by the nineteenth century, it was achieved through success in warfare. The hereditary selection of the war chief may have occurred when his role was more ritualistic and involved less participation in war. Or, this hereditary postion associated with war may have dealt more with internal police functions and had a limited role in war. In the nineteenth century as the war chief became the main intermediary between the Mesquakie and the United States government, he gained considerably more power. In many cases, such war chiefs generally became the tribal chief replacing the other forms of chieftainship and gaining the peace chief's functions.

The tribal council, whose membership was composed of leaders from each clan, contained both peace and war officials. It rendered major decisions involving war and peace, location of hunting areas, and relationships to other tribes. Membership may have been hereditary. The decision of the tribal council was based on consensus. Factionalism often stemmed from such an approach and among some groups, but probably not the Mesquakie, resulted in tribal fragmentation (Callender 1978: 613-615, 639-41; Speth 1986).

In general, the Mesquakie appear to have gradually adjusted their social organization to the contact situation. Warfare in the last half of the eighteenth century and greater isolation toward the end of the century may have demanded and permitted such changes without clear disruption of their society. For example, the apparent shifting of the war chief from a hereditary to an achieved position recognized a rising emphasis on warfare. The inability of other groups to undergo this transition often fragmented villages (see Rollings 1984). While the specific course of change remains poorly defined for the Mesquakie, it is clear that they were undergoing significant adjustments which unlike many other groups allowed them to refit parts of their social structure during their occupation of the upper Mississippi Valley which is contemporaneous with the village at the Mines of Spain from the 1780s to the 1830s.

Lead has been associated with prehistoric sites in the upper Mississippi Valley from the Early Archaic through the contact period (Fay, Garfield, and Neville 1986; Walthall 1981). However, the role of lead in the Amerindian culture altered dramatically as it became a supplement to the fur trade and a source of trade goods. Although deposits of lead ore were known to the French by 1658, conflict with the Sioux prevented their utilization of the mineral on a large scale. The Amerindian lead trade in this region began by 1690 with Perrot's trading post south of the mouth of the Wisconsin River or perhaps earlier by 1650. However, with the exception of the Mines of Spain, it generally retained limited importance in the Amerindian economy until after the War of 1812 when Americans began to dominate the trade. Prior to this period, the cost of operation and transport limited European involvement in the trade (Schermer and Kurtz 1986: 57, 84; Kay 1977: 175; Fatzinger 1977: 8). Galena is archaeologically evident at the Bell site, a Mesquakie site occupied between 1680 and 1730. Other groups involved in the trading of lead from 1780 to 1840 include the Sauk and Winnebago and to an unknown degree the Illiniwek and Osage (Walthall 1981: 11, 25).

At least in part because they had no practical means to either utilize or transport lead to northern trading points, Canadian traders evinced little interest in lead. Promoting Amerindian lead trade by 1810, American traders shipped lead down river to and through St. Louis as Dubuque had. About 500,000 pounds of lead ore were traded by the Mesquakie and Sauk annually with the greatest share originating from the Mines of Spain. These mines produced perhaps 100,000 to 300,00 pounds of lead or $1,650 to $5,000 annually. At the rate of $2.00 per hundred weight noted by Schoolcraft, this quantity allowed the Mesquakie and Sauk to gross about $6,500 to $8,500 worth of trade goods (Schermer and Kurtz 1986: 82-84). Lead within the Upper Mississippi River lead Region also came from Amerindian mines along the Fevre River at Galena, the Sensinaway River 15 miles south of Dubuque, and on the Little Maquoketa just above Dubuque (Hoffman 1935: 144).

Only a portion of the Sauk and Mesquakie mined lead. Their dependence upon the lead trade varied with their distance form the mines, the scarcity of local game, and the availability of the horse to procure game beyond the local area. The diminishing game supply became apparent after 1810. Those adjacent to lead mines who depended relatively heavily upon the lead trade, as those at the Mines of Spain, appear to have gained access to a greater abundance of trade goods (Schermer and Kurtz 1986: 76-77, 82; Kay 1977: 287).

Mesquakie woman and older men provided the main source of labor in their lead mines. The role of the Mesquakie males who did not accompany the summer hunt remains unclear (Major Morrell Marston 1820 in Auge, Gibson, and Klein 1986: 28-29). They mined only surface deposits and did not excavate shafts. Observors in 1820, Schoolcraft and Moses Meeker, described the excavation of inclined trenches descending as deep as 45 feet to bedrock. Traders provided the Mesquakie with the hoe, shovel, pick-axe, and crow bar for their mining. By subjecting it to a series of fires and cooling it with water, the Mesquakie loosened the rock. They removed the soil and ore in hide or birch bark baskets (Schermer and Kurtz 1986: 72; cf. Langworthy 1910 [1855]: 326).

The Mesquakie utilized two kinds of temporary smelting furnaces to reduce the ore. The log heap furnace was built on the ground surface with large logs at the base surmounted by smaller pieces with ore placed on top. As the lead separated from its matrix, it ran into holes dug in the earth below the fire (Thwaites 1904: 316 in Schermer and Kurtz 1986: 73). As noted by Colonel John Shaw in 1816, the Mesquakie constructed a hillside ground or log furnace usually in the side of a river bank or hill by excavating a cavity with a small horizontal ditch leading from the front to bowl-shaped holes which collected the molten lead. Alternating layers of wood fuel and ore were heated in the cavity (Schermer and Kurtz 1986: 74-75).

Schafer (1932: 34; cf. Langworthy 1910 [1855]: 326) described the ground furnace as follows:

> These were made by digging in a hill slope a hooper-like pit two or three feet wide at the top, the sides sloping toward a point but stopping short when the bottom was still some eight inches in width. The sides of the opening were lined with flat stones while longish narrow ones were laid grate-wise above the bottom. A trench called the eye was dug from the lower side extending under the bottom of the hopper. This trench was filled with dry wood, brush, and other material while the hopper was filled with ore. When the fuel was fired, the ore melted down in part and the molten lead flowed through the fire trench and was caught in a tiny pool scooped in and near its lower end. The lead in that

form was called 'plats' and each plat weighed thirty to seyenty pounds.

The Mesquakie then transported their lead to nearby traders or less frequently carried the ore to St. Louis themselves. By 1810, traders erected similar log and ash furnaces to smelt the lead and the congealed ash and lead which had accumulated adjacent to the Mesquakie smelters. Located at the Mesquakie village within the Mines of Spain Area, Kettle Chief arranged the sale of his lead ashes to a trader in Prairie du Chien in 1819. As smelting evidently became a more specialized task, the Mesquakie gradually ceased to smelt the ore prior to trading by about 1820 (Schermer and Kurtz 1986: 74-75).

Although the Mesquakie may have settled at the Mines of Spain by the early 1760s, they were clearly present by the early 1780s. The first date relies upon the memory of Auguste Chouteau (Schermer and Kurtz 1986). He arrived at the site of St. Louis in 1763-1764 at the age of thirteen (Parrish et al. 1980: 25). Beyond isolated fur posts and temporary mining camps, few settlements north of St. Louis existed in the upper Mississippi River Valley by 1780. Prairie du Chien had just begun to attract Euro-American residents. The Mines of Spain Area then existed in the St. Charles District of spanish Upper Louisiana (Foley 1971). Emigrating from St. Pierre-les-Bouquets, Quebec Province in 1783, Julien Dubuque was engaged in the fur trade first as a clerk at Michilimackinac and then with Basil Girard and other traders near Prairie du Chien. He became familiar with the resources of the upper Mississippi as he traded with the Mesquakie, Sauk, and Winnebago of that region (Auge 1976: 2; Boilvin in Schermer and Kurtz 1986: 66; Grindell 1905: 20-21).

In 1788, Dubuque gained permission from the Mesquakie to work lead mines in the Dubuque region. The agreement drawn in Prairie du Chien on September 22, 1788 does not specifically grant him a right to any land holdings (Auge 1976: 8). In 1796, Dubuque requested a land grant containing his "plantation" from the Spanish governor general of Upper Louisiana, Baron de Carondolet. In his communication, Dubuque described a grant of 220,500 arpents or 187,250 acres, about 21 miles north-south and 10 miles east-west along the Mississippi between the little Maquoketa and Tete des Morts rivers in Iowa (Auge 1976: 8; Auge, Gibson, and Klein 1986: 17-18).

Spain and Britain were at war by 1796. In the mid-1790s, the Spanish government had begun to court the good will of the Americans to protect its colonies from British aggression. They attmepted to attract American settlers to act as a buffer in Upper Louisiana between the Spanish colonies to the south and the British in Canada through large land grants offered at minimal cost, the absence of taxes, and other benefits (Foley 1971; Hoffman 1930: 87).

Dubuque's attempt to secure his settlement fit within the customary expectations whereby he sought some security of ownership through a legally acknowledged avenue. However, although acknowleded by Carondolet, the land grant was never acknowledged by the Spanish Crown (Van der Zee 1915: 13).

The transfer of the Louisiana Purchase to the American government occurred in 1803. The November, 1804 treaty with the Sauk and Mesquakie ceded the legal right to eastern Iowa to the American government. Between these dates in October, 1804, Dubuque sold a 7/18 claim to his land grant to Auguste Chouteau. In 1805, Dubuque and Chouteau then jointly sought recognition of their holdings from the Board of Land Commission which attempted to establish the validity of each Spanish land grant. Both the need to pay debts owed to Chouteau and perhaps the need for support in his land claim motivated Dubuque's land sale. The 1806 ruling confirmed their right to the Mines of Spain. Dubuque died in 1810 with no legal heirs (Wilkie 1987 [personal communication]). After Chouteau, acting as administrator of Dubuque's estate, attempted to sell part of the Mines of Spain in 1811, the Spanish Land Commission reversed their decision of 1806. The case defining the land either as property of Chouteau or as American public lands did not receive a final ruling from the United States Supreme Court until 1853 (Auge 1976: 8-10; Auge, Gibson, and Klein 1986: 19; Schermer and Kurtz 1986: 67). After Dubuque's death, the Mesquakie became very protective of both sides of the upper Mississippi River (Kurtz and Schermer 1986: 67).

Dubuque's 1788 to 1810 "plantation" at the Mines of Spain is here viewed as a trading post establishment. Trading posts on the upper Mississippi frontier possessed multiple functions and varied considerably in their composition and size. They often combined some or more of the following functions: residential, military, diplomatic, agricultural, industrial, and missionary, and the exploitation of furs and other frontier resources. Such posts involved multiple personnel performing different functions often at different seasons of the year. Its overall role also varied with the size and physical attributes of the hinterland which it tapped, its immediate physical setting, its location in relation to the transportation network, and its external relationships to other settlements and regional entrepots. The internal physical structure of the trading post theoretically reflects these functions and its personnel. While some areas might relate fairly directly to a single function, others often reveal a subtle complexity of functions (Lee 1984; McKay 1987; Sabo, Waddel, and House 1982).

Dubuque's establishment represents a regional trading post. Its multiple functions, location upon a major river, size, permanence, and probable involvement with more than one Amerindian group suggests such a level of organization (Lee 1984). Dubuque remained at a single location on the Mississippi for over thirty years. He maintained his own residence, dwellings

belonging to Euro-American or employees of mixed origin, a grain mill, a storage cellar for furs, one or two barns, a blacksmith shop, and several other storage facilities (Chouteau 1810; Chouteau 1804). He maintained trade connections on both sides of the Mississippi suggesting that he served more than the adjacent Mesquakie village including at least the Sauk. Additionally, he traded at St. Louis, Prairie du Chien, Green Bay, and Michilimackinac. Lead primarily went down-river to St. Louis. For their preservation, fine furs went north toward Canada while coarser furs of such animals as the buffalo and deer went south to St. Louis (Mahoney 1982: 151; Schafer 1932: 28; Schermer and Kurtz 1986: 81; Van der Zee 1915: 23-24; Kay 1977: 175, 207; Auge 1976: 6).

Dubuque's trading post combined fur and lead trading, residential, agricultural, and preliminary manufacturing functions. As noted, his trading region covered more than the immediate hinterland of his settlement. His employees or engagees followed the Mesquakie to their hunting territory on the Missouri and also traded along the Mississippi thus probably tapping much of eastern and southern Iowa, northern Missouri, and southwest Wisconsin (Van der Zee 1915: 22; Hoffman 1930: 87; Kay 1977: 207-208; McKay 1987). During Dubuque's period, the lead trade was viewed as a supplement to the early Mississippi Valley fur trade. Indeed, Dubuque engaged in the first extensive lead trade in the upper Mississippi region. Later traders followed a similar strategy (Mahoney 1982: 151). He dealt primarily although not exclusively with the Mesquakie. They provided the majority of the raw materials, the lead, as they did in the fur trade while Dubuque became more directly involved in its refinement and transportation to St. Louis. At his death, his inventory included 35 pounds of beaver skins, 770 muskrat skins, 92 otter skins, 353 "good Cats", 12 bear skins, 1258 deer skins, and 242 miscellaneous skins and 10,000 pounds or 464 plats of lead worth $300 (Chouteau 1810). His mines produced 500,000 pounds of lead per annum which well exceeded a value of $5000 (Schermer and Kurtz 1986: 83; Auge, Gibson and Klein 1986: 15). Most of his furs were stored in a cellar behind the north building which appears to have been his residence. While both furs and lead were primarily produced by the Mesquakie, his engagees also probably mined lead to an unknown degree. Dubuque also engaged in the initial refinement of raw materials. He maintained two smelters at the Mines of Spain, one in the vicinity of Catfish Creek and the other at Eagle Point now within the city limits of Dubuque.

Dubuque also erected a mill to grind grain for local needs and a blacksmith shop which probably provided and repaired equipment for mining and fulfilled the smithing needs of the Mesquakie. Such craft establishments were common to trading posts (McKay 1987). Permanent residential areas for Dubuque, his French-Canadian engagees, and the Mesquakie village appear to be rather scattered along Catfish Creek as are the agricultural fields (Chouteau 1804). He maintained about 1600-2000 acres of fields (Wilkie 1987 [personal

communication]) likely providing food for at least himself and his engagees (Chouteau 1810). Whether he traded his agricultural products remains unclear. In 1810, his livestock included 6 oxen, bulls, 7 cows, 12 chickens, and 218 pigs (Chouteau 1810). Since the inventory occurred in June, it recorded only corn and greens. The map produced of his holdings in 1804 (Chouteau 1804) and the inventory of his estate do not show significant segregation of these functions, probably producing a rather complex archaeological record. Nor does it show the relationship of the Mesquakie village to Dubuque's establishment.

During this period, the trader relied upon the labor of the Amerindian to produce the necessary goods resulting in the transformation of the Amerindian's mode of production. Traditionally, Amerindian groups were self-sufficient, producing goods for their own use or for immediate exchange to obtain goods to fulfill their needs. They then controlled the means of production. The trading system introduced the Amerindian to a market economy in which goods were produced for their exchange value. That is, they were sold and not immediately consumed. Part of the value of the product derived from the labor input which had little importance in a subsistence system. And, the production of needed goods was controlled by an outside source, the capitalist, who gained more from the exchange than the laborer. The Amerindian then surrendered control over this aspect of his economic system. Such an organization required considerable commitment from both parties and substantial capital input for structures, trading goods, and transportation on the part of the trader who often received backing from a larger company. A profit on such an investment required approximately three years (McCormick 1984).

The Amerindian economy developed dependence on the fur trade. The Amerindian trapper gained necessary supplies through the credit system which ensured the return of furs to the local trading post to pay for goods which he had previously obtained through credit. Thus, credit committed the Amerindian to trading, a new obligation. It stressed trapping for furs or other forms of resource exploitation above other economic pursuits. Evidence of participaion in the system includes the establishment of a local post in the vicinity of the Amerindian group, a shrinking social unit of production, heavy reliance on trade goods, and expansion and/or alteration of the hunting territory yet some permanence in village location near the trading post. The driving force behind full commitment accrued from depopulation of the tribe from disease and/or warfare and/or the inability of the village to procure subsistence through traditional means because of diminishing resources (McCormick 1984).

The Mesquakie at the Mines of Spain appear well entrenched within the trading system. They no longer operated as a self-sufficient unit. Their production of lead alone provided over $1600 to $5000 per annum in trade goods, an

equivalent to one-half of all the village's needs in trade goods (Schermer and Kurtz 1986: 84). They also continued to participate in the commercial procurement of furs as late as 1810 as indicated by Dubuque's estate inventory (Chouteau 1810). Thus, their labor became indirect for part of their subsistence. Letters from Dubuque indicate his provision of supplies on credit which created a clear dependence upon an outside party (Van der Zee 1915: 22). Dubuque's establishment near the Village of Kettle Chief provided easy access to this intermediary. And, they occupied the vicinity over a long period of time, remaining within the same general area from approximately 1780 to 1830. Yet, they had expanded their hunting territory as far west as the Missouri River Valley. Available resources within the immediate area of their village had decreased by at least 1810 (Schermer and Kurtz 1986: 84). Finally, before migrating south to the Mines of Spain, they had suffered substantial population loss and dislocation. However, whether the size of the social unit had altered significantly remains in question. Although many of the elements of their subsistence remained intact, all of these factors point clearly toward the last stages of dependence upon trade and significant alteration of the mode of production.

French-Canadian traders frequently achieved a trading relationship by adopting portions of the Amerindian culture. Such steps were an accepted part of the bi-cultural adaptation common to the Mississippi River Valley traders (Thorne 1984; Dickason 1984). They frequently cemented alliances through marriage and residence with the Amerindian for many months. Such alliances were traditionally precursors to trade for the Amerindian. Traders also practiced ritual gift exchange separate from the goods exchanged for the furs (Thorne 1984; Dickason 1984). Dubuque may have formed his close relationship with the Mesquakie through these means. Letters refer to but never identify his wife. He did not will his estate to a descendent suggesting that she may have been a member of the Mesquakie tribe (Auge, Gibson, and Klein 1987: 14; Auge 1976: 4, 12; Langworthy 1910 [1855]: 370). These acts importantly suggest Dubuque's formation of an alliance with the Mesquakie following French-Canandian patterns.

Dubuque's role as a trader was transitional (Auge, Gibson, and Klein 1986: 15). The organization of the fur trade underwent significant change during the first two decades of the nineteenth century. Prior to 1820, individual traders and partnerships with limited capital participated in the fur trade within the region. They relied upon their alliances with Amerindian groups often created through marriage and residence. The Amerindian remained the main source of furs through the period. By the 1820s, several well financed companies dominated the fur trade as abundant fur resources became farther removed from established settlements. They possessed the means to mount large trading expeditions to the middle and upper Missouri and establish a series of trading posts from which company traders and trappers operated. Trading posts

were established to serve Amerindian trading needs and gain entrance into their territory. Thus, the primary source of furs came from the employees of the company not the Amerindian. Only the well-endowed, larger companies could transport the trade goods to distant posts, build and maintain the post, supply its employees, and move goods from the post to St. Louis and into the world market (Thorne 1984; Wisehart 1971).

Dubuque entered the fur trade as an individual entrepreneur (Kay 1977: 208; Wilkie 1987 [personal communication]; Auge 1976: 3) presumably cementing alliance with the Mesquakie in the traditional manner. The Mesquakie for the most part brought the fur and lead resources to him. His employees do appear to have engaged in limited mining. This adjunct to fur trade was innovative and revived after the War of 1812. He also established a substantial trading post. Perhaps unable to meet the cost of trading and transportation upon this scale and pay his indebtedness (Auge 1976: 10), Dubuque increased his financial base through his partnership with Auguste Chouteau in 1804. Chouteau was a well-known St. Louis trader who later played a role in several large fur companies by 1820 (Oglesby 1963). However, this partnership also failed to avail Dubuque of the capital necessary to form the transition between a local trader dealing directly with the Amerindian and a company supporting its own trappers in distant areas rich in fur resources. Thus, in this context, Dubuque acted as an entrepreneur. But, unlike most eighteenth century traders, he invested heavily in his base of operations to establish an extensive trade. Fur posts were more common to nineteenth century trade.

Finally, Dubuque's estate inventory indicates a lifestyle of some refinement for a frontier setting (Auge 1976: 2, 12; Wilkie 1987 [personal communication]). His inventory includes 45 plates, coffee cups, a tea pot, a crystal pot, 8 goblets, several decanters, a dozen silver spoons, a cast iron stove, and 58 volumes including works on political science and a dictionary of arts and business (Chouteau 1810). References to Dubuque's dwelling indicate his physical separation from the Mesquakie village but the actual distance and degree of social separation remain unclear (Auge 1976: 11). Indeed this element of the bi-cultural existence of the French-Canadian trader requires definition. Dubuque made two trips per year to St. Louis and likely trips to other trading centers where he participated in the social life of the frontier entrepot. There, he was a respected citizen associated with the St. Louis elite. This position gained him an appointment as an American Indian agent at Prairie du Chien in 1808. However, ill-health shortened his tenure to several months (Auge 1976: 7; Wilkie 1987 [personal communication]). Thus, the trading post, his trade, his business organization, and his social life represent typical but not fully understood elements of the well-established French-Canandian bourgeois cultue documented for the eighteenth and ending in the early nineteenth century as Americans began to dominate the upper Mississippi Valley (Auge, Gibson, and Klein 1986: 11-12). Yet, the extent of

his operations indicate a transitional figure in the Amerindian trade.

Almost all of the accounts of the Mines of Spain are written by observors who came either to document the resources of the upper Mississippi and/or the Amerindians were recorded after Dubuque's death in 1810. Pike was the exception. He visited Dubuque's dwelling which he located on the Mississippi in 1805. Pike did not note the Mesquakie village which therefore may not have occupied the juncture of Catfish Creek and the Mississippi by this date (Auge, Gibson, and Klein 1986: 20-23). Some of his engagees probably remained at the Mines of Spain for an unknown period after Dubuque's death. Pierre Chouteau, Jr., who probably visited Dubuque as early as 1806, stayed at the village intermittently in 1811 and 1812 (Auge, Gibson, and Klein 1986: 27). Following his visit in 1820, Schoolcraft related that the Mesquakie burned the buildings associated with Dubuque, perhaps after the departure of Pierre Chouteau who reputedly used them (Van der Zee 1915: 25; Swisher 1945: 308; Goodspeed 1911: 19, 38). The reason for their destruction may be associated with the Mesquakie's heightened protectiveness of their territory against Euro-Americans entrance (Schermer and Kurtz 1986: 69).

By 1820, several observors did manage to enter the Mines of Spain. Prior to that date, sources lacked sufficient specificity to locate the village. For example, in 1817 Stephen Long merely described the mouth of Catfish Creek from a distance. Although he noted Dubuque's grave, Long did not mention the presence of a Mesquakie village to the south at the mouth of the Creek. Likewise, traders such as Thomas Forsythe failed to note the Mesquakie village as late as 1819. In 1820, however, Stephen W. Kearney described a Mesquakie village of 17 lodges opposite the island upon which Samuel Muir had established a small trading post. Two days later Henry Schoolcraft counted 19 lodges inhabited by about 250 individuals at the same location near the mouth of Catfish Creek. Giacomo Belitomi in 1823 and Thomas McKenney, the U.S. Superintendent of Indian Affairs in 1827, also described the Mesquakie village near the grave site of Julien Dubuque (Schermer and Kurtz 1986: 61-63; Auge, Gibson, and Klein 1986: 29-31). Caleb Atwater noted a village of 20 lodges and a few acres of poor corn in 1829.

After 1810, the Mesquakie brought their lead, lead ashes, and furs to traders either located on adjacent islands in the Mississippi, at a few local trading posts placed on the river banks beyond the boundaries of the Mines of Spain or to larger posts including Prairie du Chien and St. Louis. Although they probably continued to smelt some of their own ore, the Mesquakie relied upon the traders for this function after Dubuque's death (Auge, Gibson, and Klein 1986: 24; Schermer and Kurtz 1986: 75). Some traders continued to follow the French-Canadian form of alliance, taking wives within the Mesquakie tribe. The Mesquakie permitted some of them to mine along the Fevre River but apparently not within the Mines of Spain (Schafer 1932: 35).

In 1811, George Hunt, a representative of the United States factory at Fort Madison, located a post on the Tete des Morts River, the southern boundary of the Mines of Spain. For a short period, the government factory system attempted to control American interaction with the Amerindian through the trading relationship. In this specific instance, the government's primary objective was the promotion of the lead trade. Since only Fort Madison and several other factories averted financial loss, the system was terminated in the 1820s. Between 1811 and 1812, Hunt procured 700,000 pounds of lead placing the Fort Madison factory in the black. However, a Winnebago raid upon the factory and adjacent smelter, a prelude to the War of 1812 and later Amerindian dissatisfaction with Euro-American encroachment upon their territory, destroyed the trading post. The Mesquakie did remain neutral during the War of 1812 thus allowing traders such as Jean Baptiste Faribault who established relations with the Mesquakie prior to Dubuque's death to trade with them between at least 1811 and 1814 (Auge, Gibson, and Klein 1986: 24-28; Schermer and Kurtz 1986: 82-83; Van der Zee 1915: 26).

Shortly after the War of 1812, one or more traders operated near the Mines of Spain through much of the 1820s. Antoine Brisbois, who represented the American factor at Prairie du Chien, traded a total of 200,000 pounds of lead in 1818. Between about 1816 and 1822, George Davenport traded extensively in both lead and furs in the Dubuque vicinity for the American Fur Company. By 1822 when Davenport had established a trading post on the Fevre River, Joseph Rollette of Prairie du Chien, also a representative of the American Fur Company, challenged Davenport's supremacy in the Dubuque area. After 1822, Davenport presumably withdrew south allowing Etienne Dubois, a representative of Rollette, to establish a trading post at the Little Maquoketa River. He had operated in the area since 1818 and continued to do so until 1831. In 1825, he traded lead valued about $5000. The Mesquakie objected to the intrusion of American lead miners as they began to enter the Galena area in 1822 (Auge, Gibson, and Klein: 1986: 32; Schermer and Kurtz 1986: 68, 78-79, 83; Van der Zee 1915: 28, 37).

Traders continually frequented the islands adjacent to the Mines of Spain in the early 1820s. Dr. Samuel Muir traded with the Mesquakie from an island opposite their village in 1820. Representing one of three American-operated furnaces in the Dubuque area, Anderson traded and smelted lead in the vicinity during 1822. Also operating from one of these islands, David Bates and A.P. Van Metre purchased 100,000 pounds of ore from the Mesquakie in 1823 and 1824. Thomas Forsythe arrived in the area by 1819 and established a government factory on an island opposite the Little Maquoketa by 1825. Bouthellier provided additional competition for Forsythe and Dubois on the Little Maquoketa in 1826. Thus, the Dubuque lead trade proved quite lucrative through the 1820s (Schermer and Kurtz 1986: 79-80; Van der Zee 1915: 33-37;

Meeker 1908 [1872]: 271, 287).

By 1830, peace between the Mesquakie and Dakota established in the treaty of 1825 had become increasingly strained. The government sought to end their lengthy feud over the hunting territory. In April, 1830, the Menomini raided a group of Mesquakie leaders as they moved north to Prairie du Chien at the behest of the American government to begin negotiations for peace with the Menominee and Dakota. The Mesquakie fled south to Rock Island in May, 1830. Although returning in 1831 and 1832 and as late as 1833 or 1834 to mine lead, they never rebuilt their village at the mouth of Catfish Creek. Miners burned the village in 1830. Later in 1830, the government rejected the Mesquakie's offer to sell the mineral lands west of the river at the quoted price (Schermer and Kurtz 1986: 63-65, 70; Auge, Gibson, and Klein 1986: 32-34; 69; Van der Zee 1915: 40, 43-45). In May, 1830, the Langworthy brothers and other miners from Galena illegally entered the Mines of Spain to locate lead mines. Lucius Langworthy noted the abandoned Mesquakie village of 70 [20?] pole structures and a council house. A military attachment sent from Prairie du Chien forced their removal by July, 1830. The military continued to patrol the area to the beginning of the Black Hawk War in the summer of 1832 (Auge, Gibson, and Klein 1986: 34-37; Schermer and Kurtz 1986: 69; Swisher 1945: 308; Langworthy 1910 [1855]: 377).

The treaty of 1804 had given the Mesquakie the right to live and hunt in the lead region as long as it remained public land. As the lead mines began to attract potential settlers by the 1820s, the government moved to alienate the land from the Mesquakie and other affected groups. Encroachment of lead miners upon their lands led first to the Winnebago uprising of 1827 and then to the Black Hawk War in 1832. The Treaty of St. Louis ended the Black Hawk War and created the Black Hawk Purchase in September, 1832. This treaty defined a strip of land 50 miles wide which extended north from the Des Moines to the Yellow River. After the signing of the treaty, miners returned to the Mines of Spain until driven out by the military by January, 1833. In this period, they removed over 700,000 pounds of lead. The miners continued to illegally re-enter the territory in the early months of 1833. The government opened the Black Hawk Purchase to mining in June, 1833 (Acrea 1985; Childs 1984 [1857]: 13; Van der Zee 1915: 47-49; Langworthy 1910 [1855]: 379; Auge, Gibson, and Klein 1986: 37-39; Kay 1977: 219-220; Grindell 1905: 13-15).

Archaeological Representations of the Mesquakie and Euro-American Trading Post

The site type represented by the Mesquakie village and Dubuque settlement is then a regional trading post. It represents a base of operations to which raw materials, fur and lead, and trade goods were brought; at which these

materials were stored and prepared for shipment; and from which trade goods were distributed and raw materials and semi-processed goods were shipped to a major entrepot such as St. Louis, Prairie du Chien, Green Bay or Machimilimackinac. Its location on a major river facilitated its role. Like other posts of its kind, it filled multiple functions. Of the potential trading, residential, manufacturing, agricultural, missionary, diplomatic, and military functions, it conducted the first four (Lee 1984; Sabo, Waddell, and House 1982). This proximity of a trading establishment to an Amerindian settlement is not uncommon. Fort Osage, erected in 1808 on the Missouri at Sibley, Missouri, provides such an example (Wisehart 1971; Rollings 1984). The union of the Amerindian village with the trading post in one site type underscores the interaction between the two cultures. However, unlike many of its counterparts, the Dubuque settlement was very probably not surrounded by a stockade, but scattered along the banks of Catfish Creek. In this sense, it parallels the Dousman residence of Prairie du Chien. Although Dousman did not operate as an individual entrepreneur, much of his business was conducted at his estate. Established considerably later in 1843, the Dousman estate lacks the direct spatial association of the components associated with employees and a contemporary Amerindian village. But, the estate at one time included the main residence, office, preserve house probably once intended in part for the storage and processing of furs, and the agricultural component. However, many of the original buildings and much of ground have suffered considerable modification (McKay 1985b).

Placement upon major watercourses, proximity to arable soils, and a hinterland rich in exploitable natural resources compose the primary locational factors for regional posts (Price, Girard, and Harris 1979; Wisehart 1971). The physical placement of Dubuque's trading post demonstrates these characteristics. His location on the Mississippi provides an essential means of transporting his lead south and his furs both north and south. His 1600 to 2000 acres of fields supplied his settlement with food stuffs with possible supplementation by commercial products. He tapped a broad prairie and woodland hinterland from which he derived deer, beaver, otter, and other skins. Additionally, the post's location on the prairie-forest ectone adjacent to riverine resources offered a large number of local resources traditionally tapped by the Mesquakie.

The Mesquakie probably established the Village of Kettle Chief between 1805 and 1820. Although the Mesquakie arrived in the immediate vicinity by about 1780, they do not appear to have settled adjacent to the juncture of Catfish Creek and the Mississippi until after the arrival of Pike in 1805. Pike located the village on a small stream 12 miles to the west of the river. Since Pike did not visit the location, this distance may be inaccurate. Schoolcraft specifically placed the Village of Kettle Chief on the south side of the mouth of Catfish Creek in 1820 (Straffin 1973: 15; Schermer and Kurtz

1986: 62). Pike's map of 1805 places Dubuque's house on the west bank of the Mississippi at the juncture of a small stream. A map illustrating the Dubuque estate in 1804 (Chouteau 1804) depicts four structures associated with Dubuque but not the Mesquakie village which may have then been beyond its boundaries. These buildings are scattered along Catfish Creek with the eastern-most and largest one on the south side of its mouth. If Pike's map (Auge, Gibson, and Klein 1986: 22-23) can be trusted, this later edifice was Dubuque's dwelling. However, the inventory of 1810 described his residence as "a building in the north" (Chouteau 1804). This reference may indicate the northern-most of any of the buildings (Auge, Gibson, and Klein 1986: 13) or simply the buildings' location on the northern half of the property which belonged to Dubuque as opposed to the southern half which was owned by Chouteau. Thus, although certainly not all of the Dubuque settlement occurred at the mouth of Catfish Creek, the nucleus of the settlement associated with Dubuque did at least appear there in 1804 and 1805 and probably to 1810. The Mesquakie reputedly destroyed the evidence of Dubuque's trading post after about 1812, and the miner's who illegally entered the Mines of Spain after the departure of the Mesquakie in 1830 destroyed their village (Schermer and Kurtz 1986: 64; Swisher 1948: 308).

Historically, the Village of Kettle Chief contained anywhere from 17 to 20 lodges. Schoolcraft identified two parallel, compact rows of 18 lodges with a vacant area inbetween for village activities. Such an arrangement suggests a significant social division within the village (Schermer and Kurtz 1986: 65). Although clearly a less trustworthy source, in 1830 Langworthy observed pole structures covered with bark and noted the presence of a council house containing numerous hearths and illustrations of local fauna upon its walls. Sources also described a large expanse of corn fields in the vicinity of the village. Open, shallow mines associated with this village lay to the west along Catfish Creek (Schermer and Kurtz 1986: 64, 71-72).

As noted, the components of Dubuque's settlement lay scattered along Catfish Creek and included his dwelling house, an adjacent storage cellar for furs and lead, at least three other dwellings some of which may be associated with the dwellings of his engagees, four fields, one associated with each dwelling, one or several granaries or barns, a blacksmith shop, a landing on the river affiliated with a structure identified as a "yard" which may be a wharf or warehouse, and a horse-driven grain mill. "Holes for digging lead" are dotted across the Mines of Spain by 1804 (Chouteau 1804; Auge, Gibson, and Klein 1986: 15). Again, all of these structures did not stand at the juncture of Catfish Creek and the Mississippi. Dubuque also operated at least one smelter in this vicinity. The remains of a hillside ground furnace within site 13DB9 which have been identified archaeologically may be contemporary with this period (Abbott 1983: 26; Chouteau 1810; Chouteau 1804; Swisher 1945: 308).

The Dubuque settlement and Mesquakie village have received considerable attention in the popular literature beginning since the mid-nineteenth century. Studies since the 1970s have interpreted this literature while drawing upon some of the contemporary narratives by such individuals as Schoolcraft, Kearney, and Pike. J. Riess first reported the possible existence of the complex in 1967 (Till 1977: 315). McKusick's 1968 excavation at the mouth of Catfish Creek failed to locate the Dubuque residence (Straffin 1973: 17; McKusick 1968; Till 1977: 318-19). In 1973, Dean Straffin conducted surface investigations along the mouth of Catfish Creek and the bank of the Mississippi to the south as well as adjacent agricultural fields. Surface remains and artifacts located in a trench excavation confirmed the presence of the Mesquakie village and associated Euro-American acitivity (1973: 15). During his surface reconnaissance in 1977, Anton Till did not locate evidence of the site (Till 1977: 316). Investigations by the Office of the State Archaeologist of Iowa confirmed the presence of these two components in what are currently identified as 13DB9 and 13DB62. They conducted a controlled surface collection and post-hole testing over much of the two sites (Abbott 1983: 74). Additionally, Kurtz (Schermer and Kurtz 1986), Auge (1976), and Auge, Gibson, and Klein (1986) submitted reports summarizing some of the historical data related to the Mesquakie village and the Dubuque settlement.

Sites 13DB9 and 13DB62 include the Village of Kettle Chief and part of the Dubuque settlement which together represent the site type. Although archaeological testing indicate their presence, the Mesquakie and late eighteenth-early nineteenth century Euro-American components of these sites have suffered some attrition. Mining activity after 1830, which itself is an historical component of these sites, installation and operation of the railroad since the 1870s, and agricultural activity has introduced some disturbance (Abbott 1983).

The sites represent a significant regional archaeological resource complemented by a relatively rich historical record. Contemporary villages associated with the Mesquakie at Rock Island and at the mouth of the Turkey River have either been destroyed or remain unlocated (Straffin 1973: 21). Recent archaeological surveys by the Office of the State Archaeologist have noted a cluster of lead mining pits adjacent to the Turkey River Mound Groups located 34 miles northwest of Catfish Creek. The association of this unrecorded lead mining activity with the location suggests the possible presence of the Mesquakie who also participated in lead mining beyond the boundaries of the Mines of Spain. However, the mouth of the Turkey River is presently covered with 10 to 15 feet of post-eighteenth century alluvial fill (Green 1988 [personal communication]). The two identified and excavated sites with Mesquakie affiliation in Wisconsin, the Leeman site in Outagamie County and Bell site in Winnebago County, were extant in the 1670s and between 1680 and 1730 respectively. They indicate minimal Euro-American influence and

considerably pre-date this intense acculturation period (Gourley 1985; Speth 1986).

Contemporary and typologically comparable regional posts within the lower Missouri and upper Mississippi valleys such as Fort Osage or Villa Louis have suffered considerable alteration because of early, inadequately reported archaeological research and because of historical modification during later use in the late nineteenth and early twentieth century (McKay 1985b; 1987). One potential example of a post utilized for government, military, and trading purposes, the charred remains of Fort Madison which was erected in 1808 to 1809 as a United States government trading post and burned in 1813, now lies beneath a black-topped parking lot in the City of Fort Madison, Iowa. The extent of the archaeological remains, although present, are unclear (Office of the State Archaeologist of Iowa, site files).

Fort Des Moines II (13PK61), a property determined eligible for the National Register of Historic Places, and the associated Raccoon River Indian Agency were established near the juncture of the Des Moines and the Raccoon River within the Des Moines city limits in 1843. The treaty of 1842 permitted the Mesquakie and Sauk to remain in Iowa until 1845. The agency and fort were intended to serve as a nucleus of their settlement. Known structures associated with the complex include the military fort containing an officer's quarters, barracks, sutler's house, corrals, stable, and storehouse; four associated trading posts; one Mesquakie and three Sauk villages; fields and cabins of the attachees; and government agency buildings including one or more blacksmiths, agency house and outbuildings, residences of the craftsmen and interpreters, and a mill. Only evidence for a portion of the officer's barracks has been located beneath city fill through archaeological testing. There also appears to be some evidence for the government agency buildings, three of the four Amerindian villages, and an attachee cabin (Gourley 1985; Bruce, Petrides and Associates, Inc. 1985). This post then fulfilled trading, military, diplomatic, agricultural, craft, and light manufacturing functions. Although it is an excellent example of a regional post, the Fort Des Moines Indian Agency site illustrates a slightly later phase of Mesquakie acculturation than the Dubuque Trading post and Village of Kettle Chief, and the extent of the remains are unclear.

Thus, archaeological investigations have not extensively explored regional trading posts or Mesquakie villages contemporary with the Dubuque Trading Post and Village of Kettle Chief from the 1780 to 1830 period along the lower Missouri or upper Mississippi river valleys. Few sites remain sufficiently intact or available to explore this period of interaction between the Euro-Amerian and Amerindian within a trading situation. Fort Des Moines II, which represents a slightly later step in the acculturation process than the Dubuque Trading Post, stands as the best known example.

The potential archaeological and historical data related to the regional trading post/Amerindian village property type at the Mines of Spain Area should allow the investigation of numerous research questions focusing upon Amerindian and Euro-American culture change in a contact situation. Such studies must utilize both the archaeological and historical record in a complementary manner.

Initial investigations must more closely date and identify the exact spatial extent of both Amerindian and Euro-American occupations. For example, the internal settlement pattern of the Mesquakie village and the Dubuque settlement requires careful definition and comparison to extant historical narratives to derive a fuller interpretation of the physical representations. In this instance, the existence of the arrangement of lodges into two parallel rows separated by a vacant area and of the scattered buildings associated with the French-Canadian occupation at the mouth of Catfish Creek constitute one possible interpretation of the historical record which require physical confirmation.

Determination of the ways in which this physical pattern reflects known social organization may alter the general model of the Amerindian social organization. For example, the historical record suggests that a regular arrangement of lodges at the Mesquakie village may reflect a social structure once based on a hereditary moiety system. A scattered arrangement may indicate the disintegration of this structure into a non-hereditary dual division. An extension of this interpretation to the declining roles of the dual chief may be possible. Also, Mesquakie cemeteries were once arranged by clan and lineage and may offer important insight into the strength of these portions of the social structure during a period of increasingly intense acculturation.

Current models of the French-Canadian communities associated with lead mining and agriculture such as Ste. Genevieve suggest a relatively compact string of dwellings and adjacent gardens removed from common fields. Any commercial functions were incorporated into the dwelling (McKay 1987; Ekberg 1985). The scattered settlement at the Mines of Spain is more common to the dispersed American farmstead settlement. This deviation appears to express cultural adjustments to emerging American patterns. Thus, archaeological data within the Mines of Spain Area and the parallel property type can shed light upon the direction of community change for both the Amerindian and Euro-American components in conjunction with available complementary historical documentation.

While analysis of the property type lends insight into the overall patterns exhibited by both portions of the property type, in this instance the

Mesquakie and French-Canadian settlements, investigation must also view this entity as a single community. The degree of physical separation and the manner of social intercourse between the two components remains poorly defined. For example, French-Canadians commonly related to the Amerindian through marriage alliances and gift-giving as suggested for Dubuque and perhaps his engagees. Spatial proximity of the two groups may assist the definition of social interaction within the community. If the Mesquakie village did not occur adjacent to the Mississippi until after 1810, then the social separation between the two groups may have been greater than once believed. Also, any special activity areas resulting from the trading relationship such as the mining and smelting sites at the Mines of Spain Area should assist an understanding of the economic adjustments during acculturation. Analysis of the form of each lead mining site in combination with their historical description may identify those related to the Mesquakie-Dubuque settlement and perhaps further illuminate mining technology.

Interpretation should also compare the physical composition of each structure within both the Amerindian and Euro-American settlements. For example, the internal spatial arrangement and size of the Mesquakie lodges including evidence of partitions and their relation to hearths and storage pits may assist interpretation of the size and number of divisions within the residential unit. Any variations in size, space allocation, interior features, and artifact proportions and concentrations may distinguish functional variations, for example a council house from domestic structures. Analysis of size, spatial arrangement, material, and manner of construction of the French-Canadian structures including dwellings, storage facilities, agricultural buildings, industrial and crafts buildings, and associated acitivity areas should assist the interpretation of the function and origin of each form. Such an analysis may lend insight into the deviation from the typical French-Canadian settlement at the Mines of Spain Area.

Artifact analysis should also address the level of acculturation of both the Amerindian and Euro-American components. To determine context and direction of contact, delineation of the functional categories of Amerindian-derived artifacts as opposed to trade goods may lend insight into the pervasiveness of acculturation as well as which cultural areas were most affected in the contact situation. Such an analysis should be qualitative as well as quantitative to interpret the meaning of derived artifact categories. Likewise, the Euro-American goods which exhibit Amerindian modification and the effects on the Mesquakie cultural system require delineation. The origin of artifacts associated with the Euro-American settlement in combination with written business accounts and letters should assist the derivation of external trade patterns. Decorative analysis of ceramics in combination with the analysis of estate inventories such the the 1810 inventory of the Dubuque estate (Chouteau 1810) may offer limited insight into the socio-economic level

of the Euro-American life style at such a trading post and the extent to which they maintained European traditions. For example, Dubuque's activities as recorded in letters and the 1810 inventory can be contrasted with a general view of the French-Canadian life style at St. Louis.

The results of the faunal analysis from both the Mesquakie and French-Canadian occupations in comparison with Dubuque's estate inventory and letters and accounts of his trade should help delineate diet and seasonality of occupation and define which areas of the environment were exploited. The use of historical documentation can also assist this endeavor. For example, the list of furs in the Dubuque 1810 inventory suggests use of both a priairie and forest environment. However, since Dubuque very likely traded not only with the Mesquakie but with the Sauk and perhaps other adjacent groups, the inventory probably reflects more than the hunting activities of the Mesquakie. While the Village of Kettle Chief is viewed primarily as a semi-permanent summer village, the Mesquakie may have occupied it rather than the large winter camps at this season as their emphasis on hunting declined. Faunal analysis may provide insight into the shifts in duration of occupation of the village. Also, floral remains associated with the Mesquakie and French-Canadian occupations should be compared with the list of products traditionally raised by the Mesquakie to detect variations. However, the extent to which the Mesquakie and French-Canadians utilized the same fields will probably not be verifiable through either the material or written record. Complementary analysis may also indicate the degree of self-sufficiency present at this type of settlement. By the late eighteenth century, settlements adjacent to major routes of communication often depended upon trade for part of their subsistence (McKay 1987).

Thus, the potential archaeological and historical data associated with the Mines of Spain Area and its property type should assist the definition of the degree and direction of acculturation experienced by both the Amerindian and Euro-American components. For the Dubuque Trading Post and Village of Kettle Chief, analysis should attempt to define the physical components of both settlements and the extent of interaction between the Mesquakie and French-Canadians at the Mines of Spain and further develop a model for the regional trading post property type. Comparison of specific economic adjustments at the Mines of Spain with the general view of the Mesquakie economy available from 1820 to 1830 accounts (see Callender 1978) should illuminate the effects of the lead trade upon the Mesquakie economy. A more precise placement of Dubuque within the French-Canadian trading traditions should expand the knowledge of his place in the transition from an individual business and partnership enterprise to the company-based fur trade emerging in the early nineteenth century. And, a comparison of the physical components of the Dubuque trading post with other late eighteenth and early nineteenth century regional posts as these data become available can open the understanding of

the range of functions associated with this property type.

Mining and Bulk Production: Lead Mining in the Mines of Spain (1830-1914)

The context, Mining and Bulk Products, as it relates to the development of lead exploitation and processing encompasses physical evidence of the industry after 1830. The separation between this context and the context of Special Purpose Community overlaps and may be somewhat artifical. This context primarly emphasizes the post-1830 industry rather than the types of communities associated with lead mining or its role in the contact situation.

The lead region of the upper Mississippi Valley includes about 5,500 square miles within the Driftless Area of southwest Wisconsin, northwest Illinois, and northeast Iowa. Since little or no glacial drift covers the region, lead deposits lie relatively near the surface throughout the region thus allowing the early development of the lead industry despite limited technology (Owen 1844; Grindell 1905:1). The lead region in northeast Iowa occupies the counties of Dubuque, Clayton, and Allamakee. The richest deposits in that area center upon Dubuque covering a 20 square mile area 2 to 4 miles wide by 6 miles long between Catfish Creek and the Little Maquoketa River. Within this area, the Galena limestone which is capped with Maquoketa shales is deeply dissected by streams draining into the Mississippi. The Upper Mississippi Valley Lead Region produced a significant percentage of the nation's lead between 1820 and 1920. Although identified as such since the late seventeenth century, it was not viewed as an area rich in mineral resources by the American public until after the War of 1812 (Calvin 1897: 43-44; Owen 1844: 5, 31, 35; Grindell 1905: 1; Fay, Garfield, and Neville 1986; Schafer 1932: 92).

In the nineteenth century, geologists placed the lead deposits within vertical fissures below a cap rock in the upper levels of the Cliff or Galena limestone. Productive deposits were thought to occur in the upper 50 or 60 feet and not below 100 feet in veins of commonly 1 to 4 inches up to 6 to 8 feet in width. The lead occurred either attached to the rock or embedded in clay. Major deposits appeared in concentrated areas or ranges in a series of parallel east-west crevices often identified as diggings by miners (Owen 1844: 20-21, 32, 37; Langworthy 1910 [1855]: 400; Calvin 1897: 36-37, 42-43; Schafer 1932: 93-94). Current geological descriptions locate these lead deposits in the Dubuque and Stewartville members of the Galena dolomite formation in the Middle Ordovician series which is overlain by Maquoketa shales. These members lie directly over the watertable (Pruszko 1983: 5-7). While deeper lead deposits do exist, nineteenth century miners remained unaware of or ignored them because of their position below the water table and the high costs of deep shaft excavation and drainage (Owen 1844: 37). These Mississippi Valley type deposits were placed by hot vapors escaping from cooling igneous magmas

primarily in crevices, fractures, and caves which broaden as they descend (Pruszko 1984: 1; Ludvigson and Dockal 1984: 5; Fatzinger 1971: 14). Lead normally occurs as sulphides which are removed during the smelting process. Unoxidized sphalerite or zinc sulfide and smithsonite or zinc carbonates, called blackjack and dry bone by miners, often occurs at deeper levels in the crevices. Because of the complex smelting process necessary to separate them, miners usually discarded these ores prior to the late nineteenth century (Ludvigson and Dockal 1984:7; Grindell 1905: 5; Fatzinger 1971: 5).

As noted for the Indian Contact, Conflict, Dispossession context, Europeans observed the exploitation of lead mines in the Upper Mississippi Valley by the mid-seventeenth century. Radisson in the "country of the Dakotas" noted such mining during his voyage of 1658-1659. Nicholas Perrot exploited mines south of the mouth of the Wisconsin River in the 1690s. Sieur Pierre Le Sueur reported lead mining in the vicinity of Dubuque in the 1690s. French miners continued to mine in the upper Mississippi Valley in the first half of the seventeenth century. For example, in 1743, Le Guys observed 20 mines near the site of Galena, Illinois. During the American Revolution, British forces encountered 17 American and Spanish miners at the mouth of the Little Maquoketa River. Although these activities fulfilled only immediate and local needs, they advertised the mineral wealth of the area to the European public. Dubuque's activities between 1788 and 1810 represent the first known extensive exploitation and trading of lead in the region. After the death of Dubuque in 1810 to the early 1830s when the Mesquakie left the region, traders such as George Davenport, Samuel Muir, Anderson, George Hunt, and Etienne Dubois transported lead mined by the Mesquakie primarily to St. Louis but were not permitted to enter the Mines of Spain. By 1822, American settlers had begun to exploit the lead mines along the Fevre River. The ever increasing presence of miners at diggings in northwest Illinois and southwest Wisconsin and the Amerindian rejection of that presence culminated in the Black Hawk War of 1832 and the removal of the Mesquakie legally by 1833 (Schermer and Kurtz 1986: 52-57; Auge, Gibson, and Klein 1986: 6-10, 25-29; Fay, Garfield, and Neville 1986; Jillson 1924: 45; Auge 1980: 1-2; Straffin 1973: 1-3).

The Mesquakie abandoned the Village of Kettle Chief in 1830 following their confrontation with the Menominee. Lucius Langworthy and other miners arrived after their departure and occupied the Mines of Spain illegally until their expulsion by the military in July, 1830. During this period, they removed lead roughly valued at $20,000. The Mesquakie continued to mine in the area until about 1834. About 300 miners returned to the Mines of Spain after the Black Hawk War in September, 1832 and remained until their second expulsion by the military in January, 1833. During this period, the miners erected furnaces and cabins which were destroyed by the military after January, 1833. Following the formal removal of the Mesquakie by June, 1833, the miners were allowed to return (Auge, Gibson, and Klein 1986: 34-39; Western Historical

Company 1880: 344; Parish 1910: 354; Grindell 1905: 34-35).

The mining region of the upper Mississippi participated in the general westward migration from the northeast and southeast which commenced after the War of 1812 and expanded by the 1830s. Agricultural depression resulting from soil depletion in the southeast and both soil depletion and industrial displacement in the northeast repelled immigrants. The strong desire, perhaps an ethic, to improve one's standing, particularly the economic situation, drew settlers west to the rich resources of the Mississippi. Reports of expeditions, guide books, and newspaper correspondents urged immigrants westward. The depression of the late 1820s lasting to 1833 also added impetus to the movement (Bogue 1963; McKay 1985; Grindell 1905: 37; Fay, Garfield, and Neville 1986).

The wealth of the mining regions in Missouri and the upper Mississippi River Valley became a part of this magnet (Auge, Gibson, and Klein 1986: 47-48). The area centering on the Fevre River adjacent to Galena, Illinois drew immigrants by 1822 prior to significant settlement in the lead region. By 1825, 100 miners had entered the mining district. This number increased to about 450 by 1826 and 1600 by 1827 (Van der Zee 1915: 38; Auge, Gibson, and Klein 1986: 47; Grindell 1905: 37). The Black Hawk War not only opened the remaining portions of the lead region to settlers but further advertised the potential of the area. Unlike many mining areas, the Upper Mississippi Valley Lead Region generally possessed relatively rich soils. While the initial attraction to the area had not been agricultural, once there, miners found that they could provide their own sustenance and supplement their income through agriculture. This resource allowed settlers to continue mining during periods of low lead prices and by mid-century drew settlers in its own right. In comparison to other mining regions, the Upper Mississippi Valley Lead Region attracted a somewhat more stable population through its supplementary resources (Schafer 1932: 42; Kirk 1939: 23; Grindell 1905:15-18, 38).

Immigrants initially came to the Fevre River area primarily from the South. Those who faced declining availability of fertile farmlands and increasing agricultural depression particiated in a general, gradual westward movement through the southeast piedmont area, Tennessee, Kentucky, Indiana southern Illinois, and Missouri and northward up the Mississippi River. The Fevre River district as well as the Dubuque area attracted numerous Missouri lead miners. Missouri's participation in the Civil War displaced miners north by 1860. Miners also migrated from the Galena to the Dubuque mines. Increased streamboat transportation on the Mississippi assisted the expansion of this movement. By the 1830s following the opening of the Erie Canal, immigrants from the Northeast and the Middle Atlantic states also appeared in increasing numbers. In 1833 after settlement began in June, the Dubuque region attract about 500 miners. By 1836, 4274 occupied Dubuque County (Schafer 1932: 44;

Fatzinger 1971: 2; Grindell 1905: 37-38; Fay, Garfield, and Neville 1986; Childs 1984 [1857]: 31; Parrish 1910: 321; Western Historical Company 1880: 27). An improportionate share of these individuals, 1969 of a total of 4374, were males over 22. However, the territorial census of 1836 does not indicate their occupation (Grindell 1905: 54). While it is likely that a majority were miners, this assumption has not been verified. The early mining population in the Galena district has been characterized as young males possessing little credit, equipment or knowledge of lead mining. Consequently, many more failed than succeeded in acquiring the wealth which had attracted them west (Kirk 1939: 16).

Seventeen separate individuals living in ten dwellings and cultivating nine fields occupied the Mines of Spain Area according to the government field survey notes of 1837. One lead furnace was located adjacent to and one just within property boundaries along Catfish Creek by that date. Analysis of territorial census data and land records indicates an unstable population with much movement in and out of the area prior to 1850 (Auge, Gibson, and Klein 1986: 44-46). Such movement would be expected for a population of miners. Very likely much of the population both farmed and mined perhaps making this lead mining region somewhat more stable than most. Instability in which 30% to 50% of the population moved within ten years was a common phenomenon across the upper Midwest even during agricultural settlement and frequently during much of the nineteenth century (McKay 1985). As noted below, this instability often requires additional modes of social relationship to bind the community.

Although the St. Louis Treaty of 1833 opened the Black Hawk Purchase, no land sales occurred until the government completed its land surveys in 1837-1838. Additionally, the legal title to lands within the Mines of Spain was not assured until after the settlement of the Chouteau claim in 1853. Further complicating the disposition of land into private ownership, the government designated a part of the Dubuque region as mineral lands. In 1807, the federal government reserved all lead bearing lands for its own use. In the Upper Mississippi Valley Lead Region, the War Department leased these lands to those willing to extract the lead (Fay, Garfield, and Neville 1986). It leased mineral lands in the Mines of Spain Area between 1833 and 1847.

The United States Congress opened these lands to public sale in 1847. Perhaps because lands in the Dubuque region without this designation were alienated from public ownership in 1840, the mineral lands attracted settlement between 1840 and 1847. Government permits allowed the miner to stake a claim of 200 square yards, to erect a dwelling, enclose cultivated fields of limited size, utilize local timber, and raise grain to feed their teams. Requiring that all lead be sold to licensed smelters, the system bonded the smelter to pay 6% of all profits to the government. These stipulations tended to frustrate the early development of agriculture within mineral lands. Although the system

brought limited order by officially defining the location of claims, participants soon objected to the restrictions of the system (Childs 1984 [1857]: 18; Fay, Garfield, and Neville 1986; Schafer 1932: 107; Auge, Gibson and Klein 1986: 39, 41; Meeker 1908 [1872]: 271; Langworthy 1910 [1855]: 282, 411; Western Historical Company 1880: 20; Calvin and Bain 1899: 16).

After 1847, miners purchased lands containing lead deposits or, equally as frequently, leased the mineral rights (Western Historical Company 1880: 27). For example, in 1848 Guy Morrison with several partners leased his part of the Bailey lot within the Mines of Spain Area to A. Graham and C. McAllister to mine in a "miners like manner" and "always keeping sufficient form upon the ground" for at least five days per week. The two agreed to pay one-fifth of all the proceeds from the mined lead (quoted in Preston 1986).

Until the mid to late 1830s, eastern Iowa possessed minimal formal government. Miners trespassing upon the Mines of Spain in 1830 formed a brief code of rules. It recognized a mining claim of 200 square yards which they were required to mine one out of every six days. They also designated an arbitrator for disputes. This agreement merely resolved disputes over claims (Auge, Gibson and Klein 1986: 35; Swisher 1945: 308). Childs (1910 [1857]: 22, 46) indicates the prevalence of a high level of social disorder aggrevated by vigilantism until at least the formation of a judicial system in 1837. However, at least at Galena, the superintendent of mines who represented the military possessed the authority to create a court of arbitration (Kirk 1939: 8-9). Whether this institution existed in the Dubuque area and how effective it was remain unclear.

Even after formal government became well-established, the miners formed the Bronson Rules in 1860. They also regulated use of the land and its mineral contents. These rules may have emerged from the Dubuque's Miner's Association formed as a joint stock organization in 1858 and reorganized in 1860 to arbitrate differences (Western Historical Comapny 1880: 25). These rules prohibited legal mining without owning or leasing the land. Lands were to be leased by crevice and worked continuously. They also regulated the leasee's right to sell their mining claim, the removal of minerals from the ground's surface, the sale of minerals, and the payment of one-sixth of the value of all minerals raised as rent (Calvin and Bain 1899: 582). Thus, initial settlers likely lacking other forms of social ties created formal rules to resolve disorder. Even well after local government became established, miners regulated their own specialized behavior.

Until the late nineteenth century, mining frequently occurred upon an individual or informal partnership basis. Usually, individual miners prospected for lodes and formed a verbal partnership with two or three others after striking a lead deposit. Friendship formed the basis of this bond.

Thus, each participant remained responsible for all liabilities and assets. Local operators formed informal companies for hiring others to work for them after isolating a rich lode. Given this approach, miners tended to work only the upper segments of relatively rich veins, quickly leaving unproductive or deep mines. The cost of tunneling and draining water after reaching the water table proved too great for such informal business arrangements which lacked substantial capital. They invested little and consequently suffered comparatively small losses (Calvin and Bain 1899: 582-83; Kirk 1939: 16-17; Grindell 1905: 4; Fatzinger 1971: 38, 58-59, 76; Ague 1980: 7).

However, after 1860 as lead prices rose to meet the demands of the Civil War more capital came into the lead mining region. Outside sources became willing to make substantial investments in large operations which were able to practice more efficient mining techniques and tap deep deposits. But these operations also stood to lose heavily in such a speculative enterprise (Fatzinger 1971: 59, 125; Schafer 1932: 57). About 1860, the Julien Mining Company discovered rich loads south of Catfish Creek. The precise location of the operation remains unclear (Western Historical Company 1880: 26). Employing 75 individuals, the Dubuque Mining Company sank three shafts to a depth of 210 feet west of Dubuque and operated large pieces of equipment such as concentrators, a steam hoist, and a steam pump in 1895. Large, incorporated companies did not form in the Dubuque area until about the turn of the century (Calvin and Bain 1899:545-546). Individual mining continued often in combination with farming and appears to be the predominant arrangement supporting mining operations within the Mines of Spain Area. Scattered ore bodies may explain the persistence of this level of operation (Auge, Gibson, and Klein 1986: 51).

Local smelting operations formed the largest business in mining prior to the late nineteenth century. Erection of the physical plant required considerable capital. The operation also often established a store adjacent to the smelter in which supplies were advanced to the miner upon credit. The speculative nature of mining which left unpaid accounts, inefficient furnaces, and until 1847 the leasing system, lowered profits (Kirk 1939: 17-18; Grindell 1905: 11).

The technology utilized in lead mining in the Dubuque region during the nineteenth century required a small investment. Prospecting relied primarily upon a number of surfacial signs. Miners correctly believed that productive veins occurred in fissures running east-west rather than north-south. Lead deposits ranged in size from pea-sized, detached fragments to masses up to 1000 pounds in cavities. While lead-bearing fissures might run close to the surface reaching it in "contracted funnels" (Owen 1844: 39), it was often covered with a thick stratum. Owen observed that (1844: 40)

> When the outline of the hill presents a sort of a bench, or step, or slight undulation...even if but small, it becomes a symptom of lead which the experienced miners's eye instantly detects. For the same reason a small longitudinal depression, or minimal ravine, on a hill side, may also be considered a symptom.

Other indications of a lead deposit included the presence of sink holes, a rank growth of vegetation in a linear direction, surfacial occurrence of a calcerous spar associated with lead, a red appearance of the surface indicating a ferruginous clay which sometimes embedded small pieces of lead, and especially the presence of small pieces of lead ore with a "crumbling appearance of the adjacent limestone." The prospector was rarely aware of the explanation for the relationships between these signs and the presence of lead ore (Owen 1844: 40; Schoolcraft 1972 [1819]: 90-92; Fatzinger 1971: 14).

When the prospector located such indications, he excavated a shallow hole usually in the summit or the declivity of a hill. If he failed to locate gravel containing the mineral, the prospector quickly abandoned the location and might follow east-west fissures to locate lead-bearing north-south ones. Otherwise, early miners rarely drifted very far horizontally to locate veins. These prospecting holes often riddled the hillside (Owen 1844: 40; see also Grindell 1905: 5-7; Langworthy 1910 [1855]: 401).

Prospecting holes or exploratory lead mining pits were usually a vertical, shallow hole about four feet in diameter. After excavating to a depth of six to eight feet, the miner might insert a temporary log cribbing to secure its sides. They also set up a bucket and windlass system over the pit or used a ladder in shallow excavations (Grindell 1905: 7; Schafer 1932: 96; Fay, Garfield, and Newell 1986). Thus, sinking the initial shaft and the limited drifting along ore veins remained hand operations. Soft rock was removed with a hammer, gad, and pick axe. Harder deposits required a hand drill and gun powder. If the vein appeared reachable along the hillside, the miner then drifted horizontally which allowed removal of the ore in a wheelbarrow. Pillars of rock were left at intervals to support the tunnel. Large caverns admitted the use of small mineral tubs run on wood rails (Langworthy 1910 [1855]: 401). Miners often abandoned shafts deeper than 60 feet and rarely descended below 100 feet. Although deep shafts could be drained with horizontal drifts and pumps, little mining was done below the water table (Owen 1844: 41; Grindell 1905: 8; Fatzinger 1971: 70-71; Schafer 1932: 96-97; Swisher 1945: 309; Kirk 1939: 16).

Several miners commonly worked a vein of lead. Possessing greater capital, companies frequently conducted deep shaft mining, often reopening shallow mines in the Dubuque area after 1890, and perhaps employing air drills (Fatzinger 1971: 70-71; Fay, Garfield, and Neville 1986; Kirk 1939: 17).

Thus, as demand and prices rose, lodes were mined more efficiently (Mahoney 1982: 59; Calvin and Bain 1899: 585).

Prior to smelting, miners separated the spar with a small pick, broke up large fragments of ore to achieve a uniform size, and separated the heavier metal through water agitation. Smelting removed the sulphate from the ore through a roasting process which consumed the sulfur and allowed the lead to run off (Schoolcraft 1972 [1819]: 92; Grindell 1905: 9; Fatzinger 1971: 19). Smelting occurred in relatively unsophistocated log heap and log and ash furnaces prior to the 1830s. By the mid-1830s, more specialized smelting operations erected cupola, reverbatory or blast, and by the 1860s Scotch hearth furnaces.

The log heap furnace consisted of a small basin covered with a layer of three or four five foot logs and then a box of smaller logs within which was placed the mineral. Fuel was heaped over and around the box. After burning, the lead fell into the basin below (Grindell 1905: 9; Schafer 1932: 181). Another version was constructed of a simple platform of rock with mortared crevices. Measuring about 15 feet square, it sloped toward the center. Alternating layers of fuel and ore placed on top of the platform were then burned down. The metal was drained from the lower part of the platform (Calvin and Bain 1899: 17).

The log furnace (Figures 10-11) was composed of a hopper-like hole excavated into the hillside set at about a 45 degree angle. It measured about 2 feet deep and 2 feet wide at its orifice and was lined with flat stones. The base of the hopper formed a eight to nine inch hole and was topped with a grate of stone. It led to a 1 by 1 foot trench which emerged from the hillside below the smelter. Burning of the wood and ore mix in the hopper melted the ore. The resulting lead then flowed into the channel below. A more sophisticated version was encompassed by three walls forming an 8 foot by 8 foot, three-sided structure. Inclined to 45 degrees, a 2 by 8 foot hearth ran down its center to an arched opening at the front. The opening led to a hole excavated in the ground to receive the molten lead. The mineral was laid on large logs placed above the hearth upon a ledge. Fuel surrounded the mineral. Firing drove off the sulphur and melted the lead which ran to the recepticle at the base of the hearth. Both versions of the log furnace recovered only 50% of the lead from the ore. Such furnaces were often placed side by side (Langworthy 1910 [1855]: 377; Meeker 1908 [1872]: 286; (Schoolcraft 1972 [1819]: 92; Schafer 1932: 102). Log furnaces thus occurred on a hillside near a lead mine and adjacent to a stream for ready access to transportation by a flat boat to and from the Mississippi (Kirk 1939: 19). Log furnaces were common to the Dubuque mining area at least through the first half of the nineteenth century (Langworthy 1910 [1855]: 44).

The log furnace left a considerable residue of congealed ashes and lead or

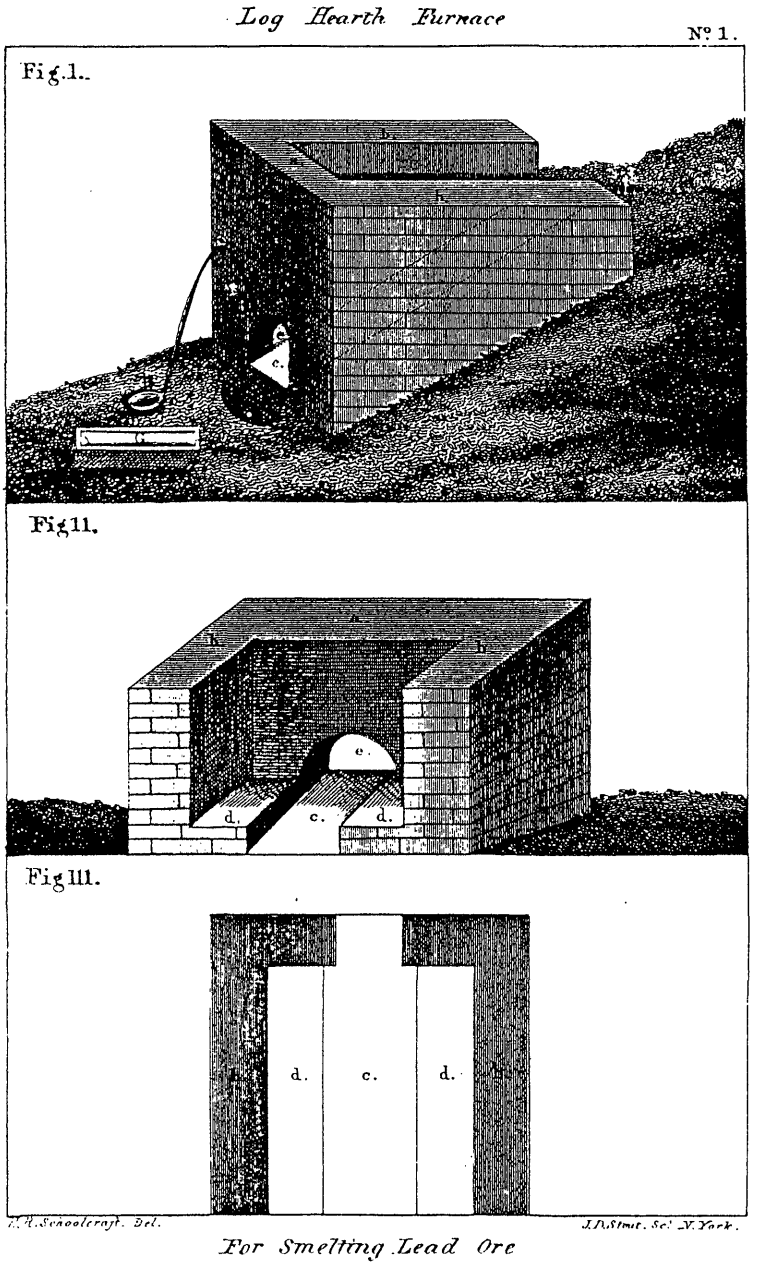

Figure 10: Sketch of a log heap furnace (Schoolcraft 1819).

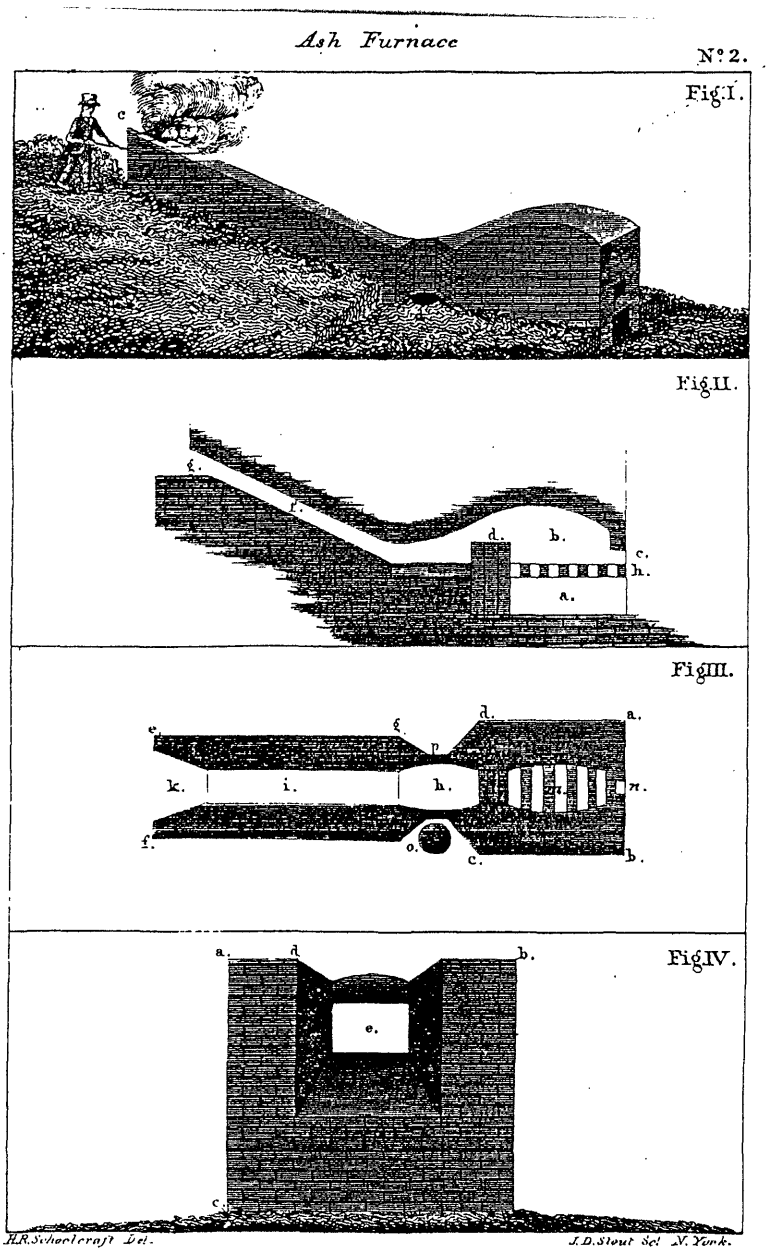

Figure 11: Sketch of an ash furnace (Schoolcraft 1819).

slag. After pounding the ashes to a powder and removing excess ash through flotation, the lead ash was placed in a second furnace (Figure 11). Also erected along a hillside, the commonly 2 foot wide by 6 foot long by 20 inches high limestone and clay mortar flue ran up the hill from a grate which sat at its base. After heating the grate from below, the ash charge mixed with flux was fed into the flue. The ore and slag, a heavy black, glassy substance, were then tapped at the base of the grate. Composed of limestone rather than firebrick, log and ash furnaces were reduced to lime and lasted only 15 to 20 days. Both furnaces yielded 65% lead (Schoolcraft 1972 [1819]: 97-105; Schafer 1932: 102; Meeker 1908 [1872]: 256).

As the smelting process grew increasingly sophisticated by the mid-1830s, it became a more specialized task (Grindell 1905: 10). The complexity of construction and the necessary firebrick of the cupola furnace required a greater investment of capital but remained intact for a longer period of time and produced a higher percentage of lead. Peter Lorimer erected a cupola furnace just north of the mouth of Catfish Creek in 1834. Two others were erected in the region in 1835. The cupola furnace extracted 65% to 70% of the lead (Calvin and Bain 1899: 17). Introduced into the region about 1836, the reverbatory furnace allowed the fire to pass over the top and bottom of the mineral charge. A system of bellows driven by water power produced a more intense heat. Given its need for water power, these furnaces often appeared in ravines near diggings. By the end of 1836, five blast furnaces existed in the vicinity of Dubuque. Water's furnace just above Rockdale on Catfish Creek lay immediately outside the Mines of Spain Area (Calvin and Bain 1899: 17; Schafer 1932: 102-103; Fay, Neville, and Garfield 1986). The Scotch hearth blast furnace replaced the reverbatory furnace about 1866. These furnaces reduced about 80% of the lead (Schafer 1932: 103-104; Kirk 1939: 20; Calvin and Bain 1899: 595).

Between 1820 and 1920, the upper Mississippi Valley produced a significant percentage of the nation's lead (Fay, Garfield, and Newell 1986). Production in the Mississippi Valley followed the usual course for such extractive industries: an initial period of development to the mid-1830s followed by a boom period from 1835 to 1847 and then a decline with sporadic activity to near cessation by 1910 (Auge, Gibson, and Klein 1986: 59-50).

The rise in the price of lead by the mid-1820's, a protective tariff, and the growing awareness of lead deposits stimulated the lead industry in the Upper Mississippi Valley Lead Region and resulted in a rush to the Fevre River lead mines by 1825. However, overproduction causing a drop in lead prices during the depression of 1829 to 1833 arrested this development. The price of lead descended from $3.75 per hundred weight to $1.31 per hundred weight at which miners lost money. Access to river transportation and the practicality of a supplementary agricultural income allowed the industry to survive (Schafer

1932: 32-35, 42; Fay, Garfield, and Neville 1986; Kirk 1939: 22, 28).

Between 1835 and 1847, the lead industry entered a boom period. The production of lead rose in response to increasing market prices and the protection of that market by a new tariff. Falling transportation costs allowed greater profits. Because of these factors and an increased tariff in 1842, the lead industry suffered little from the depression of 1837 to 1843 (Mahoney 1982: 153). Prospectors continued to open new lodes in the Dubuque region in this period. Since they mined rich surface deposits, miners invested little in equipment and usually hired few employees. In the Dubuque region, output reached 3,000,000 pounds of lead in 1839 and rose to 8,700,000 pounds in 1854. In 1839, the Upper Mississippi Valley Lead Region as a whole produced an estimated 30 million pounds from its 46 smelters, and the lead industry employed about 3,000 part time individuals (Straffin 1973: 7; Owen 1844: 44; Calvin and Bains 1899: 10; Childs 1984 [1857]: 35; Fatzinger 1971: 14; Mahoney 1982: 153; Auge, Gibson, and Klein 1986: 49-50). Dubuque thus composed roughly 10% of the output of the Upper Mississippi Valley Lead Region and increased its production 190% during those 25 years.

In 1848, production in the upper Mississippi Valley leveled off and began a slow decline dropping 8% in 1848 and 10% in 1849. However, continually rising prices did not indicate oversupply but an inability to fill demand. Additionally, attraction of a portion of the miners to western gold fields in 1849 coincided with declining production through decreasing lead resources and a concomitant rise in the cost of extracting lead particularly below the water table. Miners exhausted most of the rich surface deposits by 1845 and increasingly chose other mineral bearing areas or other occupations. Continuing operations tended to re-open and extended old mines to greater depths requiring more labor, equipment, and capital. This decline was arrested temporarily in 1853 and again in 1856 to 1857 as shortages forced prices higher and induced greater capital expenditures (Mahoney 1982: 156-59; Schafer 1932: 107-108, 114; Goodspeed 1911: 24, 120; Fatzinger 1971: 38-39; Auge, Gibson, and Klein 1986: 49, 86).

With the onset of the 1857 depression and falling demand, lead production declined precipitously in the upper Mississippi Valley region, never recovering its former level (Mahoney 1982: 159; Fay, Garfield, and Neville 1986). Production continued to decline through the remainder of the century with sporadic rises (Auge, Gibson, and Klein 1986: 49-50). In the 1860s, war demands attracted more capital for production and stabilized the decline. It lasted until the depression of the early 1870s when the decline advanced once again. With a few exceptions, larger mining operations did not enter the lead industry in Dubuque until the 1890s. Following the discovery of rich lead mines in the western states, the focal point of the lead industry shifted away from the Mississippi Valley in the 1870s. During this decade, the commercial

extraction of zinc which often occurs in association with lead extended the mining industry in the upper Mississippi Valley into the twentieth century. Except for scattered small operations which lasted into the 1950s, low demand and high production costs ended lead mining the early 1900s in the Dubuque region (Auge, Gibson, and Klein 1986: 49-50; Ludvigson and Dockal 1983: 4-5; Fatzinger 1971: 51-52 59, 67; Calvin and Bain 1899: 583; Preszko 1983: 51).

The presence and commercial value of zinc ore in the Upper Mississippi Valley Lead Region was recognized since at least 1844 (Owen 1844: 51). However, because of its general occurrence in deep deposits, complex reduction processes, the use of coal in smelting which does not occur in the the region, and the capital required to establish the operation, early lead miners discarded zinc ores. The beginnings of the zinc industry are marked by the erection of a zinc smelting plant near a coal source at La Salle, Illinois in 1859 and at Mineral Point, Wisconsin in 1863 and after 1882. However, expansion depended on the development of a regional railroad network by the 1870s and the gradual sophistication of mining techniques assisting drilling and drainage in the 1890s which assisted the development of the industry beginning in the 1870s and intensifying in the 1890s. Zinc production surpassed lead mining by the 1880s. A significant rise in demand and price produced by its utilization in many metal products prompted a boom in the zinc industry in 1898 which lasted to about 1918. The industry declined during the depression of the early 1920s and collapsed in 1929. Although zinc mining did occur in the Dubuque region by 1885 and in Mosalem Township, a majority of the deposits concentrate in Wisconsin. Despite the mining activity during the 1890s and early 1900s in the Mines of Spain Area, it does not appear to have included zinc (Auge, Gibson, and Klein 1986: 52-53; Knox 1982: 227; Western Historical Company 1880: 20-22; Calvin and Bain 1899: 44, 589; Fay, Garfield, and Neville 1986; Fatzinger 1971: 43, 105).

The avenues for marketing lead altered significantly during the nineteenth century. Europe met much of the nation's lead demands prior to 1825 when the Upper Mississippi Valley Lead Region replaced it. As early as the 1780s, lead started to flow south from the Dubuque region to St. Louis. This trend continued after the War of 1812. Traders located outside the bounds of the Mines of Spain transported lead extracted by the Mesquakie until the early 1830s. Lead from the Galena lead mines which opened in 1822 and boomed in the mid-1820s also travelled south to St. Louis. Given its weight, the ore's proximity to the Mississippi River was essential to the development of the lead trade in a frontier area. Only about 3% of the lead moved overland through Wisconsin or northern Illinois to Milwaukee for transshipment over the lakes until the arrival of the railroad. St. Louis thus remained the main entrepot for the upper Mississippi Valley until the 1850s (Auge 1976: 1; Schafer 1932: 5; Mahoney 1982: 151, 167).

Initial steamboat arrivals at Galena occurred in 1823. Stimulated by the lead trade, steamboat transportation between Galena and St. Louis attained a regular schedule in 1825. It began to displace keel boats and became well established by the 1830s (Mahoney 1982: 61-63, 67). Galena remained a main lead port for the upper Mississippi Valley region including Dubuque from the 1820s to the early 1850s. Until this period, the shipments received at St. Louis were almost equivalent to those transshipped from Galena. Small excesses beyond that shipped from Galena, which appeared in 1842, 1843, 1846, 1847, and 1851, arrived from Cassville and Potosi, Wisconsin, and Dubuque. By 1853, direct shipments from other northern ports increased with 10% from Dubuque and 10% from Cassville and Potosi (Mahoney 1982: 161-62). And until the early 1850s, lead received at St. Louis was merely transshipped to the east coast, primarily New York City, via New Orleans. By 1853, 25% of the lead was diverted at St. Louis into local industry, initially white lead and shot (Mahoney 1982: 162-166).

Arriving in Rockford in 1851, in Freeport in 1852, and Galena and Dunleith across the river from Dubuque in 1855, the Illinois Central Railroad quickly altered trade patterns in the lead industry. Rather than going south to St. Louis, lead flowed from the lead region via the railroad to Chicago and the Great Lakes ports. By 1861, two-thirds of the lead mined in the lead region went through Chicago rather than St. Louis. However, Chicago did not become merely a transshipment point to New York City and Philadelphia. Only one-fifth of the lead reached eastern ports, and the remainder was processed in Chicago. Also, as transportation costs by railroad as opposed to overland routes dropped, it became more cost effective to manufacture lead products closer to its source. By the late 1850s, Dubuque became a small lead production center. By the late 1850s, Dubuque manufacturers produced lead shot, white lead, sheet lead, and lead pipe. The railroad also directed lead from smaller centers away from Galena toward regional manufacturing centers. Thus, the railroad localized the lead trade drawing it away from the two main centers, St. Louis and Galena, and allowing its local processing (Mahoney 1982: 168-77; Auge 1976: 5).

Until the mid-1850s, Galena dominated the trade on the northern Mississippi above the rapids at Keokuk. With its focus south of these rapids, involvement by St. Louis traders north of Keokuk always remained selective. As the lead trade began to shift away from Galena, Dubuque drew its packet trade. In 1856, the Minnesota Packet Company relocated from Galena to Dubuque (Mahoney 1982: 177). Prior to this era, Dubuque's poor harbor had discouraged substantial river trade. This split in the river trade at Keokuk facilitated the rather rapid shift of trade south to local markets and Chicago. The localization of trade also stimulated the building of roads to entrepots (Mahoney 1982: 177, 78, 85). However, in the early 1900s, some of the lead produced in the Mines of Spain Area, specifically at the Fessler Mines

(13DB151 and 13DB153), traveled south on the railroad from Rockdale to Galena (Helen Fessler in Hartman 1986; Pruszko 1983: 53). How long and exactly why the lead was diverted to Galena remains unclear.

Mining occurred intermittently within the Mines of Spain Area from the period of Dubuque's occupation to about 1914 and again in the 1950s. However, it is not usually possible to date the operation of specific mines. Most evidence of mining tends to be concentrated along crevices where lead was known to accumulate (Fatzinger 1971: 19).

Neither the Mesquakie nor Dubuque's engagees are believed to have excavated mining shafts, but appear to have operated in shallow pits or inclined depressions as deep as 45 feet (Straffin 1973: 13). Specific evidences of their mining have not been adequately substantiated. An interview with Helen Fessler, a member of the Fessler family who mined lead in the Mines of Spain Area at the turn of the century, suggested that the Mesquakie mined the Monument Caves (13DB108) and the Fessler Caves (13DB151 and 13DB153) (Preszko 1983: 52; Hartmann 1986). Showing no evidence of mining but containing some modification toward the rear, Cattese Cave (site 13DB104) more likely functioned as a rockshelter (Preszko 1983: 52).

During the Government Land Office survey of 1837-1838, Burt observed that "...lead ore [is] raised in large quantities in this township [T88N R3E] near the banks of the Mississippi in the N. part of the township" (quoted in Rogers 1976: 42). By 1839, however, Owen recorded little active mining within the Mines of Spain Area. He noted current activity at what he called the "Catfish diggings" to the north and west of the area showing only a few mines in the south half of section 9. Adjacent areas displaying mining in the late 1830s included the southeast portions of sections 15 and 27, the northwest portion of section 22 and the southwest corner of section 26 in T88N R3E as well as the east half of section 2 in T88N R2E. But, he did note the evidence of mining activity in early periods (Owen 1844: 87, 116). In 1841, Catlin described "an extensive smelting furnace" and noted that ore was "...dug out of the hills in all directions..." above it (Catlin 1841: 130). Here, Catlin may be referring to the Lorimer smelter which stood just north of the current boundaries of the Mines of Spain Area. By 1847, the Cattese Mines at Cattese Hollow within the Mines of Spain Area were listed in a public land sale notice as one of the four significant mining districts of reserved mineral lands in the Dubuque region (Rogers 1976: 42).

Twenty years after the public land sales, De Werthern (1858) published a map of the lead mining district illustrating a string of mines trending northwest to southeast parallel to the Mississippi River. This line follows the southwest edge of the Mines of Spain Area. In the 1850s and 1860, the Cattese Hollow area continued to experience considerable mining. Numerous small

mining pits, primarily exploratory pits but also probably several shafts, likely remain from this era. Such mining companies as Driscol and McNamara, Wall & Co., James Brazer & Co., Robert Brazer & Co., Dolphus & Co., McGuire & Co., and Power & Co. mined in this area (Preszko 1983: 57).

Additionally, local families mined and farmed the land primarily in sections 4 and 9 and a small portion of 8 (Figure 9). Although Sylvester Preston I who initially claimed lands within the Mines of Spain Area in ca. 1836 was a professional smelter, he was employed at large operations at Mineral Point and later in Missouri and Michigan and does not appeared to have mined upon his own lands (Hartman 1987). However, his son, Sylvester Preston II, primarily a miner and secondarily a farmer, mined extensively in the above area in the late nineteenth and early twentieth centuries. Additionally, Sylvester Preston I's widow, Anna, rented her mineral lands in the west half of section 9 and section 4 to outsiders after her husband's death in 1852 (Hartman 1987 [personal communication 11/30/87]). And, in 1874, the DUBUQUE DAILY TIMES noted the activity of two individuals removing 1500 pounds of ore per day from mines at the mouth of Catfish Creek (Auge, Gibson, and Klein 1986: 50).

Although Calvin's map of the Dubuque lead mining area failed to indicate any mines within the Mines of Spain Area in 1899 (Calvin 1899), he noted that a portion of T88N R3E had produced large quantities of ore in the past while other areas proved barren. In 1906, the Baule Brothers were mining lead two miles south of Dubuque near Cattese Hollow (Auge, Gibson, and Klein 1986: 51). Although most of the mines closed in the Dubuque area by 1910 (Ludvigson and Dockal 1984: 5), the Fessler mines in the Mines of Spain Area were operated from 1908 to 1912 and again briefly in 1950 (Hartman 1986). Thus, written sources indicate sporadic activity in the Mines of Spain Area from the period of Dubuque, the early 1830s, the early 1840s, the 1850s and 1860s, the mid-1870s, and at the turn of the century. Small scale mining by residents probably continued from at least the 1860s into the early twentieth century.

Recorded property types related to the Mining and Bulk Products: Lead Mining in the Mines of Spain Area (1830-1914) context include sites associated with lead exploitation: the lead mining pits, adits, and shafts and lead processing sites.

The 77 shallow, lead mining pits which dot the Mines of Spain Area are primarily exploratory although some of the large pits may be shafts whose sides have slumped. Some of the sites represent a large cluster of pits such as 13DB95 and 13DB155 and others contain two to ten pits (Abbott 1982b: 26). They usually occur on top of and in the sides of hills and most commonly follow an east-west but occasionally a north-south direction in an attempt to intersect major crevices (Preszko 1983: 9). Most cannot yet be associated with a specific period of activity. Aley and Aley (1985: 15) noted that a

number of these pits contain mature walnut trees allowing the dating of mining disturbances in some areas to the early 1800s. One such concentration occurs south of Cattese Hollow at 13DB95. Many of the pits at Cattese Hollow itself probably date to mining activity in the 1850s and 1860s during the settlement of Mosalem (Preszko 1983: 57).

Lead mining adits are either horizontal entrances into caves excavated to provide access and/or allow drainage of water for deep mines. Fill may obscure some adits beyond the twelve recorded to date. The entrance to some of these has recently collapsed (Abbott 1983). Most are less than 100 feet or 30 meters and about 2 to 3 feet in diameter although Fessler #2 (site 13DB151) extends 52 meters. Similar entrances outside the Mines of Spain Area often lead to 3.2 km. or 2 miles of passages (Aley and Aley 1985: 13). Unlike the mining pits, some of the adits are datable either through written sources, oral tradition or remaining artifacts.

The twelve vertical shafts recorded for the Mines of Spain Area result from American activity after 1830 (Straffin 1973: 13). Except those which contain artifacts, support members or tracks, the shafts cannot currently be more precisely dated. The openings of some but not all shafts are secured with rubble limestone walls. Any log cribbing would have disintegrated (Owen 1844: 41). Also, some shafts which have blocked entrances may be mistakenly identified as mining pits (Abbott 1982b).

Since the relationship of old road beds to mining, agriculture or logging remains unestablished, they are noted as potential sites for future consideration but are excluded from the current multiple property group. They include sites 13DB121, 13DB146, 13DB158, 13DB170, 13DB183, 13DB206, 13DB248, 13DB258, 13DB281, and 13DB282.

Documents record the operation of a cupola furnace lying near the mouth of Catfish Creek just north of the Mines of Spain Area, a second furnace in the southwest corner of section 5 just north of the Mines of Spain Area, and a third in the southwest corner of section 6 inside its boundaries. The cupola furnace and house owned by Lorimer & Company existed at Ripow in 1836 during the General Land Office survey. Describing it as "...an extensive smelting furnace...," Catlin noted the existence of a furnace at the same location in 1841 (Catlin 1841: 130; Auge, Gibson, and Klein 1986: 45; Western Historical Company 1880: 462; U.S. General Land Office Survey in Hartman 1986). The same 1837-1838 survey also indicated Latin's furnace in section 5. And, the DeWerthern map of 1858 noted the furnace in section 6 (DeWerthern 1858).

To date, surveys have located only log furnaces within the Mines of Spain Area. Although it is believed that both Euro-Americans and the Mesquakie followed similar construction techniques, this generalization remains

unverified. These furnaces are frequently but not necessarily older than the cupola and blast furnaces. Requiring less investment to construct, such furnaces are usually associated with smaller, more temporary operations (Schafer 1932). The archaeological remains appear as a roughly circular concentration of flat stones along a hillside. A stone-lined channel leads away from this nucleus. In one example, a considerably larger triangular outline of stones with one point facing downslope encompasses this circle. Two log furnaces occur in association with site 13DB9 near the mouth of Catfish Creek. Because of their stratigraphic location, one may perhaps be associated with Dubuque's operations and the other appears to date between 1850 and 1876 (Abbott 1982b: 26).

Environmental factors set parameters on where sites were located. Exploratory mining pits occur throughout most of the Mines of Spain Area. However, they appear mainly upon hill tops and slopes and align primarily in an east-west and less strongly in a north-south direction as they attempt to follow or intersect the east-west lead-bearing crevices. Other than their location above the valleys and the water table in the first and second levels of caves (Preszko 1983) and often in a cluster, no other locational factors are associated with mining pits. Log furnaces appear on hillsides, often near a water source such as a Catfish Creek or the Mississippi River, and adjacent to the mines. However, recently noted examples do occur well above such water sources. These less sophisticated furnaces did not rely on water power, but creeks and rivers were utilized as an avenue of transportation for ore. Apart from their proximity to transportation, other factors affecting mining and smelting locations, for example socio-cultural considerations, have not been isolated.

The initial archaeological investigation by Straffin (1973) which dealt with the technology of lead mining within the Mines of Spain Area made only general reference to the existence of exploratory mining pits and adits within a brief historical context. While Abbott (1982b; 1983) enumerates the properties upon which the proposed nomination is based, Pruszko's (1983) report places those sites within their speological and historical setting. Also focusing specifically on the Mines of Spain Area, Hartman (1986), Auge (1976), and Auge, Gibson, and Klein (1986) add to the historical context.

The context Mining and Bulk Products: Lead Mining in the Mines of Spain (1830-1914) relates to evidence of past lead mining after the initial abandonment of the area by the Mesquakie in 1830. Thus, historical archaeological research within this context focuses primarily upon its technology and the ways in which socio-cultural factors interacted with that technology. Initial research must distinguish the different eras of mining through the examination of attribute variations in location and depth for exploratory mining pits, adits, and shafts, to better grasp the alteration of mining techniques through

the nineteenth century. More detailed examination may reveal a less stable development. The investigation of the log furnaces should better delineate their physical appearance, manner of operation, and temporal and cultural associations. The triangular arrangement of stones surrounding the hearth may be unique to the Mines of Spain Area or a time period. However, the historical literature does suggest considerable variation. Additional locational determinants, particularly those related to cultural factors such as the proximity of small mining communities and camps at Cattese Hollow and Catfish Creek and the routes of travel to pinpoint avenues of trade require delineation.

As miners become identified, the isolation of the type of land tenure through which they claimed their mines and located their community of residence will assist the delineation of community and trading patterns associated with the mining era. This theme is also addressed under the context of Special Purpose Settlements: Lead Mining Communities in the Mines of Spain Area (1830-1860s). The Dubuque mining region appears somewhat more stable than those in the Far West perhaps because of a more legally recognized permit system, the government leasing system, and the tendency to participate in agriculture as well as mining (see Fay, Garfield, and Neville 1986). Knowledge of the miners' origin, length of residence, and other part time occupations should enlighten these issues. Correlations may appear between greater permanency and participation in agriculture.

Primarily individual or local partnership operations appear to have directed mining in the Mines of Spain Area. Notation of a series of small companies operating in the Cattese Hollow area are the exception. If possible, the nature of these companies and the reasons for their association specifically with this area as well as an examination of the background of the individuals who operated the mines require explanation. Some appear to be part time miners who also participated in agriculture. It is likely that the companies were small operations employing few individuals. Such business affiliations appear typical of many early mining areas or later ones which do not contain extensive deposits. Because large mining operations appear to be absent from the Mines of Spain Area, its development is probably more typical of the mining frontier than areas containing rich lodes. It gains its significance from this association which enlightens the more typical mining situation.

Special Purpose Settlements: Lead Mining Communities in the Mines of Spain (1830-1860s)

Equally significant to the comprehension of nineteenth century lead mining are the small, temporary communities in which the miners lived and from which they traveled to both mine and trade their ore and procure provisions from larger trading centers. Such communities must be placed within a settlement pattern framework to understand their function and significance.

Community research analyzes the settlement pattern of a defined group at different, non-hierarchial physical and social spatial levels. This approach allows the derivation of the different social networks linking one site to another (Price, C. and Price 1980). The system of property types composing the framework for the Special Purpose Settlement is based upon the concept of community initially developed by Lewis (1977a; 1977b), Price and Price (1975), and McKay (1978; 1984; 1987). The community can be viewed as a property type encompassing the greatest space. Then, community is defined as a "...group of households in association..." (Russo 1974), a social entity, not simply a place, that occupies a contiguous and limited geographical space. Its inhabitants remain in contact. Kinship and cooperation in matters of common welfare bind it together. Face-to-face contact strengthens community bonds (Hine 1980). The community maintains a particular variety and combination of social institutions through economic, religious, political, and educational bonds as well as voluntary and informal associations. They not only internally knit the community but relate its inhabitants in specific ways to other communities. Such a perspective, then, places one specific community within its social network allowing the delineation of its function.

The settlement pattern is composed of the community, here the property type, and spatially subordinate resources which are linked together through different kinds of social networks (Schmits, McKay, Mandel, and Hedden 1986). The distinguishing features of the community types are their internal physical structure and the social institutions or functions which the structure commonly represents. Each community type fulfills a different scale and combination of functions, has a different manner of distribution across the landscape, and possesses a different set of social relationships within the larger settlement pattern (Lewis 1977a; 1977b; Price, C. and Price 1978; Chang 1968; McKay 1984; 1987). These functions which the community performs knit the community together and create the networks between them.

Community types composing the settlement pattern common to the nineteenth century Midwest include the rural community which is in turn composed of subtypes such as the houseplace, farmstead, and special purpose activity area and central places such as the nucleated community, trade center, county seat, and regional commercial center. The central places are often composed of such

resources as urban farmsteads; commercial, business, craft, and industrial buildings; and public buildings. While the community types may share similar kinds of resources, the number, position, interrelationship, and functions serving its inhabitants and hinterlands distinguishes them. Each possesses a particular variety and level of function.

The mining settlements of Catfish and Mosalem within the Mines of Spain Area as well as Ripow located just to the north and perhaps smaller satillite mining camps such as 13DB201 not only represent special purpose resource extraction settlements but from a more wholistic perspective probably functioned as many of the small Iowa communities developing during the first half of the nineteenth century. This approach allows insight into the internal integration of the community as well as the relationship with its associated extractive sites and externally to the communities on which they depended for economic support services and other functions. These settlements with the exception of the mining camps may have functioned as nucleated communities with close economic and probably other social ties to the county seat of Dubuque.

The small, often unplatted nucleated community contained a few comparatively closely spaced dwellings and a small number of entrepreneurs such as craftsmen, businessmen, and perhaps a small local industry. These enterprises frequently included a merchandising store, blacksmith, and/or local mill. The nucleated settlement served a small trading radius of perhaps four to six miles. They also often maintained a school which perhaps housed religious functions or a separate church and occasionally a township hall which was also attended by nearby rural residents. Thus, residences with associated outbuildings, discrete trash deposits, gardens, and other landscaping features as well as business, craft, and industrial structures, and often a school and perhaps a church created the physical composition of the nucleated community. This form relied upon larger, more complex central places such as Dubuque for numerous economic and political functions and frequently voluntary associations. The definition of community form, then, minimally includes its social functions, its physical structure, and its external relationships (Abbott and McKay 1978; McKay 1984; 1987).

Small mining communities in the Upper Mississippi Valley Lead Region emerged quickly in response to rapid settlement. They often contained temporary residences, a general merchandising store, a saloon, a blacksmith shop, and smelter. These services essentially fulfilled the immediate needs of this nucleated community. Kirk (1939: 20) described a similar community, which he calls a smelting establishment, located 1.5 miles north of Galena, Illinois. Founded in 1829, this community contained a stone warehouse, one stone house, one dwelling, a saw and grist mill, one blacksmith shop, three additional dwellings, and the smelting furnaces. Dwellings were frequently one room

structures or two rooms divided by a central passage constructed of log and lacking floor boards. Individuals mined and participated in semi-subsistence farming perhaps producing some surplus for sale (Fatzinger 1971: 33). For example, near Galena miners produced such crops as corn and potatoes and raised several beef and dairy cattle as well as several yoke of oxen (Kirk 1939: 5). Mining permits allowed the devotion of one-quarter acre to farming (Fatzinger 1971: 33). The urban farmstead was the norm in communities of all sizes into the twentieth century. Each lot contained a dwelling and associated outbuildings, vegetable garden, animal pen, and special use areas for butchering, washing, minor blacksmithing, and the like (Stewart-Abernathy 1986). Fields immediately adjacent to the community were often worked by community members (Mckay 1985a).

A settlement pattern of numerous, small, dispersed communities in essentially rural areas with little population between them characterized these mineral bearing areas. Some of these mining communities developed and maintained relatively diversified economic bases while others gradually lost population as deposits became depleted and faded (Fay, Garfield, and Neville 1986; Fatzinger 1971: 24). The general physical and social composition of the mining camps remains unclear but may be limited simply to an isolated dwelling or small group of dwellings.

Three small nucleated communities, Mosalem, Catfish, and Ripow, appeared along the Mississippi River in or near the Mines of Spain Area from the early 1830s to at least the mid-1860s. There were also mining camps such as site 13DB201 which may date to this era. Ripow occurred just north of Catfish Creek and the Mines of Spain Area on the north edge of section 6, T88N R3E and perhaps on the southern boundary of section 31, T89N R3E. Catfish (13DB9, 13DB17, 13DB18, 13DB62) was positioned at the mouth of Catfish Creek in the northwest corner of section 5 and the northeast corner of section 6, T88N R3E. Mosalem (no site number) was located at the mouth of Cattese Hollow south of Horseshoe Bluff in the north half of the southwest quarter of section 5, T88N R3E. The potential mining camp (13DB201) occurs along a ravine southeast of this area in the center of the southwest quarter of section 9.

The legal definition of such nucleated communities remains ambiguous. Miners settled the community of Catfish in ca. 1832 and abandoned it in the late 1850s. Mosalem was settled by 1855 and abandoned in the mid-1860s (Hartman 1986). If formed on government land prior to 1847 as were Catfish and Ripow, their residents occupied the land as squatters. Even their association with a licensed smelter did not alter this status (Grindell 1905: 14). After 1847 and the alienation of land into private ownership, community members may have squatted near their mining claims or leased the area upon which they resided depending upon the whim of the land owner. Although DeWerthern depicts Mosalem as a platted town in 1858, this may not be a legal status (Auge,

Gibson, and Klein 1986). The community disappeared from the 1874 map (Harrison and Warner 1874). The land was then owned privately by the Iowa Lumber Company. Thus, the miners remained as either leasees or squatters after 1847. The status of the mining camp appears to be a similar one. They are unplanned, temporary entities with their existence dependent upon the proximity of the mines. Both communities and the mining camp occur in heavily mined areas near the Mississipi with access to a major trade center.

In 1836, Albert Lea noted the existence of Catfish at the mouth of that stream (1836: 40):

> This is a little Place laid out in 1832, on a piece of ground, containing about fifteen acres, and hemmed in on all sides by a precipitous rocky bluffs, the Mississippi, and the creek of the same name. It possesses great advantage in the richness of the contiguous mines, has a good landing, a mill near at hand, and is withal a very busy little place. It takes its name from the quantities of catfish that are found in the sluggish water at the mouth of the creek.

The 1837-1838 composite Government Land Office survey plat indicates the existence of Latin's furnace and house just south of the mouth of Catfish Creek. Ripow appears in the ravine to the north of Catfish Creek and contains Lorimer's furnace and house (in Auge, Gibson, and Klein 1986). At that time, 50 individuals lived in the two communities (Rogers 1976). And, Lea noted a smelting establishment and several stores but no town lots at Ripow (1836: 40). Likewise, in 1857 Child stated that Lorimer had established a cupola furnace with an associated village near the mouth of Catfish Creek in 1836 (1984 [1857]: 40). Thus, Ripow and Catfish are two separate entities situated about one-half mile apart.

In 1836, Goodspeed placed the distillery of Chauncey Swan at the mouth of Catfish Creek (1911:56). The 1858 DeWerthern map illustrated a platted community on the south side of Catfish Creek, the location of Catfish, which runs into the ravine to the north at the location of Ripow. He identified this entity as one community, South Dubuque. Just to the west of the location of Catfish and just southwest of the Mines of Spain Area on Catfish Creek, DeWerthern located a mill and post office which may be identified as Rockdale. The 1874 Harrison and Warner map placed a sawmill and three houses along a railroad spur at the former location of Catfish. An 1892 map failed to indicate a settlement (Northwest Publishing Company 1892). In 1930, Hoffman concluded that Catfish contained miner's cabins, several businesses, and a smelter (1930: 182).

Thus, Catfish very likely existed by ca. 1832 although it may have been

occasionally confused with nearby Ripow. It appears to have contained miner's cabins, a smelter, a mill, a landing, perhaps a distillery, and possibly several other businesses. By 1874, it had evolved into a small milling center with the Iowa Lumber Company sawmill, three houses, and a railroad spur.

In 1968, the Office of the State Archaeologist of Iowa conducted an excavation at the location of Catfish just south of the mouth of Catfish Creek on the footslope and toeslope of the floodplain of the Mississippi (13DB17). They identified the foundations of a miner's cabin dating to the 1830s as well as several concentrations of historic Euro-American ceramics and glassware fragments (Straffin 1973: 17; Till 1977: 317-18). Thus, historical archaeological evidence clearly indicates a settlement at that location.

Mosalem existed as a post office from 1850 to 1855 and 1862 to 1864 (Hartman 1986). It also appeared as a platted community on the 1858 Dewerthern map but disappeared from the 1874 Harrison and Warner map. By 1860, it contained a population of about 20 miners and seven mining companies (Preszko 1983: 53). The Preston family owned lands just southeast of the community and both leased mineral rights and mined in the area (Hartman 1986). Between 1870 and 1873, the Chicago, Clinton, Dubuque, and Minnesota constructed a railroad along the bank of the Mississippi (Western Historical Company 1880: 630) which may have destroyed part of this community. A portion of it may also be flooded by the Mississippi. Currently, exploratory mining pits and possibly some filled-in shafts dot the hills surrounding the ravine which contained the community (Abbott 1983; Hartman 1986; Preszko 1983: 53). The remains of a dwelling foundation adjacent to a road stabilized by a retaining wall are visible in the center of the south wall of the ravine above the location of Mosalem (Hartman 1986; observed by McKay and Hartman on 9/30/87). While a community of Mosalem likely existed and minimal remains suggest a location, its precise boundaries remain tenuously defined.

Site 13DB201 is identified as a possible mining camp (Abbott 1983: 59). Located in a heavily mined area, the site is marked by a deep rubble limestone foundation associated with the remains of a smelter (Observed by Hartman and McKay 9/30/87).

Catfish and Mosalem very likely relied upon Dubuque for economic services and at least minimal political needs. By 1835, Dubuque possessed a courthouse and jail and three churches in addition to its 25 dry goods stores, groceries, and four taverns. It served not only the local miners but the growing number of farmers who traded their surplus products at its market. Because it possessed a poor natural harbor, Dubuque did not become an important trading center until the arrival of the railroad in 1855. In the late 1850s, trading became more internalized within the region shifting away from the two major trading centers affecting the area, Galena and St. Louis. Dubuque had begun in the

mid-1840s and particularly after the arrival of the railroad to develop a local industrial and commercial base. By the late 1850s, it became a small lead processing center (Mahoney 1982: 177; Langworthy 1910 [1855]: 304; Auge, Gibson, and Klein 1986: 43; Lea 1835: 40-41). But, for an unknown reason, the railroad also allowed local miners by the early 1900s to by-pass Dubuque and ship lead to Galena (Preszko 1986).

The mining communities of Catfish and Mosalem lasted a brief period, probably as long as it required the miners to tap the accessible lead veins in the surrounding area. Such rapidly established and short-term settlements probably also demanded equally temporary and expedient forms of social relationships. However, the precise form of the internal social structure remains unknown.

Property types applicable to the Mines of Spain Area which relate to this context include lead mining communities, Mosalem and Catfish (13DB9, 13DB17, 13DB18, 13DB62) and one mining camp (13DB201). The latter is known archaeologically to be composed of a miner's cabin and log furnaces and may also potentially contain additional dwellings and associated features; business enterprises such as a mercantile store; commercial enterprises including a wharf and warehouse; industrial complexes such as a mill and additional smelters; a craft shop, most likely a blacksmith, and perhaps a public building. The mining camp is known to contain at least a dwelling and smelter and probably also includes additional outbuildings, trash pits, and special activity areas. Such property types are most likely to occur adjacent to lead-bearing veins but also near routes of transportation to provide a means to reach lead markets, supplies, and other needed social services.

Sources providing data on the archaeological component of the sites related to the context of Special Purpose Community include the speleological survey by Pruszko (1983), the research notes and other communications prepared by Hartman (1986; 9/30/87; 11/30/87), the 1973 archaeological survey report by Straffin, the portion of the Iowa's Great River Road Cultural and Natural Resources survey which relates to Dubuque County by Till (1977), and the surveys conducted by the Office of the State Archaeologist of Iowa by Abbott (1982b; 1983). Hartman, Pruszko, and Abbott as well as Auge, Gibson, and Klein (1986) also provided data for the historical context.

The sites with related, complementary historical data which represent the Special Purpose Community context within the Mines of Spain Area are capable of contributing considerable data to research questions focusing upon the physical and social characterisitics of such temporary communities. The physical composition of these communities and camps require verification. Excavation should precisely define the physical appearance of potential urbansteads, entrepreneurial structures, public buildings and their related

outbuildings, and activity areas. Additionally, investigation should address the spatial relationship of these subtypes within the community focusing upon the spatial integration or segregation of each property subtype. Physical evidence should also suggest the composition of the diet and depending upon the nature of the ceramic remains, relative social-economic variation within the community.

The precise social relationships which cemented these temporary communities and bound them to other communities remains unclear. The form of land tenure requires definition to illuminate the intended stability of the settlement. The effect of county and later township government upon the order of such isolated communities may have been relatively minimal. Additionally, if miners founded them as temporary entities lasting only the period during which they would extract accessible lead from the nearby mines, they were unlikely to form permanent institutions such as churches, schools, and local governments. Thus, residents perhaps associated with extant religious and educational institutions and voluntary organizations such as miner's associations in nearby, more permanent communities such as Dubuque or in time nearby rural communities. They likely did rely on Dubuque and perhaps adjacent small central places for economic services and perhaps the shipment of their lead ore. The nature of the mining communities' relationship with such trading centers requires defintion. Locally, order may have initially occurred through the voluntary association of citizens to perform specific needs. Vigilante groups were not uncommon to this mining frontier (Childs 1984 [1857]; Kirk 1939). Given the temporary nature of the community, kinship associations beyond the nuclear faimily appear unlikely. However, the population and family composition as well as occupational make-up requires examination. If local companies employed inhabitants within the community, then these companies may have superimposed some order. A combination of maps, census records, local newspaper accounts, legal records, account books, oral tradition, diaries, and letters in combination with the physical representation of these communities should provide resources for insights into these questions.

The Changing Iowa Farm: The Agricultural Rural Community in the Mines of Spain (1836-1925)

The agricultural rural community developed adjacent to the mining operations after 1847. Although they also participated heavily in mining, residents of these rural communities were for the most part also farmers. And unlike the miners living in nearby nucleated communities, they owned the land and remained for longer periods of time.

The federal government designated the Mines of Spain Area as mineral lands which removed them from public sale occurring for non-mineral lands in Dubuque County in 1840 (Auge, Gibson, and Klein 1986: 41). A public law of 1846 released this land for sale in Mosalem Township in 1847. Although Dubuque lay within the lead bearing region, a special congressional charter of 1836 allowed the sale of lots. The designation as mineral lands delayed the right of preemption under the preemption law of 1841 until after 1847. Thus, settlers within the Mines of Spain Area prior to the land sale of 1847 occupied the land as squatters. The Chouteau land claim to the Mines of Spain prolonged uncertainty to individual land title until its settlement in 1853 (Childs 1984 [1857]: 84; Langworthy 1910 [1855]: 390, 411; Rogers 1976: 67-69; Bogue 1963: 30; Bidewell and Falconer 1941: 266).

Agricultural settlement in the Dubuque area, then, was delayed by land disputes and the mineral land designation. Immigrants made agricultural land claims outside the mineral lands immediately after the land surveys of 1838 (Langworthy 1910 [1855]: 409; Goodspeed 1911: 41). Although a few early agricultural land claims as opposed to mineral claims within the Mines of Spain Area occurred at the time of the land survey in 1836, agricultural settlement was generally delayed until 1847. Settlers purchased approximately one-half of the lands within the Mines of Spain Area in that year. Sylvester Preston originally established his claim about 1836 and purchased 640 acres which partly lie within the Mines of Spain Area in 1847 (Hartman 1987: 146, 162). Settlers claimed all the public lands within the Mines of Spain Area by 1857 (Auge, Gibson, and Klein 1986: 46).

Although many early settlers immigrated to the Dubuque region from the southeast, particularly North Carolina and Virginia, and the lower Midwest including southern Indiana and Illinois, Kentucky, and Missouri, by the late 1830s and 1840s, residents of the Northeast from New York and Pennsylvania as well as Ohio soon began to dominate the migration (Ross 1951: 3; Fatzinger 1971: 24; Childs 1984 [1857]: 35-36). The Prestons, for example, were originally associated with the Pennsylvania Quakers. Although settlers came for many reasons, perhaps the prevailing stimulus remained the drive for personal improvement. The panic of 1837 set many farmers and laborers loose, and the large stretches of vacant lands advertised by the Black Hawk War drew

them westward. The 1840s and 1850s proved to be a period of rapid settlement along the upper Mississippi Valley, and Dubuque became one port through which they entered (Bogue 1963: 18; Ross 1951: 13; Child 1984 [1857]; Grindell 1905: 15).

The notes of the original land surveys of 1837-1838 suggest that an oak savanna characterized by sparsely forested uplands and irregular hill prairies formed the predominant vegetation within the Mines of Spain Area (Aley and Aley 1985: 14-16). Owen, an early geologist and a contemporary observor who was better informed than most, viewed the soils of the Upper Mississippi Valley Lead Region as generally fertile because of their high organic and mineral content. But, he described T88N R3E which contains most of the Mines of Spain Area as three-fifths timber of "...a rather indifferent..." quality. The land surface was rolling and frequently broken and "...tolerably well water..." by streams and springs. The soil which Owen described as sandy was generally poor and classed as third rate (Owen 1844: 87, 116). With reference to the general area, Schoolcraft had also noted a rich alluvial soil. However, he indicated that the area's reputation as a mining area would turn away the prospective farmer (Schafer 1932: 39). Langworthy also noted in 1855 that such a mining region had been viewed as a "...sterile frozen region..." by the farmer (1910 [1855]: 386). Thus, while some contemporary viewers found the general region, although not the immediate area of the Mines of Spain Area, to possess fertile soils, most settlers would initially view lands within a mining region as barren.

Most settlers prior to the mid-nineteenth century also classified prairie soils as unproductive. Forest cover suggested fertility not grasses. Additionally, the prairie lacked readily available water and timber and proved difficult to cultivate. Therefore, many settlers initially viewed the prairie as an unproductive wasteland; it was strange and forbidding. Early settlers therefore tended to shun the prairie and hug the timberline until the early 1850s even after the prairie's fertility became generally accepted. Until then, farming the prairie proved too great a risk by those acclimated to the eastern forests. They eventually farmed small prairies or the edges of large prairies where sod proved less tough and used the broad expanses for grazing. By the 1850s, the steel plow became more readily available. Market demands favored the ability to cultivate and harvest broad expanses with new machinery such as the reaper. New technology reduced the risk and its use became financially renumerative as agricultural prices rapidly rose in the 1850s (Bogue 1963: 5, 47; Bidewall and Falconer 1941: 267-70; Ross 1951: 13; Grennan 1980: 4; Belthius 1948: 117; Acrea 1985). When these factors were thus surmounted, the actual existence of soil fertility, ease of clearing, and the speed with which a large farm could be acquired was advertised in the East. Thus, "...the prairies of Illinois and Iowa were the subject of one of the greatest spontaneous promotional campaigns of history" (Danhof 1969: 121-22).

Sylvanus Preston who claimed a large tract within the Mines of Spain in 1836 initially searched for a homestead near Mineral Point (Hartman 1987: 55 [letter from Sylvanus Preston, Galena to Anna Preston dated 4/25/1835]):

> ...about four miles southeast of the mine where there is said to be a grove, [near a] sufficient stream of water for the purpose to be obtained or leased from the government. In case we make this arrangement I will not be able to buy land at present but we can settle on it and whenever it comes into market we will have a chance to buy it.

Preston like many others sought timber, water, and likely soils which he could till with traditional equipment. He also noted the difficulty of erecting a "very good home" because of the timber shortage. He planned to plant a garden early in May but he was too busy practicing his profession as a smelter to farm. He put in a wheat crop to supply necessary grain in the fall. He closed his letter by informing a friend that there was a good chance to make money through lead mining in the region. Although this letter applies to his home in Mineral Point, it is typical of the settlement experiences in the general area and those which he encountered at his homestead in the Mines of Spain Area after leaving Wisconsin.

In the 1840s, the Mines of Spain Area attracted at least temporary settlers because of its mineral wealth. Although the soils in the immediate vicinity proved less fertile, early settlers apprehensive of the prairie generally preferred this sparsely timbered area which provided lands relatively easily cleared and tilled with traditional equipment, water in springs, and timber for fuel and buildings. As early as 1840, the census indicated that the number of farmers exceeded the number of miners. However, most farmers also engaged in mining (Auge, Gibson, and Klein 1986: 45, 48, 52; Parrish 1910: 348).

The farmsteads within the Mines of Spain Area belonged to one or more rural communities which formed a significant portion of the midwestern rural settlement pattern. Rural farmsteads and houseplaces did not exist in isolation but were often physically clustered into rural communities according to such factors as environment, transportation networks, and kinship (Mason 1984). The community possessed known physical and social boundaries. A convenient travel distance of usually not much greater than four miles defined its size. Members might participate in the same kinship networks, work exchange groups, churches, schools and local government as well as informal visiting.

The dwelling, related outbuildings, outdoor work areas, discrete trash

middens, fields, pastures, and other landscape features composed the farmstead. Outbuildings might include a summer kitchen, smokehouse, and corn crib, and somewhat later a barn, stable, machinery shed, and roofed threshing floor. The small barns and stables of mid-century to perhaps the 1880s reflected the possession of limited livestock and little machinery. The log cabin lasted only a few years on the Iowa frontier as lumber shipped via the Mississippi River from the north quickly replaced local materials (Bogue 1963: 67-68). Often occupied by businessmen or professionals or, for the Mines of Spain Area, by a miner, the rural houseplace was rather rare and consequently poorly known and not easily distinguished from the farmstead. They usually possessed similar outbuildings although smaller in number and combining functions which might be separated on a farmstead, discrete trash deposits, at least a garden if not additional fields, and other landscape items. Because of the short distance possible to travel in a single day, specialized activity areas often occurred outside central places and within the rural communities. They frequently included mills, hotels, isolated stores, and craftsmen. These activities performed in a rural environment shifted to central places as population densities increased toward the end of the nineteenth century.

Inhabitants of the rural community maintained a close relationship with nearby, more densely populated central places. The central place offered the rural community needed merchandise and markets, and the later consumed goods and provided necessary agricultural products and raw materials. Rural residents made frequent trips to nearby central places, in this case Dubuque, to fulfill economic and occasional political needs and later in the nineteenth century to participate in voluntary organizations. The functions of both the central place and the rural community varied through time (McKay 1984; 1987; Abbott and McKay 1978; Hine 1980; Lewis 1979; Price, C. 1979).

The Preston family once held somewhat less than one-half of the 1273 acres now within in Mines of Spain Area. Originally from Bucks County, Pennsylvania and later living in Maryland and Vermont, Slyvester Bills Preston (1804-1852) migrated to Mineral Point, Wisconsin in 1835. Trained as a chemist and associated with copper smelting after his arrival in the Midwest, Preston oversaw the operation of the smelter at Mineral Point between 1835 and 1843. Between 1841 and 1843, he owned the Preston and Company furnace whose limited success was attributed to the discontinuous deposits of copper in the Mineral Point area. During this period, he claimed 640 acres in sections 8 and 9, T88N R3E. Although he settled there briefly in 1839, the uncertain status of the land claims probably prevented his permanent occupance until 1843. Sometime in the late 1830s or early 1840s, Preston erected a dwelling in the southern portion of SE1/4, NE1/4, section 8. He continued to erect copper smelters at Ste. Marie, Michigan and Merimac, Missouri in the late 1840's. With the help of his sons, Preston also operated a farm at his homestead (Hartman 1987: 45, 55, 157 [letters from Sylvester Preston to Anna Preston:

5/13/49, 11/31/48, 3/25/49]).

Sylvester Preston died in 1852. The family divided his 747 acre estate, known as Cottage Hill, among his children and widow, Anna West, about 1869. Anna received the inheritance of David Preston who died in the Civil War. This share included the east portion of section 9 and section 4 which she rented as mineral lands. After her death in 1882, Slyvester II and Vasa Preston inherited much of this land. At the time of the property division in 1869, Mary E. Preston lived with her husband Guy Morrison in California and received a monetary settlement. Guy Morrison had been attracted west by the gold rush in 1851 and his wife followed in 1854. However, while living in the Mines of Spain Area until 1854, the Morrisons owned lands in sections 4 and 8 and probably a dwelling in government fractional section 4. Its location remains unidentified. Matilda Preston with her second husband Eli Littlefield inherited 80 acres which included the SE1/4, NE1/4 of section 8 where they erected a dwelling (13DB195) about 1869. At her death in 1893, the land was sold to Lawrence Kemling. Sylvester B. Preston II inherited the original homestead (13DB86, 13DB90, and related cemetery 13DB89) of about 100 acres. Sylvanus erected a second dwelling adjacent to the original homestead in 1869. He occupied this portion while Anna continued to live in the original house. Sylvester mined portions of his lands in sections 4 and 9. At Sylvester II's death in 1918, his sons Sylvester III and Vasa inherited his estate. These lands were sold outside the family in 1925. They dismantled the original house just prior to 1925 and abandoned the newer portion in 1925. Additionally, the daughter of Sylvester III, Ruth Collins Preston, built a dwelling on the west edge of his holdings (13DB270) in the 1920s. It burned shortly after its erection. Finally, Gustavus received 120 acres of the original homestead on land bordering the Mines of Spain Area to the west in the W1/2, NE1/4, section 8 as well as other adjacent lands. He replaced his original house which burned in 1883 by 1884. His son, David, who gained the land in 1911, erected a third house in 1910 which still stands. He tore down the second dwelling in 1944 (Hartman 1987; 1986; correspondence with Hartman 11/30/87 and 12/3/87; Harris and Warner 1874; Northwest Publishing Company 1892; Iowa Publishing Company 1906).

In addition to the farmsteads and houseplaces related to the Preston family: sites 13DB195, 13DB86, 13DB90, 13DB89 and 13DB270, the rural community within Mines of Spain Area contains eight other farmsteads and houseplaces. They include 13DB60, 13DB69, 13DB80, 13DB100, 13DB190, 13DB200, 13DB211, and 13DB279. Additional sites 13DB121, 13DB146, 13DB158, 13DB183, 13DB206, 13DB268, 13DB258, 13DB281, and 13DB282 designate old road beds. However, the relationship of the roads to mining, agriculture and logging themes remains unestablished. These later sites are therefore noted as potential sites for future consideration but are excluded from the current proposed nomination.

As noted, uncertainties over land ownership, the area's designation as mineral lands, and an early presumption that mining and prairie regions were barren wastes delayed the development of agriculture in the Mines of Spain Area. Allowing the cultivation of gardens on one-quarter of an acre without special dispensation, the leasing system frustrated the development of agriculture. Therefore, until about 1847 residents tended to view agriculture as a supplement to mining. It provided their food supply, and they sold the surpluses. During periods of low lead prices when miners required additional income and as the increasing number of immigrants expanded the potential market, residents in the mining region discovered the richness of the prairie soils. Agriculture thus gradually became a more permanent occupation. However, while much of the lead region did possess deep, loamy soils, those within the Mines of Spain Area tended to be of second and third rate quality. This condition along with a major focus on mining may have delayed the development of a market agriculture (Hartman 1987 [personal communication 11/30/87]; Owen 1844: 116; Fatzinger 1971: 33-34; Fay, Garfield, and Neville 1986).

In northeast Iowa and particularly in the lead mining district, inhabitants practiced semi-subsistence agriculture during the 1830s and into the 1840s. Upon his arrival to the lead mining district in 1835, Sylvester Preston found himself too involved in mining to practice farming beyond putting in a garden and sowing a wheat crop in the fall (Hartman 1987 [letter from Preston to Anna Preston, 3/25/1835]). Farmers followed a familiar pattern of producing a wide range of goods to fulfill their own needs selling only surpluses. They depended on local trade centers for a limited number of exotic goods and manufactured items. They typically raised one to six cows and an equal number of young stock on adjacent prairies and sold dairy products and perhaps a few beef cattle to local general merchants. Corn, buckwheat, potatoes, wheat, and rye composed the typical early crops (Bogue 1963: 86, 97; Danhof 1969: 124; Ross 1951: 71).

Generally, farmers with access to transportation made a rapid transition to market agriculture, often within four to five years. This process may have taken longer within the Mines of Spain Area. However, the adjustment was dramatic. It altered from an agriculture geared toward family consumption and sale of surpluses to one focusing upon one or several crops produced for sale. To compensate for this specialization, home industries were dropped and family needs were increasingly fulfilled through exchange or purchase at trade centers. However, the development of market agriculture did require the presence of a trade center within one or two days' journey, about 12 to 15 miles. The development of agricultural implements to cope with the prairie such as the steel plow and later those which enhanced the harvest of large grain crops in flat areas such as the reaper assisted this trend by the early 1850s. Residents within the Mines of Spain Area who lived several miles to

the south of Dubuque possessed the marketing opportunities (Danhof 1969: 1-11, 14-15, 124; Bidewell and Falconer 1941: 271; Bogue 1963: 280; Mahoney 1982: 71).

Farmers in northeast Iowa like many other areas in the northern Midwest increasingly concentrated on the commercial production of wheat beginning in the late 1840s. However, although farmers concentrated upon wheat production, they raised other subsidiary crops such as corn, oats, buckwheat, rye, barley, flax, and hay as well as some livestock. For example, Sylvester Preston raised spring wheat, corn, oats, buckwheat, and potatoes in 1849. Unlike many, he appears to have practiced crop rotation at this early date (Hartman 1987 [letter from Preston to Anna Preston, 3/25/1849]; Auge, Gibson, and Klein 1986: 53). In the late 1860s, his son, Gustavus Preston who farmed adjacent lands, concentrated primarily upon wheat (Hartman 1987: 169). Especially with the growing availability of agricultural implements in the 1850s and the 1860s, wheat required less labor, proved to be less perishable than other grains, and generally remained in high demand thus bringing comparatively high prices. Its production generally suited areas removed from major markets. The rapid influx of settlers through such ports as Dubuque in the late 1840s and 1850s provided a growing local market. The export trade grew rapidly as well. Prior to the mid-1850s, much of the wheat exported beyond the local area was sold by the farmer in small amounts to local merchants at numerous, small trade centers. He purchased it, processed it, and sold wheat in larger amounts, often shipping it down the Mississippi River to St. Louis. Dubuque millers met local needs and shipped wheat and flour to national markets via St. Louis by 1848. It was transshipped through New Orleans to the east coast and increasingly to Great Britain. The South only absorbed about 17% to 18% of the exported wheat in this period. Lighter, finished products often arrived from the East via the National Road and other turnpikes (Ross 1951: 22, 26, 42, 45-47; Schmidt 1920b: 95-96, 358, 400, 404; Mahoney 1982: 178, 201, 206-207, 212-14; Bogue 1963: 123, 232; Danhof 1969: 1, 150).

By 1859, Iowa had become the eighth largest producer of wheat in the nation and by 1869 had attained second place behind Illinois. However, to accomplish such production, settlers farmed extensively, rapidly depleting soil fertility. This emphasis upon quantity glutted the market and resulted in occasional crop failures common to continuous wheat production. Perods of low wheat prices plagued Iowa farmers particularly during the depression lasting between 1857 and 1861. Prices again rose from 1862 to the end of the decade because of Civil War demands and expanded European markets. Again resulting from overproduction, the depression of the early 1870s moved many farmers who had not already begun to diversify their production and ended their heavy dependence upon an undependable single crop. Wheat production dropped rapidly in Dubuque County between 1849 and 1879 (Schmidt 1920b: 400; Ross 1951: 45-54; Mahoney 1982: 183; Auge, Gibson, and Klein 1986: 54; Bogue 1963: 123, 220).

As farmers entered the national market, events which shaped the market also affected their economic decisions and success. Such events included transportation improvements, particularly the arrival of the railroad in the 1850s and the development of the refrigerator car in the 1870s, marketing specialization, and alteration of the method and location of processing of agricultural goods. In addition to Dubuque's inadequate harbor, its distance from the major market at St. Louis reduced wheat prices offered by Dubuque merchants. During periods of high prices, traders such as those in Galena frequently tapped the city's rural hinterlands to within eight miles. However, with the arrival of the Illinois Central at Dunleith in 1855, wheat rapidly began to flow east from Dubuque to the higher priced Chicago market rather than to St. Louis. The transition from river travel to St. Louis to railroad transport to Chicago for the wheat trade was relatively complete by 1860s. By 1857, the direction of trade became increasingly localized as packet companies began to move away from Galena and became established at Dubuque. Increased packet trade in turn stimulated local production. Much of the rising wheat production by 1858 went to supply expanding local needs rather than to the export trade. During this period, Dubuque also received corn, hogs, hay, oats, barley, beef, mutton, butter, and potatoes primarily for local trade (Bogue 1963: 280-82; Mahoney 1982: 71, 77, 84-85, 181-94, 220-21; Goodspeed 1911: 85; Schmidt 1920a: 95).

Farmers diversified their crops by the 1870s. Although much of southern Iowa turned to the production of corn and livestock, northeast Iowa placed less stress on corn in favor of such feeds as oats, barley, and rye. Producing less wheat, farmers added dairy and beef cattle and hogs. By the mid-1850s, Dubuque had become a local center for pork packing. It participated in a more regional pork trade with the advent of the refrigerated railroad car in the 1870s. The Chicago market shipped hogs to the northeast, south, England, and the West Indies (Schmidt 1920b: 408; Mahoney 1982: 232; Danhof 1969: 252-53; Ross 1951: 59, 73; Bogue 1963: 86, 123, 223-28).

The dairy industry attained increasing importance during the 1880s. Dairymen in northeast Iowa concentrated upon milk production for butter. Factory production was introduced by 1875. By the 1890s, Iowa rivaled New York in its butter production. In addition to dairy cattle, farmers often raised hogs which were fed on milk by-products, fed beef cattle, and produced the necessary feed (Ross 1951: 119-22; Bogue 1963: 86, 230, 234). The 1906 atlas described Mosalem as a "dairy township" in which each farmer was a dairyman. They sold milk as fluid milk for the urban market and as cream, butter, and cheese (Hartman 1987: 164). At the time of the Preston farm auction, Slyvester Preston III advertised seven cattle, five milk cows, both guernseys and heifers, machinery which implied the production of feed, a separator, and a brooder and incubator (Hartman 1987 [auction poster dated 3/25/25]). The

era between 1900 and 1917 was generally a prosperous one for American farmers: products were in high demand, technology had become an integral part of farming, and marketing was standardized. However, prices collapsed by 1920 while the cost of production remained high. Numerous farm foreclosures followed (Danhof 1969: 122). Such depression may provide one explanation for the sale of the Preston family farm in 1925.

The local marketing of agricultural and other natural products formed a major bond between the rural community within and adjacent to the Mines of Spain Area and nearby central places. During the 1830s and perhaps somewhat later, several locations within the rural communities, special activity areas, and nucleated communities fulfilled a portion of this function. Mosalem, Catfish, and Ripow probably absorbed some of the local products at least on an intermittent basis. Catfish contained a mill and lead furnace to process local goods. Stores at Ripow and perhaps Catfish provided locations of exchange of perishable products for necessities. An additional grist mill at Rockford, Horton's grist mill, and at least one flouring mill along Catfish Creek absorbed the wheat production (Auge, Gibson, and Klein 1986 [U.S. Government Land Office Survey 1837-38]; Newhall 1957 [1846]). While gristmills usually performed custom grinding, flouring mills mainly processed larger quantities of wheat for trade outside the immediate area. Finally, by the 1870s, a sawmill probably relying primarily upon pine from Wisconsin may have participated to a limited degree in local purchasing and sale (Harrison and Warner 1874). Such services internally knit the community along economic lines.

Dubuque provided the main trading center for the region. Although it was platted and incorporated as a village by 1837 and as a city by 1840, its growth proved comparatively slow until the late 1840s. The Chouteau claim led to unclear titles within the city to 1854. Sloughs and marshes often impeded landing at Dubuque's harbor for extended periods. However, by 1838, packets did make daily stops from St. Louis at least during periods of high water. Harbors improvements occurred in the early 1840s and again between 1853 and 1856 (Childs 1984 [1857]: 50, 57; Horton 1972: 6, 27-29; Mahoney 1982: 71). As a result of these factors and because of its long distance away from the main entrepot of St. Louis, Dubuque's trade radius remained rather narrow until the early 1850s, often less than eight miles for such commodities as wheat. During periods of high prices by the early 1850s, the Galena trading sphere reached to within eight miles of Dubuque (Mahoney 1982: 181, 194, 206). Located only several miles to the south of Dubuque and well within a day's journey of 12 to 15 miles, the Mines of Spain Area lay within easy reach of its services (Hartman 1987 [letter from Deborah Preston to Anna Prston, 11/17/56]; Mahoney 1982: 85).

Dubuque remained a small production center until the mid-1850s, relying

primarily upon the processing of agricultural goods, mining natural resources such as lead, and manufacturing goods for local consumption by its own population and the surrounding hinterlands (Mahoney 1982: 173). Businesses present by the mid to late 1830s were oriented toward serving local miners (Langworthy 1910 [1855]: 384). Such businesses included groceries, dry goods, hardwares, drugstores, harness shops, and the like (Childs 1984 [1857]: 35). Dubuque's enterprises became more diverse but remained small through the 1850s. By the beginning of that decade, they also included small industries such as wagon manufacturers, several flouring mills, sawmills, brass and iron factories, tinware manufacturers, breweries, two pork packing plants, two smelting furnaces, three sawmills, and five sash, door, and blind factories. Commercial establishments had expanded to 13 warehouses associated with forwarding and commission merchants and six lumberyards (Childs 1984 [1857]: 88, 153). The extensive lumber industry reflects Dubuque's early involvement with the northern pineries (Horton 1972: 29). Until after the 1850s, this array of services placed Dubuque among the smaller entrepots such as Hannibal, Keokuk, Fort Madison, Burlington, Davenport, Peru, and Peoria which were tributary to St. Louis (Mahoney 1982: 239). Thus, the trade direction remained either local or to the south through Galena and St. Louis to the mid-1850s (Mahoney 1982: 181).

Beginning in the late 1840s, Dubuque began to expand its marketing sphere. Initially, rapidly rising wheat production in its hinterlands and the establishment of its own flouring mills placed the city in control of the local grain trade as well as the grain shipped north to the Minnesota and Wisconsin frontier between 1848 and 1858 (Mahoney 1982: 209, 221). During much of the 1850s, Dubuque served as a main processing center and market for local agricultural goods and natural resources rather than as a transshipment location to New Orleans as it had in the past or to Chicago as it would by the end of the decade (Mahoney 1982: 225). During the late 1850s into the late nineteenth century, agricultural products remained a central focus of Dubuque's industry and commerce. Businesses and commercial enterprises grew more specialized as Dubuque became a distribution center serving a broad region along the upper Mississippi Valley. Initially engaged in only a local market, the pork packing industry did not become a major industry at Dubuque until the development of the refrigerator car in the 1870s when pork products gained access to the Chicago market. Dubuque gained its first grain elevator in ca. 1860. The lumber industry including such plants as sash and blind factories, saw and planning mills, wagon and carriage manufacturers, and other wood working industries and lumber distribution companies attained increasing importance, serving the prairie and plain states to the west through the 1880s. Flouring mills, breweries, vinegar works, an oatmeal factory, and tobacco companies absorbed local and regional agricultural products. Although a base of small, diverse industries remained, the trend toward industrial specialization began as Dubuque gained greater access to a national market

(Western Historical Company 1880: 648; Goodspeed 1911: 133; Mahoney 1982: 232, 248-53).

The arrival of the Illinois Central to Dunleith in 1855, the subsequent expansion of this railroad network west, north, and south by 1873, and the relocation of the major northern packet company from Galena to Dubuque in 1856 established the city as a main northern entrepot in the mid-1850s. It served Minnesota, northern Iowa, and interior Iowa by 1856. However by the late 1850s, with its trade flowing east to Chicago, it again became a transshipment point but for a considerably larger radius (Western Historical Company 1880: 626, 632; Childs 1984 [1857]: 146; Mahoney 1982: 77, 218, 269; Goodspeed 1911: 57). By 1860 to 1861, Dubuque replaced Galena as the dominant entrepot of the upper river. This shifting of trade focus and demand reflects the importance of commerce with the northwest and the rise of Chicago as a main commercial center of the Midwest (Mahoney 1982: 253).

Dubuque provided an outlet from the Mines of Spain Area for wheat through the 1860s and for pork and grains in the 1870s and later. Its urban population also absorbed local dairy products and other perishables such as orchard fruits (Hartman 1987 [personal communication 11/30/87]). Dairying probably achieved increasing emphasis as a market product from the Mines of Spain Area during the 1880s. Historical documentation and erection of large barns and silos point to the importance of livestock, especially dairy but also beef cattle.

About one half of the original settlers remained on their land in any decade. The other half improved their claim and then moved on. Those who remained often left when soil fertility declined (Bogue 1963: 31; Danhof 1979: 126-27; McKay 1985). Likewise, of the 98 original land purchasers acquiring land between 1847 and 1858 in the Mines of Spain Area, seventeen were present in 1840. Families who remained on the land for several or more generations appear to be an exception to the pattern of movement rather than the rule. Perhaps they remained on this land with second and third rate soils in part because they could supplement their income through mining. An understanding of why these families remained and how they differed from their neighbors who moved on would provide further understanding of early frontier mobility. Without permanent settlement and presumably without extensive kinship ties, then other, presently poorly defined ties evidently knit the rural community together.

The external relationship of the rural community at the Mines of Spain Area which tied it to Dubuque were primarily economic. As a central place, Dubuque provided a market for most of their goods and fulfilled many services unavailable within the immediate local. As the county seat, Dubuque also maintained political ties after 1847 and voluntary associations with the rural

community. Also, its nearness to Dubuque may have brought occasional reliance on other social services such as education.

The ties which internally knit the community remain poorly understood. The non-economic structure of the community is less accessible to recovery by traditional archaeological and historical investigation. However, kinship and household organization, religious networks, educational systems, government organization, and voluntary associations strongly influence the structure of the settlement pattern. Through broad community settlement pattern investigations, detailed study of farmstead structure, local historical research, and the application of known regional patterns, the understanding of these ties can be refined.

The farmstead composed the basic unit of settlement within the rural community. Mobility often severed family groups. The household of the nineteenth century upper Midwest was commonly comprised of a nuclear family. Prior to mid-century, it occasionally encompassed some additional related members such as parents or unmarried adult siblings and non-family members such as hired laborers, servants, and unrelated children. The average family size on the northern frontier was 5.6. This size did not vary greatly from the settled Northeast. The large family was not essential to survival on the frontier (McKay 1987; Mason 1984; Gordon 1978; Davis 1977). Families such as the Prestons in the Mines of Spain Area appear to have occasionally housed at least additional extended family members. For example, Anna Preston lived with Slyvester Preston II until he erected a separate house which was immediately adjacent to the original homestead. But, after her husband moved to California in 1851, Mary E. Preston Morrison probably did not live with Anna or her siblings but likely remained within her own household until she joined her husband in 1854 (Preston 1987; Preston 1987 [personal communication 11/30/87]). Thus, in terms of household composition, the Preston family may not be an atypical example.

While family composition altered minimally through the loss first of the few extended family members and somewhat later the unrelated children and finally toward the end of the century of hired laborers and servants, its functions changed significantly through the nineteenth century. Prior to mid-century, the household provided the working center of the family and continued to do so for rural areas engaged in farming but not in central places. Schools and vocational institutions replaced the family's educational function relatively early. Religious instruction shifted from the home to the church. However, the Prestons as Quakers may have retained this function within the home for an unknown period of time (Preston 1987; 1987 [personal communication 11/30/87]). The vote of the family head ceased to represent the family as a unit and became an individual expression. The operation of the welfare and correctional institution, hospital, orphanage, poor house, and old people's

home slowly replaced family responsibilities in these areas. Formal township and county government organization began to mediate intra- and inter-family disputes. Voluntary organizations provided acceptable sources of support and recreation outside the family (Doyle 1978: 187-88; Berthoff 1971: 204-205, 212; Russo 1974: 223).

The Prestons may have retained some of these responibilities longer than normal. The Preston family, for example, may have remained responsible for the educational function until 1869 through the utilization of a tutor from Dubuque. And, they later sent their children to schools in Dubuque (Hartman 1987). Generally, the persistence of generations of established families on the land for more than one generation appears uncommon. Land divisions became too small in the face of abundant lands further west (Bogue 1963: 49). But, the Prestons did begin on a 640 acre rather than the more usual 188 acre claim. Of the four surviving children of Sylvester Preston, three remained on or adjacent to the original tract from two to five generations (Hartman 1987 [personal communication 11/30/87]). Because of extant family papers and the existence of the archaeological remains of the family farmsteads, in-depth investigation of the Preston family may provide valuable insight into the nature of these changes. Since their personal religious beliefs stressed the importance of the family, they may have retained early family responsibilities later than surrounding families thus allowing the investigation of these critical alterations. Their patterns then require comparison with the familial composition of adjacent farmsteads.

Such close kinship ties which in fact appear uncommon in the Midwest (McKay 1985) probably provided an important tie cementing this rural community. The kin group became a source of cooperative labor and support in time of crisis and acted as a social regulating mechanism through informal censure. Some members occasionally provided education and religious training, a foster home, and a marrige partner as well as added economic skills or leadership for the rural community (O'Brien et al. 1984; Price, C. and Price 1978). These patterns are thought to be more common to the southern than the northern Midwest, but more in-depth investigations are needed (McKay 1987).

Prior to alienation of the Mines of Spain Area from public to private ownership in 1847, the rural community may have remained loosely organized. Although minimal county government existed after 1834, it may not have affected areas in public ownership. Claims clubs often provided some limited formal organization in agricultural as well as mining areas not yet in private ownership. They brought together previously unassociated individuals to fulfill a common need. Claims clubs were essentially voluntary organizations formed primarily to protect each member's rights to his claim, settle land disputes, and occasionally regulate other matters such as physical security. In this later sense, they may have functioned more like vigilante groups.

Also, groups agreed upon specific rules regulating the size of a claim, the degree of improvement and length of occupancy necessary to be a member, and the means by which to settle disputes, often through the creation of informal judicial proceedings. The government eventually recognized the land claims of these members during land sales (Bogue 1963: 31, 39; Ross 1951: 15-17). Such an organization is identifed for miners within the Mines of Spain Area in the early 1830s, but it is presently unknown whether this organization continued in a similar form after 1833.

Thus, even though Dubuque County was formed and the first county court was organized by 1834, the level of government organization within the Mines of Spain Area prior to 1847 may have been quite minimal if non-existent. Indeed, several local historians suggest a rather high level of disorder and vigilantism within the City of Dubuque prior to 1837 (Childs 1984 [1857]: 50; Grindell 1905: 49-50; Langworthy 1910 [1855]: 384). Less populated rural areas may have experienced less disorder through the action of informal censorship by kin groups, neighborhood alliances, church organizations, and the school system. After 1847, county and township government provided minimal services such as education, road building and maintenance, civil order, the issuance of licenses for the operation of organizations, polling locations, and the creation of a local tax structure (Goodspeed 1911; Western Historical Company 1880).

Although church organizations appear relatively early in settlement, a church edifice often did not exist, to some degree inhibiting the understanding of early religious activities. Early church organizations frequently met in private homes or, if erected, the local school. During the mid and late nineteenth century, most organized American religious denominations emphasized the practice of ethical behavior. The local church group acted as a social regulating mechanism and enforced social order in the absence of outside agencies of social control. The church group provided a community assistance organization, informally fulfilling functions of later welfare institutions. Some of these functions later became more formalized as voluntary church organizations. The occasions of church gatherings also created a period for social activities and informal visiting which brought the community closer together (Price, C. 1979; McKay 1985; 1987).

The first generation of Prestons associated with Quakerism prior to immigration. Few references remain of their participation in it since they were not permitted to record occurrences related to their faith. Without a known meeting house in the vicinity of the Mines of Spain Area, it is presumed that they maintained their religious observances within the home. While Sylvester and Anna followed at least some of the dress and perhaps speech patterns distinctive to the Quakers, they participated in some of the prohibitions such as music (Hartman 1987: 1-4; 1987 [personal communication,

11/30/87]). Their religious faith which stressed the importance of the family may have also been one tie which maintained the extraordinary cohesiveness of the Preston family. Some of the second generation family members joined the local Methodist Church at Rockdale or a Presbyterian Church whose location has not been pinpointed.

The Preston family cemetery may reflect religious division and the strength of kinship ties. Family members included within the cemetery which stands adjacent to the original farmstead (13DB89) include Sylvester and Anna, their son David who died in 1863, three Morrison children, and Matilda Preston Littlefield. They lie in marked locations. Also, several unmarked graves of family members, Slyvester Preston II, his wife, Anna, and Carl Preston, and of unidentified individuals from the neighborhood were located within the cemetery. An unknown number of family members lie in the Rockdale Methodist cemetery (Hartman 1987: 200-201; Hartman 1987 [personal communication 11/30/87]). First or second generation adults or children dying between 1846 and 1893 are buried in the marked graves of the family cemetery. The clustering of graves within the cemetery reflect primary social values. Segregation within this cemetery may be not only an expression of religious values but also of values embedded in kinship organization. For example, each distinct group within the cemetery represents a separate nuclear family despite the sex of the individual who lies within the grave. Nuclear family ties possessed greater importance than ties to the family of origin despite strong bonds with the family of origin (see McGrath 1986; Price, C. 1979; McKay 1987).

Most of the Preston family neighbors belonged to St. Catherine's Catholic Church, the only one within Mosalem Township (Hartman 1987 [personal communication 11/30/87]). Since Dubuque lies only several miles away, it is possible that some Preston family members attended church in Dubuque. Thus, for this rural community, religion reinforced family ties within a large family network. However, their faith may have removed the family from this important community tie. St. Catherine's appears to formed a reinforcing social link for other families within the community's boundaries.

The educational system formed an important link within the rural community. Schools functioned as an important social regulating mechanism by teaching not only formal education but also proper social behavior. Since the entire family participated in activities at the local school, they often reinforced ties across the rural community (McKay 1985; Price, C. 1979). The first identified school within the rural community was erected upon property donated by Gustavus Preston in 1869. Smith School in District No. 4 stood just outside the Mines of Spain Area along Massey Road in the southeast quarter of section 8. The school closed in 1964 and was recently dismantled. The late building date is probably dependent upon the organization of the school

district within the township. Prior to this date, the Prestons appear to have sent their children to private and Catholic schools in Dubuque and Sinsinawa, Wisconsin or provided a tutor from Dubuque (Hartman 1987 [personal communication 11/30/87]; Hartman 1987: 169, 204 [letter from Deborah Preston to Anna Preston 11/17/1864]). Thus, the educational system may not have formed an important link within the community until after 1869.

Finally, voluntary associations often did not unite the rural community until the late nineteenth or the early twentieth century. These voluntary organizations formed outside the community to accomplish specific community tasks and provide companionship. They became most prevalent in a non-kin based society where informal ties had begun to decline. Voluntary organizations also provided moral standards for their membership thus substituting the informal censor of the kin group in a tightly knit rural community (McKay 1987). Their development often reflected the failing operation of other institutions and eventually offered a functional replacement. Voluntary organization usually emerged in an urban setting and later attracted rural participants. While they appeared exceptionally early in Dubuque, by the 1840s (Childs 1984 [1857]: 39), their apparent absence within the rural community in the Mines of Spain Area may reflect the persistence of other strong community ties.

At mid-century, kin, religious, educational, and informal bonds such as work groups remained strong in the Midwest. Although there appears to be some aerial variation, these bonds primarily reinforced one another and did not crosscut the rural community (Schmits, McKay, Mandel, and Hedden 1986). During 1890s or early nineteenth century, these rural communities ties began to erode as members looked beyond its boundaries to fulfill economic and other social needs. By this period, the rural community disintegrated as members looked away from them to urban areas. The precise period during which the rural community within the Mines of Spain Area declined remains unidentified but appears relatively late, sometime between 1900 and 1920.

Then, the composition of the farmsteads, their spatial organization within the rural community, the relationship of the farmsteads to special activity areas such as mills or smelters, and external ties to central places express the socio-cultural organization of the cultural landscape. The location of some of the components of the rural community within the Mines of Spain Area has been identified but their individual composition requires illumination through archaeological and historical research.

The property types within the Mines of Spain Area which relate to the Changing Iowa Farmstead: The Agricultural Rural Community within the Mines of Spain (1836-1925) include houseplaces with no, or more likely, few associated outbuildings and farmsteads and a family cemetery (13DB89) which is part of

farmstead 13DB90. At this phase in the study, the distinction between houseplace and farmstead remains unclear in some cases. The components of the rural community range in date from the late 1830s or early 1840s to the 1920s.

The potential components of the houseplace include a dwelling, landscaping features such as a grouping of lillies, discrete trash pits, privies, and very likely several small outbuildings. The later houseplaces such as 13DB270 may have housed occupants who worked at nearby family farmsteads, such as 13DB90. Such dwellings may not have needed a large independent group of outbuildings to support subsistence and other household activities. Also, these outbuildings may have been smaller and combined functions of separate outbuildings on adjacent farmsteads.

Early farmsteads dating between the late 1830s and the 1860s may contain a single log and/or frame dwelling, small log or frame barns, rail pens and fencing, summer kitchen, smokehouse, corn cribs, discrete butchering areas possibly separable by type of animal, other work areas such as threshing floors, trash middens associated with butchering areas, trash middens related to the dwelling, privies, springs, gardens, a family cemetery, and other landscaping features. Into the later nineteenth century, burials occurred in family plots rather than in graveyards near the church. But, such plots often also included individuals from neighboring farms and often retain data upon the social structuring of part of the rural community. The array of outbuildings partly reflects the emphasis placed upon clearing the land and engaging in family subsistence activities which produced small quantities of products requiring little storage and wheat agriculture which required few outbuildings. Intra-site patterning may reveal a specific disposition of outbuildings and work areas around the dwelling. For example, in the Missouri Ozarks the front area of the dwelling was generally free of features except perhaps for the spring while the rear yard contained an arc immediately behind the dwelling the interior of which was swept free of debris and used as a domestic work area. Trash middens, outbuildings, and farm-related work areas stood beyond this arc (see Price, C. and Price 1978; Price, J. and Price 1979; Price, J. and Price 1981; Price, C. 1985).

Later farmsteads dating after the late 1860s or early 1870s or additions to earlier farmstead may include a second dwelling, granary, large barn, stable, roofed threshing floor, machinery sheds, poultry house, hog lots, and storage sheds. Such additions to dwellings reflect the growth of the family and/or a greater desire for privacy and alterations in agricultural patterning. In northeast Iowa, the outbuilding additions suggest an emphasis upon dairying and other livestock such as hogs and chickens. Studies of intra-site patterning reflect the alterations in agriculture at the individual site. With differential faunal analysis between pit features, this patterning may

detect butchering and dietary patterns, food sharing, the sale of farm products, and processing techniques (cf. Price, C. 1985).

Few studies have examined the patterning of dispersed farmsteads within rural communities in the upper Midwest. Therefore, the following locational patterns for farmsteads within the rural community are presented for possible investigation (see Abbott and McKay 1978). The general pattern of dispersed farmsteads within rural communities in the Midwest developed during the very late eighteenth or early nineteenth century (McKay 1987). As noted above, early midwestern settlers tended to initially settle at the prairie's edge and by the 1850s to migrate out onto the prairie as the myths of soil infertility evaporated, proper tools to deal with prairie sod and soils and deep water tables became available, and lumber was shipped from the northern woods. Early settlement in the Mines of Spain Area would then be expected. However, locational patterning within the Mines of Spain Area itself remains unclear. There is at least for the Prestons a clustering of farmsteads at about one-half mile intervals. The farmsteads were also placed behind the bluffs and adjacent to springs. Like the Prestons, settlers likely preferred nearly flat to moderately steep uplands with small prairies and terraces and comparatively wide bottomlands along the Mississippi and Catfish Creek with a few hillsides used for pasteurs. They selected against the narrow valleys and the steep, timbered hillsides (Abbott 1982b). The Mines of Spain Area offers a sufficiently extensive expanse to examine the potential factors regulating initial settlement. Given the nature of the terrain, later settlement appears to have not surprisingly retained this pattern.

Historical studies by a member of a Preston family, Gerda Hartman, and surveys by Abbott (1982b; 1983) compose the primary sources of data specific to the Mines of Spain Area for this context. Hartman (1986; 1987; personal communications, 1987) draws upon family letters and diaries dating from 1826 to 1881, oral interviews, maps, and land records as well as her close familiarity with the Mines of Spain Area landscape.

The physical patterning and social functions of the post-1830 rural community remain poorly defined for the upper Midwest. Studies of potentially equivalent breadth include the documentation of the Crow Creek Drainage in Scott County, Iowa (Abbott and McKay 1978) and the Coon Creek Drainage south of La Crosse, Wisconsin (McKay 1984). The Mines of Spain State Recreation Area land management unit, containing at least thirteen farmsteads and houseplaces, provides sufficient historical archaeological resources for such a comparative study.

Initially, the approximate boundaries and size of the community must be established through oral interviews and diaries. The Mines of Spain Area may contain parts of more than one community. Similar resources should indicate

and define the nature of the rural community's relationship to other community forms. While it is apparent that this community maintained strong economic and also political ties with Dubuque, other potential relationships remain poorly defined. Additionally, some members of the community may have related to some of the smaller satillite communities adjacent to Dubuque such as Catfish or Mosalem. Or, because of its position south of Dubuque, they may have dealt with merchants in Galena for specific services. These relationships networking the rural community with central places likely altered significantly through time reflecting changing agricultural products and methods, changing involvement in lead production as prices fluctuated, transportation improvements, and other social needs.

While the general internal composition of the rural community has been defined through archaeological surveys, the delineation of the components of each farmstead and special purpose activity area requires more complete physical description. Based on general studies, the potential locational attributes noted for the farmsteads require confirmation and refinement. These attributes include topography, soils, contemporary vegetation cover, proximity of water sources, routes of transporation, placement of nucleated communities, and the distribution of kin groups. Study of intra-site patterning interrelating the dwelling, outbuildings, middens, acitivity areas, and other more unique features such as the cemetery should detect butchering patterns; allow identification of changes within agricultural patterns; distinguish between livestock raised for consumption and sale; delimit portions of the dietary patterns, perhaps constructing patterns of sharing of communally butchered meat; and detect household activities conducted within an inner yard adjacent to the house. Houseplaces must be distinguished from farmsteads by size, form, function, and interrelationship of outbuildings and their owners' identification with occupations and relationship to families of surrounding farmsteads. Houseplaces may contain miners or agricultural laborers related through kin ties to adjacent farmsteads.

Examination of the social structure within the rural community includes the delineation of the extent of the kin networks within the rural community, ties to religious and educational organizations and the function of each, the operation of township and county government within the community, the existence of informal work groups and visiting networks and their function, and investigation of overall family stability. Such an historical study specifically related to the physcial components of the community can provide a detailed view of the rural life which predominated upper midwestern society through the nineteenth into the early twentieth century. Few such studies now exist. Additional questions might address the possible split in the community along religious lines and the social statements intimated by choice of cemetery and burial placement within that cemetery, particularly with reference to the importance of specific kin, neighborhood, and religious

associations as well as the examination of the ceramic inventories in conjunction with written financial data to roughly detect approximate economic rankings and their apparent importance within the system of social rankings. Since many values affected the social ranking system, such analyses cannot even roughly approximate these interrelationships without complementary historical data.

Thus, the careful examination of the internal and external social relationships of this rural community and the delineation of its complementary physical representations provides a model of an important but as yet poorly defined community form.

General Manufacturing: Lumber Milling (1860-1890s)

Despite the broad prairie expanses, lumber milling remained a significant industry in Iowa from settlement to the turn of the century. Although early settlers rapidly depleted local supplies by the 1860s, timber from the northern forests allowed its milling industry to expand and meet the rising demands from the prairie and plains region. Because the Mississippi provided an economic means of transportation for this bulk product from the northern pineries, the industry developed in or adjacent to urban areas connected to the prairie and plains regions by railroad. It stimulated the economic development of numerous Iowa Mississippi River cities including Dubuque, Davenport, Muscatine, Clinton, and Burlington. The lumber industry grew rapidly during the 1860s as railroad transportation expanded west, reached its peak in the 1880s and 1890s, and declined precipitously in the late 1890s and early 1900s as the industry depleted northern forests. Such exploitation patterns reflect the importance of wood in American material culture well into the twentieth century (Acrea 1985; Kniffen and Glassie 1966).

Individual lumber mill sites in rural areas are here viewed as a special purpose activity area within the rural community. Such a vantage point facilitates an understanding of the interaction between the special purpose activity area and the remainder of the community. It presumes that although perhaps run by outside operators, the mill employed local residents, purchased and processed some local timber, and sold some of its products locally. Mills extant after the 1870s also participated heavily in a regional if not national market like the agriculturalist. Thus, placement within a local setting must also recognize the influence of external relationships. Such specialized activity areas initially emerged because of the short traveling radius which persisted well into the 1920s. During the nineteenth century, the mill's labor supply came from residents within a relatively narrow radius. Then, despite its production for extra-local markets, the rural mill site can be viewed as a part of the local rural community. The mill site includes the

industrial structure itself and any associated residential or commercial structures. This perspective places the mill within its social context (McKay 1987; Price, J.and Price 1981; Price, J., Price, and Saucier 1985).

Oak forests with limited prairies composed the dominant vegetation at the time of settlement. Logging for smelting from Dubuque's time combined with logging for clearing, building, fuel for domestic purposes and for steamboats and railroads, and the furniture industry depleted the forests in the Mines of Spain Area by the last half of the nineteenth century. Owen described primarily dwarf oak in T88N R2E and much of T88N R3E. Timber in these townships occupied three-fifths of the area (Owen 1844: 116, 118). By the 1860s, second growth timber included oak, basswood, ash, and sugar maple. Logging of this stand ended by the 1880s (Prior 1980: 6; Auge, Gibson, and Klein 1986: 55-57; MacBride 1899: 4-5; Alley and Alley 1985: 15-16; Abbott 1982b: 6).

Often preceding or coinciding with settlement, small, local sawmills utilized local timber sources. The mills as well as the settlers hugged the rivers. This timber provided the primary power source and building material within a predominately prairie environment. Local farmers supplied lumber to the mills which practiced custom work rather than extensive sale outside the locale. Local demands depleted most of Iowa's timber supplies by the 1860s. After this period, its hardwoods continued to supply industries requiring fine woods such as furniture factories. Many of the dispersed stands were then cut by portable sawmills. Lack of transportation for bulk products inland inhibited the rapid growth of the milling industry at Mississippi River ports prior to 1860.

The first steam sawmill at Dubuque appeared in 1837. Mississippi River mills commonly utilized the pine along the Chippewa and Black rivers by the 1840s. The expanded use of this resource by 1850 placed Iowa as the eleventh largest producer of lumber in the nation. The westward expansion of the railroad facilitated its rapid growth in the 1860s. Increased production by the larger mills along the Mississippi which utilized Wisconsin pine from the Wisconsin, Black, Chippewa, and St. Croix river drainages displaced local mills which had depleted their resources by the 1870's (Goodspeed 1911: 73; Belthius 1948: 123-26, 134; Acrea 1985; Hartman 1942: 54-59, 65).

By 1860, the rapidly increasing demand for pine necessitated changes in the transportation of the logs along the Mississippi. Long log rafts, often 700 by 135 feet and up to 1500 by 300 feet, pushed by stern wheel steam riverboats replaced the free floating rafts by 1870. Transporting logs down river and processing them at ports which served the western hinterlands proved more cost effective than moving finished lumber products south from Wisconsin. After 1866, several large log driving companies formed to make the necessary

improvement at the mouth of these rivers: the booms or log storage and sorting pens, piers, and wing dams to catch, sort, and scale logs. They virtually dominated the log booming industry in the northern pineries. Larger companies often maintained their own boats while smaller companies relied on regular steamboat lines to move their timber south. Log rafting reached its greatest volume in the 1870s and peaked during the 1890s (Acrea 1985; Hartman 1942: 65, 69-74; Belthius 1948: 129, 132-135, 139).

By the 1870s, the milling industry became dominated by large companies. For example, although the number of mills between 1860 and 1870 remained at six for Dubuque County, the value of production rose from $38,955 to $306, 700 and the number employed jumped from 57 to 164 individuals. This growth leveled off between 1870 and 1880 with 7 mills, a value of production at $352,540, and 188 employed individuals (Hartman 1942: 67). While some smaller ones survived, the major proportion of the lumber business was handled through large enterprises. Such companies formed the major impetus behind the growth of a number of Mississippi River communities such as Dubuque (Acrea 1985).

Wood processing industries included furniture manufacturers, planing mills, sash, door, and blind factories, and sawmills. They output such goods as finished boards and trim, shingles, lath, barrel staves, and barrel headings as well as completed products such as furniture. Smaller companies frequently occupied wood and brick buildings which covered a single lot, often 25 feet by 60 feet in size and rarely not more than two stories and more often one story in height. Most of these buildings have been replaced by expansion of the company or general urban sprawl. Larger lumber companies often constructed multi-story complexes covering one to three blocks. Most of these more substantial buildings which survive have suffered extensive remodling during later building reuse. Only a few examples survive. Examples of surviving mills which might parallel in function but likely surpassed in size the sawmill within the Mines of Spain Area include the D. Winter Sash and Door Company of Burlington. The main building measures 285 feet by 100 feet and contains two stories. Support buildings are three 25 by 70 foot, 40 by 80 foot, and 22 by 112 foot, two story warehouses; a 18 by 50 foot kiln; and a 20 by 50 foot, three story drying house. It employed 45 individuals. S. and J.S. Atlee of Fort Madison erected a two story, 75 by 75 foot, brick planning mill, a sawmill, drying house, shingle mill, stables, and yards covering 35 acres. It employed 150 individuals (Acrea 1985).

By 1870, of the 545 sawmills in Iowa, 401 were powered by steam, particularly the larger plants along the Mississippi. The circular saw quickly replaced gang saws in the 1870s which were themselves replaced by band saws in the late 1880s or early 1890s. In 1877, Dubuque's five mills ran a gang saw, eight circular saws, a single muley, and five edgers. A majority of the lumber mills in Iowa air-dried their lumber, although a few, such as the example

above, did dry their lumber in kilns (Acrea 1985; Belthius 1948: 132, 135, 141; Hartman 1942: 74, 81). Mills tended to be seasonal operations working 10 to 12 hour days for a six week period when log rafts first arrived in the spring (Hartman 1942: 74). References failed to indicate whether these industrial plants included adjacent housing for their laborers. They noted only that they utilized the local work force (Hartman 1942: 63), presumably seasonal laborers who worked on a part time basis at other occupations. The milling industries at the river cities along eastern Iowa shipped their lumber and wood products to the adjacent prairies in Iowa and Illinois and the plain states. They essentially acted as a funnel through which Wisconsin and later Minnesota pine flowed. Growing dramatically between 1860 and 1880, the railroad greatly influenced the expansion of this market (Hartman 1942: 68, 74, 82; Acrea 1985).

The major Mississippi River ports which served the industry included Dubuque, McGregor, Davenport, Muscatine, Burlingon, and Clinton. By 1875, Clinton and adjacent Lyons processed about 40.5% of the timber floated down the Mississippi while Davenport cut 17.2%, Muscatine produced 11.2% and the remainder processed a minor percentage. Dubuque ranked fifth in production of the eastern Iowa cities. However, while Clinton and Lyons contained seven mills by 1870 Dubuque trailed by only two, reinforcing the conclusion that mills were not so much growing more numerous during this boom period but rather becoming considerably larger. In comparison to other Mississippi River cities, Dubuque thus participated heavily in the production of lumber and wood products. As early as 1865, it contained at least 24 wood products industries which included planing and sash and door mills; sawmills; carriage and wagonmakers; cabinetmakers; cooperages; and manufacturers of boxes, crates, caskets, coffins, fixtures, and show cases. By 1885, Dubuque had risen rapidly following only Clinton in its production level. Diversification of production by lumber firms at Dubuque in the 1890s reflects the growing shortage of timber from the northern woods. And, by 1900, the number of wood products companies in Dubuque dropped to fifteen (Hartman 1942: 74; Belthius 1948: 135, 140; Acrea 1985).

The forests of northern Wisconsin and Minnesota became depleted by the end of the nineteenth century. Logging along the Wisconsin River ended between 1897 and 1914, and rafting along the Mississippi ceased in 1906. One of the last Mississippi River mills to close, the Standard Lumber Company at Dubuque, who at one point owned the mill in the Mines of Spain Area, ceased operation in 1911. Since some of the more prosperous Mississippi River mills invested in timberlands in the Northwest and southern Midwest, they survived this initial period, competing with the mills located at the source of the timber (Hartman 1942: 74-3-74, 81; Belthius 1948: 140).

After the collapse of the industry in the first decade of the nineteenth

century, those larger companies remaining in business survived by utilizing imported lumber in a diverse array of products to fulfill local demands. But the industry was no longer completely dominated by these Mississippi River mills in large urban areas. Small mills became dispersed across the state once again relying on native hardwoods. By 1912, there were 500 small operators across the state. While this number declined only to 428 in the next decade, by 1940 it reached 30. Individuals, often farmers operating part time during the winter, and small companies harvested the scattered stands primarily with portable mills. Having to cope with the dispersed nature of the resource like the individual farmer, these companies operated a number of small units rather than a large mill. This rig included a circular saw with log carriage. Although producing mainly rough lumber, a few contained edgers to remove the outer layers. Steam engines or after 1925 tractors provided the power source (Belthius 1948: 134, 146-152; Hartman 1942: 82).

Site 13DB17 represents this context within the Mines of Spain Area. Enoch R. Lumbert and Charles E. Bradford erected a steam sawmill south of the mouth of Catfish Creek about 1857. Both Bradford and Lumbert were listed in directories between 1865 and 1875 as sawyers. Lumbert who was indicated as operating a lumber company as E.R. Lumbert and Company remained listed until at least 1884, but they never appeared together as a business enterprise. E.R. Lumbert and Company floated its timber down river and shipped lumber west at least during the 1860s. Gang saws were initially installed in the mill and later replaced by circular saws. Lumbert and Enoch leased the mill in 1864 to the Iowa Lumber Company which appears in an 1875 directory as a producer of lumber and lath. The mill burned in 1875 and was rebuilt in 1876. In 1881, it was sold to the Standard Lumber Company, reputed to be one of the nation's largest manufacturers of lumber products. It operated another Dubuque firm as late as 1890. The 1874 Harrison and Warner map illustrates a sawmill and three adjacent structures along a railroad siding. These facilities do not appear on an 1892 map (Baily and Hair 1865: 603; Child and Arntzen 1873: 69, 136, 224; Wolfe 1875: 56, 145, 248; R.L. Polk & Co. 1884: 89, 253, 449; Edloff 1890: 484; Hartman 1986; Acrea 1985; Goodspeed 1911: 162; Harrison and Warner 1874; North West Publishing Company 1892; Auge, Gibson, and Klein 1986: 57-58).

In addition to this sawmill, there is some evidence for the operation of a portable sawmill within the Mines of Spain Area in the SE1/4, SE1/4, section 5 and the NE1/4, NE1/4, section 8. Artifact scatters suggest that it operated in the late nineteenth or early twentieth century (Hartman 1987 [personal communication 9/30/87]). Not sufficiently examined and therefore currently excluded from the multiple property group, investigation of this site may adjust the time frame for logging within the Mines of Spain Area. Also additional sites 13DB121, 13DB146, 13DB158, 13DB170, 13DB183, 13DB206, 13DB248, 13DB258, 13DB281, and 13DB282 designate old road beds. However,

since their relationship to mining, agriculture, and logging remain unestablished, they are noted as potential sites for future consideration but are excluded from the current proposed nomination.

Site 13DB17 represents a medium to large lumber mill depending primarily upon log rafts floated down the Mississippi River for its wood supply. Its main production was probably for markets to the west. Such lumber mills were often constructed of either wood or brick, were one to two stories, and contained perhaps about 6000 square feet per story. Associated support buildings might include a drying house, a kiln, yards covering perhaps 35 acres, and warehouses. Whether the three structures adjacent to the steam mill on the 1874 map represent support buildings or dwellings for employees and/or managers is unknown. The existence of employee housing in the Iowa lumber industry has not been treated (Acrea 1985).

Till (1977) noted the existence of the site and its exploration by the Office of the State Archaeologist of Iowa in 1968. Historical documentation of the mill occurs in Straffin (1973), Hartman (1986), Auge, Gibson, and Klein (1986), and Hartman and McKay (observation: 9/30/1987).

Few large sawmill sites survive in Iowa. Primarily located in urban environments (Acrea 1985), most medium-sized mills have suffered either complete destruction during urban expansion or have been heavily remodled during expansion and replacement of equipment or during building adaptation to new uses. Therefore, the historical archaeological remains of such a property type can inform upon the materials, spatial configuration, type and placement of equipment within the mill, power sources, and any support structures. Historical documentation can add data upon the technological operation of the mill, its level of business operation, its source of timber, its products, and its market. By the 1870s, lumber operations moved quickly from business partnerships as shown by the initial operation of site 13DB17, to companies such as the Iowa Lumber Company, and to large conglomerates such as the Standard Lumber Company. But, these steps and the development of the physical plant as these business transactions occurred require further documentation.

An equally important area of research focuses upon the employees of the milling operation. They appear to be drawn from the local community. But, the age and ethnic composition, class affiliation, and origin of this labor force requires investigation. Although some or a majority of the labor force may have lived in established residences during their employment, some may have lived in several possible dwellings adjacent to the mill. The dwelling form and associated structures, the internal social structure of the group of dwellings, and the forms of social relationship with the community require examination. Structures associated with such mills may have housed part time and perhaps a partly migratory work force. Because of difficulties in

transporting the lumber short distances in the northern woods, much of the logging occurred during the winter months when sledding remained possible. Thus documentation to date suggests that these mills operated fully during a rather short period when rafts were floated down the Mississippi in the spring until the last run. Although locally organized labor groups did exist (Acrea 1985), their form of organization and which groups of workers they affected remains unclear. Other transient, seasonal laborers such as coal miners effectively formed such groups. These organizations acted as support groups for individual miners and with limited success struck to improve wages and working conditions (McKay 1985a).

Then, such rural lumber mill properties offer an opportunity to investigate the interaction of the labor force at the mill with local inhabitants within the adjacent rural community who may have supplied at least some of the workers. Also, the property related to this context adds necessary data upon the physical plant and business operations of medium-sized to large lumber milling operations.

Boosterism in Iowa: A Celebration of Community Roots (ca. 1870-1940)

The Julien Dubuque Monument (site 13DB116) may mark the grave site of Julien Dubuque. Most importantly, its castle-like form represents a social statement by late nineteenth century society. It was a product of a turbulent era searching for an urban identity and boosting its cities through an antiquarian view of the past.

The late nineteenth century was a period of cultural diversification which precipitated rapid culture change during the 1890s and early twentieth century. This era of accelerated change emerged initially in urban areas. It culminated in a move toward nationalization and increasing concentration of population and industry in urban areas.

Because the late nineteenth century was an era of increasing change, it was also an economically unstable period characterized by alternating depression and expansion. In part because it was a period of physical followed by delayed social innovation, the last decades of the century were also ones of uncertainty rather than the cultural ideal of great optimism for a majority of Americans. Labor and farm organizations formed against big business to combat the growing inequities in the national economy. The nation groped toward a balance between economic freedom to compete in an open market and the need to restrain large business organizations from reducing that competition through the formation of business comglomerates (Berthoff 1971).

Except for a minor set back in 1883, steady growth characterized the era

between 1879 and the early 1890s. The panic of 1893 grew from an overextended economy following a speculative era. It resulted in bank failures, wage cuts, unemployment, and farm foreclosures. The failure of the federal government to provide relief precipitated labor and farm movements and protests (Wiebe 1967; Shanon 1945). Recovery was followed between 1897 and 1918 by a period of relative economic prosperity for the nation. The growth of urban areas created a greater demand for agricultural and manufactured goods. Such growth opened additional jobs and increased the agricultural markets thus adding more cash to the economy. Few grew rich in this era, but most shared in its rising prosperity (McKay 1985a).

The period of rapid national industrialization between 1870 and 1900 was one of turmoil resulting in the emergence of many cultural alternatives (Hayes 1957; Gutman 1976). By 1880, industrial expansion demanded a new form of economic order. At varying rates after the depression of 1883, small local businesses tended to become absorbed or displaced by larger companies, concentrating business in major regional commercial centers such as Chicago. The growing technology of the second half of the nineteenth century required increasing amounts of capital to support large scale enterprises favoring the conglomeration of business organizations. Inducing intense competition, they hardly brought order to the American economy (Berthoff 1971; Wiebe 1967).

The ramifications of industrialization eventually affected many areas of the American culture. Taken in its broadest sense, the process of industrialization meant discarding many established elements, re-evaluating others, and finally accepting a qualitatively new cultural complex and social forms (Gutman 1976). In the 1870s, the sweeping changes affecting American economic institutions lacked a parallel development in other areas of the culture. With such institutional voids, Americans temporarily suffered from a growing sense of social dislocation and estrangement during the late nineteenth century. Perhaps Wiebe best described the era (1967: 12; cf. Hayes 1957; Berthoff 1971):

> America in the late nineteenth century was a society without a core. It lacked those national centers of authority and information which might have given order to such swift changes. American institutions were still oriented toward a community life where family and church, education and press, profession and government all largely found their meaning by the way they fit one with another inside a town or detached portion of a city. As men ranged farther and farther from their communities, they tried desperately to understand the larger world in terms of their small, familiar environment. They tried, in other words, to impose the known upon the unknown, to master an impersonal world through customs of a personal society. They failed, usually

without knowing why....

Thus, the period following the Civil War was an era of discontent and reform searching for solutions to as yet unidentified problems. An increasing number of American wage earners and farmers resented the widening gulf between themselves and wealthy businessmen. The American dream, one of progress toward a life of ease and wealth, had passed them by. Composed mainly of philanthropists, the reformers of the 1870s operated outside the government which during an era of laisse-faire participated little in these efforts. The reformers attempted to redress surface social inequities in a disorganized fashion. They reformed nothing. Their efforts many times equated with simple philanthropy. It was an era of "simple solutions" to complex social problems (Hays 1957: 24).

The solutions to society's ills required pervasive public rather than simply private action. But, those movements would not emerge until the early twentieth century (Hays 1957; Berthoff 1971). In the late nineteenth century, reform occurred at the traditional community level. This approach did not cure society's ills; it did not realign the social institutions with economic developments. The impersonal, wealthy corporations embodied those changes which threatened the economic base of rural communities and many central places alike. The reform movement thus voiced resentment against this force. To combat big business and save a familiar community life, local reformers, intellectuals, small businessmen, clergy, and lawyers, formed organizations which boosted the importance of their community (Hayes 1957; Wiebe 1967).

As the Midwest emerged rapidly from its frontier adjustments, many communities struggled to become major trade and industrial centers. Many failed, some succeeded as smaller trade centers in the shadow of a few, major regional commercial centers (Wiebe 1967: 44; Atherton 1954: xvii, 279). Dubuque fell into this middle category. Boosterism often accompanied this bid for greatness. This spirit commonly appeared when the community feared that change threatened its current position, usually when it began to lose commercial importance to other centers. Its respected citizens often attempted to make the community a physically and populously larger place in relation to nearby rivals. They strove to make the community the center of economic, political, and social activities and to involve larger areas of the community's hinterlands in this development (Doyle 1978: 62-63; Moline 1971: 7-8). Leaders also sought a new importance for their community by winning the county seat or attracting railroads, large businesses, colleges or state institutions. They sought to achieve their goals by some combination of lobbying, fund raising, land donations, vigorous advertising, and community beautification. Community fathers exalted often exaggerated community virtues in the newspaper and political speeches. Their community possessed the highest morality; it was the most democratic, temperate, beautiful, healthful

community in the region; and offered all the economic advantages for success as an industrial and commercial center.

Underlying this competition, the booster spirit also became a part of nineteenth century man's search for his identity. He sought greater stability and a redefinition of the community from which he was becoming disassociated. It was covertly an effort to find unity in disorder. It succeeded by joining the individual's goals to the community's needs. Both desired economic success. Therefore, the community's growth indirectly assisted its members. The booster spirit thus lent a sense of common purpose and often crosscut other social divisions. Although it strengthened the sense of community, boosterism was a weak link because it involved only a small number of individuals and was promoted by inflated hopes of great success (Doyle 1978: 62-63, 255).

One common expression for this search for an identity as a specific place among all the other competing communities became a growing sense of nostalgia displayed through the glorification of the community's past. Amateur historians during the mid to late nineteenth century as well as today collected reminiscences, family papers, and memorabilia. Often the resulting histories glorified the past through exaggeration and selective ommission. The recounting of these successes was an expression of community pride. This process gave the community a single identity however inaccurate it might have been (McKay 1985: 461). This resurrection of the past offered stability, something familiar during a period of tremendous flux and uncertainty about the future.

As Dubuque neared the end of nineteenth century, its lumber industry began to collapse as had its lead trade several decades before. At mid-century, its industries absorbed local natural products and fashioned finished products which were marketed in the city and its hinterlands. As the railroad networks broadened, the city gradually again became a transshipment point for natural or semi-finished products to Chicago. Although it remained a large urban center for its region, the city never attained the status of a major regional commercial and industrial center (Mahoney 1982), the goal of many city fathers. While it eventually developed a diverse industrial base with several major industries, the period of transition in the late nineteenth century as Dubuque's major industry failed but a brighter national economic outlook appeared brought uncertainty. Boosterism often accompanied uncertainty. One form of booster organization, the Early Settlers Association of Dubuque attempted to promote its city's image by associating it with what they considered to be important past events.

The subtle changes in the descriptions of Dubuque's grave site through the nineteenth century illustrate the Early Settlers Association's view of the

past and their use of history. In 1820, Stephen Kearney, a member of the military, viewed the grave site from a nearby island in the Mississippi. According to him, a small building covering Dubuque's remains stood on a high hill at one end of the Mesquakie village (Auge, Gibson and Klein 1986: 31). An Italian traveler, Giacomo Beltrami, while ascending the Mississippi in 1823, observed that "Dubuque reposes, with royal state, in a leaden chest contained in a mausoleum of wood, which the Indians erected to him upon a summit of a small hill that overlooks their camps and commands the river" (Quoted in Auge, Gibson, and Klein 1986: 31). A Superintendent of Indian Affairs, Thomas McKenney visited the grave site in 1827. He noted that the grave was on a high bluff adjacent to Catfish Creek and the Mesquakie village.

> Over the grave was a stone, covered with a roof of wood. Upon the stone was a cross, on which was carved, in rude letters: Julian DuBuque / died 24th March, 1810 / aged 45 years" (quoted in Auge, Gibson, and Klein 1986: 32).

McKenny also observed the nearby grave of an Indian chief (Auge, Gibson, and Klein 1986: 32). In 1829, Caleb Atwater again viewed the grave from the river and noted that it was marked with a cross (Schermer and Kurtz 1986: 63).

In 1841, Catlin visited Dubuque's grave and offered a relatively lengthy description and a painting. He (1841: 130) observed that Dubuque had settled adjacent to the Mesquakie village. On the pinnacle of a high bluff

> ...he erected the tomb to receive his own body, and placed over it a cross with his own inscription on it. After his death, his body was placed within the tomb, at his request, lying in state, (and uncovered except with his winding sheet), upon a large flat stone, where it was exposed to view as his bones now are, to the gaze, of every traveller who takes the pains to ascend this beautiful grassy and lily-covered mound to its top, and peep through the gratings of two little windows, which have admitted the eyes, but stopped the sacrilegious hands of thousands who have taken a walk to it.

Langworthy first visited the site about 1830 but recorded his findings in 1855 (1910: 370). He noted that Dubuque had been buried in a stone house with a red cedar cross both of which had become dilapidated by 1830. The remains of an Indian chief were deposited inside as well. Finally, the editors of the Western Historical Company commented in 1880 (p. 504) that the site was now merely a depression which contained nothing. But, "Once, however, it is said, that the place was rock built, fenced-in, and within was a coffin containing the remains of the adventurous founder of Iowa's chief city." All that now

remained was the jaw bone which had been located and retained by a local resident. They commented that it should be placed in a museum.

Richard Herrmann, a member of the Early Settlers Association and heavily involved in the erection of the Dubuque Monument in 1897, described the appearance of the site just prior to the erection of the monument. Attempting to record his observations as true historical fact, he stated that there was a large mound placed over the grave with a wall of rough stone placed on the mound. The mound was seven feet wide by eleven feet long and about four feet high (DUBUQUE ENTERPRISE 1904; Herrmann 1922: 65). An undated photograph confirms this description (Hartman 1986). While excavating the grave site which the members of the association presumed had been robbed, Herrmann and M.E. Erwin uncovered scattered human bone fragments at a depth of four feet and two relatively complete skeletons at eight feet. The smaller extended skeleton which they attributed to Dubuque lay under the north wall of the mound. The other, larger one which they identified as the Mesquakie Chief Peosta lay in a more upright position to the south. Grave goods associated with the smaller skeleton included a pipe of red pipestone and with the larger skeleton, the partial skeleton of a squirrel and twelve flint projectile points. Outside but adjacent to the mound, they located a third skeleton which they attributed to Potosa, a Mesquakie woman closely associated with Dubuque in the local lore. Herrmann took custody of the skeletons and grave goods during the erection of the monument. He returned one skeleton whom they presumed to be Julien Dubuque to the grave site and retained the one identified as the Mesquakie chief and associated grave goods for his museum. The placement of the third skeleton remains unclear (Herrmann 1922: 55, 65-67).

While the actual configuration of the grave site is immaterial to the significance of the site, early descriptions in juxtaposition to later views of the site hold importance. Observors of the 1820s to 1841 generally agreed that one or more stones and a small building covered the grave site. Kearney in 1820 and McKenney in 1827 both observe the building or roof and McKenney who viewed the site more closely described a stone with an inscription. The location of a cross, either inscribed upon the stone or standing next to it, remains unclear. In 1823, Beltrami probably elaborated the description adding a leaden chest and altering the building to a mauseoleum. Catlin added to this view in 1841. The cross now stands in the ground and the building becomes more substantial, something less than a mausoleum and more than a roof. By 1855, Langworthy retains the notion of the mausoleum or stone house as he calls it and the standing cross. By 1870, the site became a depression and Herrmann added the rock wall as illustrated in a presumably contemporary photograph. However, Herrmann concludes that once a hut with a door of cedar covered with lead at one end stood on the mound. The skeletons have a specific identification (DUBUQUE ENTERPRISE 1904). Beltrami's and Catlin's

elaborations prevail. But these descriptions relate more easily to the late nineteenth century conception of how Dubuque should have been buried. It enhances their view of the past. Seeking greatness for their city, this view bolsters the overall image of the City of Dubuque. The monument which emerged in 1897, one wholely unrelated to what had been there originally, becomes more understandable and gains significance from this perspective.

Having made pilgrimages to the grave site each year (Champion n.d.), contemplating the erection of a monument for an unknown number of years, and finally raising sufficient funds, the Early Settlers Association with the Iowa Institute of Science and Letters of Dubuque accomplished the task as the Julien Dubuque Monument Association in 1897. The association acquired the location of the grave site and adjacent land totalling 1.48 acres (Hartman 1986). Plans for the monument were sketched in pencil by Alexander Simplot. Carter Brothers who quarried the Galena limestone for the structure from an adjacent quarry executed the plan (Herrmann 1922: 61-65). The remains associated with Dubuque were placed within a walnut case and interred in a bed of cement within the monument, a medeival tower (DUBUQUE ENTERPRISE 1904).

The dedication of the monument occurred in October of 1897. News articles published immediately after the ceremony indicated an attendance of 2000 to 3000 individuals. The Chicago, Milwaukee, and St. Paul ran special excursion trips to the location as did several ferries (Herrmann 1972: 146). The ceremony's appearance as a side show to later generations may in fact mask the intent of a celebration expressing respect for the past and contemporary attitudes toward the use of history in that perod.

The Early Settler's purpose and public attitudes become more clear from the perspective of the needs of the late nineteenth century community of Dubuque. They "... had only the betterment of Dubuque in mind and the preserving of old relics of the early history of Dubuque" (Champion n.d.). Because of Dubuque's prominence in the early history of the City of Dubuque and "...giving it a beginning...," the Early Settlers Association decided to erect the monument (DUBUQUE ENTERPRISE 1904). Herrmann also noted that "all the travelers and writers speak of the location of the grave as being an extremely curious and interesting place, which tourists should not fail to see" (1922: 54). And, finally in the introduction to his work on Julien Dubuque, Herrmann stated that his purpose was to explain his role in the building of the monument including the finding and his custody of the remains at the grave site and most importantly to correct any misinterpretations of the facts which might then prevail. This last statement likely refers to the excavation of the skeletons (1922: 3).

Because the physical remains of the past were not necessarily well understood in the late nineteenth century, they viewed them as curiosities or relics.

These objects linked the past with the present. They linked late nineteenth century society to a more certain past when their community had a vision of a more certain future. Thus, association with this history gave those of the late nineteenth century a more secure present and a more certain future. This past was also used to boost Dubuque through tourism. Dubuque had participated in what was viewed as an important first event for the State of Iowa. This association then bolstered the city's importance during a period of cultural instability. Dubuque's prominent citizens focused attention on the grave site and used it to attract attention to their city. It became a symbol of all their past importance and retrospectively of their current uncertainties. Thus, the Julien Dubuque Monument gains significance not as the grave site of Dubuque but as a symbol of late nineteenth century historicity, as an expression of its insecurities, and as an attempt to find lost certainties and bolster their city during a time when communities rushed to get ahead.

F. ASSOCIATED PROPERTY TYPES

Contents of Property Types

I. Name of Property Type: Open-air Occupation Sites

II. Description

Open-air occupation sites include all artifacts, lithic scatters, and ceramic fragment recorded by reconnaissance surveys in the Mines of Spain Area which occur in isolation or in association with other artifacts. These sites were functionally classified as "villages, camps, and resource extraction sites" (Abbott 1983: 42).

At the Mines of Spain Area, open-air sites are found in all topographic situations (cf. Abbott 1983: 40, 97, Table I). The four open-air sites identified as villages are all on late Wisconsinan terraces at or very near drainage confluences, for example the confluence of Catfish and Granger creeks. These villages are large, up to 2800 square meters in diameter. They are multicomponent sites with extensive surface debris, and shovel tests have evidenced intact subsurface deposits. The diversity of the local environment around these sites, particularly at the mouth of Catfish Creek, is quite high and probably accounts for the selection of these landforms for spatially and temperally extensive occupation (Abbott 1983: 42).

The open-air camp/resource extraction sites on the pre-Wisconsin uplands are probably short-term camps and resource extraction sites. These sites appear to be oriented towards utilization of the local resource diversity of the immediate upland environment. The comparatively small amount of cultural material recovered from the majority of these upland open-air sites indicates the short term occupation period and limited function of these sites. Few sites contained the quantity and diversity of materials suggesting reoccupation or long term occupation. Eighty-one percent of the open-air

sites lacked diagnostic materials. Sites range in size from a find spot such as 13DB115 to 100 square meters such as 13DB207 to 5000 sqaure meters such as 13DB200 (Abbott 1983).

Only three open-air camp/resource extraction sites were located in the Holocene bottomlands. Two were situated on alluvial fans while the third was found buried in fluvial sediments exposed in a cut bank along Catfish Creek. Their limited types and amounts of cultural materials indicate this site type (Abbott 1983: 43). However, sub-surface testing, especially at buried sites could identify both the function and affiliation of these sites. Geomorphological investigations have not been conducted in the Mines of Spain Area. It seems likely that a significant number of additional open-air sites may be found buried in the alluvial fans of the larger drainages, especially Catfish Creek.

III. Significance

The Mines of Spain Area prehistoric sites have the potential to yield significant data regarding the local prehistory of the area under criterion D of the National Register.

Surface survey and subsurface testing in the Mines of Spain Area resulted in the location of 66 open-air sits. The sites identified as "villages" have the research potential to answer questions on the long-term habitation of the Mines of Spain Area. Because of the lack of previous research related to Archaic habitation sites in northeast Iowa, research questions are general. The central problem remains the characterization of the Archaic occupation through the definition of diagnostic artifacts and the recovery of a range of tool and debitage types and their comparison to Archaic sites in adjacent regions. Faunal and floral remains may provide information on floodplain procurement strategies and seasonality of resource extraction. Similarly, Woodland subsistence patterns in northeast Iowa are poorly understood. The majority of previously excavated sites in northeast Iowa have focused on sites with large mound groups and exotic grave goods. Comparatively little data on non-mortuary sites now exists.

The camp and resource procurement sites are part of the larger pattern of occupation associated with more permanent sites. Additional testing of these sites would focus on such areas as changing settlement pattern systems and means of resource procurement through time. Small sites tend to be single component and often single function. Ease of identification allows selective research on site affiliation and procurement strategies. Such research should characterize the site by addressing the type of resource being gathered, the kinds of activities pursued at the site, the season of the activity, the size

and depth of the site, the type and number of artifact remains, the existence of concentrations of artifacts and their interassociation, and the relationship of the site to its environment and other sites within the Mines of Spain Area. Archaeological surveys to date have indicated a wide range of site variation (Abbott 1983). Thus, research must focus on the functional meaning of this variation. And, finally, where possible each site category must be related to its cultural affiliation to assist the understanding of the social interrelationship between the sites. These small sites as a unit form the territory and subsistence base for the larger habitation sites. While the resource procurement sites are rarely individually eligible, the total pattern of their occurrence is a vital research component of areal prehistoric occupation.

Precisely because of rather than despite its diversity, the Mines of Spain Area should be viewed as a unified study region for the investigation of temporal and spatial ecological adaptation and change. In an area of high ecological diversity such as the Mines of Spain Area, no single site or site type can be fully understood without reference to the surrounding natural environment and without relating it to other sites of both the same and other time periods. The Mines of Spain Area open-air sites offer a unique opportunity for the study of cultural adaptive strategies in general and of Eastern Archaic and Mississippi Basin Woodland adaptations in specific.

IV. Registration Requirements

Requirements for listing the Mines of Spain Area prehistoric sites on the National Register of Historic Places include site association and integrity. These sites are associated with a long-term subsistence systems which operated in the Upper Mississippi River Basin. The network of sites and site types and their location on the landscape possess significant associational information which should elucidate the subsistence and settlement patterns within the Archaic and Woodland period. They should also suggest the nature of the social organization in which the occupants of the sites participated.

Site integrity normally refers to the degree of site disturbance suffered through both natural and human agencies. This condition affects the amount of information yielded by the site. As of 1982, approximately one-half of the Mines of Spain Area, including both uplands and bottomlands, was under cultivation (Abbott 1982: 7). Although subsurface testing of all but a few cultivated sites has not occurred, the lack of additional known surface disturbances strongly suggests that intact subplowzone deposits exist, especially in the bottomland sites protected by alluvium.

The uncultivated parts of the Mines of Spain Area including forest and pasture

land in both the uplands and bottomlands contain sites which are essentially undisturbed. Limited shovel testing has occurred in uncultivated portions of the Mines of Spain Area. For example, sites 13DB65 and 13DB210 exhibited both surface and sursurface deposits while shovel testing located six sites including sites 13DB155, 13DB199, 13DB201, 13DB205, 13DB208, and 13DB209. These results suggest the likelihood of additional sites present in the uncultivated portions of the Mines of Spain Area with only subsurface deposits. Placed away from public access, these sites likely possess good integrity.

I. Name of Property Type: Rockshelter

II. Description

Because rockshelters in northeast Iowa have not been systematically examined, their characterization relies primarily on data from the Mines of Spain Area. Rockshelters in the Mines of Spain Area derive from either bedrock blocks spalling from bluff faces and leaving overhangs, streams undercutting bluff faces or erosion by solution of carbonate rock. Rockshelters are particularly common on east and north facing bluffs. All rockshelter sites were located on the Wisconsin bluffs and terraces.

In general, there is little surface evidence of prehistoric occupation within the rockshelters (Abbott 1982b: 9), but shovel testing has frequently uncovered evidence of buried prehistoric occupation (Abbott 1983: 75). Twenty single and clusters of rockshelters comprising a total of 51 individual shelters were shovel tested, and 34 shelters produced cultural materials. Rockshelters range in size from 3 by 5 meters to 50 by 100 meters with an average height of about 2 meters. Most rockshelters averaged about 10 by 20 meters in size (Abbott 1983).

III. Significance

Rockshelters in the Mines of Spain Area gain significance under criterion D for the potential prehistoric data they contain. Because many rockshelters within the Mines of Spain Area contain stratified buried deposits, they will likely prove to be an extremely significant archaeological resource. Currently, only one site, 13DB186 which is a Woodland site, can be assigned to a cultural affiliation. However, testing was limited to an average of one shovel test per rockshelter. More extensive testing should determine the cultural association of additional rockshelters.

Rockshelters have been recorded throughout northeast Iowa, but few have been excavated. The Mines of Spain Area contains a high density of rockshelters adjacent to other site types including open-air sites and mounds. The potential ability to determine the interrelationship of rockshelters with other site types within the settlement system should allow the explanation of their role as exploitation and/or habitation sites or conceivably as site with some special function within prehistoric society. The frequent presevation of paleo-botanical remains should assist not only the interpretation of means of subsistence but also seasonality of occupation. The preservation of stratified remains characteristic of rockshelters not only assists the elucidation of function but also the interrelationship of cultural sequences within the locale. Thus, rockshelters gain particular importance as a site type for the categories of data they are able to provide.

IV. Registration Requirements

Because rockshelters as a site type remain unexcavated in northeast Iowa, their registration requirements must be addressed in relationship to sites examined within the Mines of Spain Area. Requirements for listing rockshelters in the Mines of Spain Area on the National Register of Historic Places include site association and integrity.

The rockshelters in the Mines of Spain Area are located on Wisconsin landforms where they are associated with a high diversity of natural resources within a 200 meter catchment area of each site. Abbott (1983: 43) postulates that the resource orientation of these sites was toward the exploitation of the slope and upland forests in the area. Although the sites' association with the numerous open-air sites of the area requires definition, site density provides the opportunity for this research.

On the basis of limited shovel testing, a majority of the rockshelters possess intact subsurface materials. Some surface disturbance from historic use has occurred in several of the more visible rockshelters along the east end of Catfish Creek, but stratified middens still remain. Many are located in relatively inaccessible areas and remain relatively intact. With good site integrity, these rockshelters preserve data relevant to the determination of site affiliation and resource utilization.

I. Name of Property Type: Mounds and Mound Groups

II. Description

Mounds are common prehistoric remains found throughout the Midwest, especially on bluffs along waterways. The Mines of Spain Area contains 13 mounds and mound groups all of which are located on pre-Wisconsin uplands. They occupy exclusively the upper and lower bench remnants of the Wisconsin uplands, overlooking either the Mississippi or the lower Catfish Creek valley.

Mounds in northeast Iowa possess a variety of shapes including conical and linear and enclosures and effigies. At the Mines of Spain Area only generally small conical and linear mound occur. Conical mounds average about 10 meters in diameter although they range from 4.5 to 26 meters. Linear mounds average about 26 meters in length, although they also show a wide range from 9.5 to 60 meters. All mounds are under one meter in height. Mound groups contain both shapes, but archaeological surveys have only thus far located linear mounds in isolated circumstances. Most mounds can be isolated from other land features by the presence of a layer of rock immediately below the land surface (Abbott 1983: 77).

III. Significance

Because of the lack of systematic research involving mound sites in the area, research questions are general. Recognizing their ability to produce signficiant data pertaining to local prehistorical development, mounds gain local significance under criterion D.

Mounds are one of the most visible archaeological sites in the upper Midwest and are often associated with the Woodland time period. Late Archaic mounds also exist. Their investigation will produce data upon construction techniques. To date, no evidence of human burial remains has been located in the mounds of the Mines of Spain Area. However, these mounds still possess significance because of the abstract human behavior which they represent. Benn et al. (1978: 64) list three categories of human behavior potentially represented by mounds: 1) acts associated with offerings and ceremonies, 2) activities enacted to ensure the proper disposition and propitation of the soul, and 3) rituals symbolizing traditional ideology. Mounds additionally represent the consolidation of labor supporting the effort required to erect the structures. This cooperation in itself suggests that a more complex, perhaps hierarchial level of social organization existed. It is also likely that the mounds contain data relevant to Mines of Spain Area's relationship to other regions, specifically the Hopewell interaction sphere. Equally signficant, numerous adjacent open-air sites offer the potential to examine the spatial interrelationship between mounds and habitation and resource extraction sites of the same cultural affiliation. A cultural group can then be examined from both an ideological and subsistence-settlement perspective thus allowing the derivation of a more wholistic interpretation of Woodland

cultural development.

IV. Registration Requirements

Because of their high visibility and reputation for containing burials and grave goods, mounds are site types frequently subject to disturbance by vandalism. Archaeological surveys conducted within the Mines of Spain Area indicate that many but certainly not all of the mounds and mound groups have experienced such disturbances.

For example, mound 13DB43 is truncated by a road and a parking lot. The edge of a field has encroached upon mound 13DB13, #2. Old holes excavated to loot the mounds exist in sites 13DB13, #1; 13DB45 #2; 13DB47 #2-5; 13DB103; and 13DB128, #5. Quarrying operations at Horseshoe Bluff removed site 13DB15. Four mounds exist in forested areas and thus have not been impacted by plowing or other human activities. All other currently identified mounds have been cultivated.

Nevertheless, disturbed mounds can yield data relevant to the inquiries noted above. Mounds remain sufficiently intact to yield data upon construction materials, techniques, and stages to elucidate the variations in mound construction within the Mines of Spain Area. The prehistoric practice of constructing subfloor pits suggests that even pastured and plowed mounds may still contain features. Disturbed mounds may also contain intact deposits since looters most frequently concentrated their excavations in the center of the mounds leaving the perimeter intact. Thus, mounds suffering partial disturbance can yield significant information especially in the context of data from adjacent habitation sites.

I. Name of Property Type: Regional Trading Post/Historic Amerindian Village.

II. Description

Although known to have existed from historical documentation and archaeological investigations, the physical form, distribution, and period of the Regional Trading Post/Historical Amerindian Village site type has received only minimal research to date. The type probably emerged in the early eighteenth century and lasted to about 1860 along the Mississippi and lower Missouri river valleys. Such a major post requires sufficient physical presence to supply the necessary employees and support services. Its operators must establish enough familiarity with the surrounding Amerindian

population to secure trade and trust and enable the attraction of an Amerindian village. For example, the 1720s French Fort D'Orleans lasted only a few years because the support services and trading relationships remained undeveloped. By 1860, most of the commercial fur bearing animals were harvested within the Mississippi and Missouri river valleys obviating the need for such establishments.

The physical remains of the property type represent the multiple functions which it fulfilled. Relatively permanent habitation sites for the trader and his employees, storage facilities such as cellars, acitivity areas related to final preparation of skins prior to shipment, a warehouse and landing, agricultural fields, storage structures for crops such as corn cribs and granaries, other food processing areas, and craft structures, particularly for blacksmithing, compose the central features of the regional trading post. These components may be scattered but are most frequently concentrated within a stockade. Other possible functional components might include additional craft and light industrial structures such as a grain mill, facilities for processing other natural resources such as a lead smelter, quarters for a missionary, the residence of a diplomatic official, and military quarters and accompanying stockade.

Semi-permanent, seasonally occupied Amerindian villages frequently stand adjacent to the post. The composition of the village varies according to the group and period. A Mesquakie village might contain lodges; a ceremonial structure; areas free of structures within which communal activities occurred; activity areas relating to food and hide preparation, tool manufacture, and other subsistence-related acitivities; storage pits within and outside the lodges; and burial areas adjacent to or within the village proper (Speth 1986; Callendar 1978; Schermer and Kurtz 1986).

Such regional trading posts with related Amerindian villages occurred along major rivers to allow the transportation of goods and supplies and adjacent to hinterlands containing the sought-after natural resources, most frequently furs but also lead. The environmental context of the property type often included arable lands and less frequently a defensable position. It also often stood within an environmental ecotone which provided both Euro-American and Amerindian inhabitants a wide variety of resources (Speth 1986).

Thus, the property type is associated with frontier areas along the upper Mississippi and lower Missouri river valleys between the early to mid eighteenth century to 1860. Further research may extend the property type into other regions. The type emerged with the exploitation and transportation of natural resources such as furs and lead and perhaps salt to fulfill the needs of an established nation. Other support functions were domestic, agricultural, industrial, diplomatic, military, and religious. European,

primarily French, American, and upper and central midwestern Amerindian groups interacted in association with the property type. Because they were regional centers not intended to necessarily penetrate the resource area but to provide support functions, its location occurred along major transportation networks such as the Mississippi and Missouri and reflected the widely distributed nature of the resources.

Because of the relatively large area covered by the property type, rural environments experiencing limited post-mid-nineteenth century utilization enhance preservation and allow the understanding of intrasite relationships. For example, the Dousman residence within the city limits of Prairie du Chien experienced considerable alteration after its initial establishment thus destroying much of the original estate.

III. Significance

The regional trading post/Amerindian village property type relates to the Indian Contact, Conflict, Dispossession Along the Upper Mississippi River Valley context. Examples of the property type potentially demonstrate the interaction between the two cultural components, the midwestern Amerindian and Euro-American. The property within the Mines of Spain Area provides an example of a large, semi-permanent, seasonally occupied Mesquakie village and a French-American trading post adjacent to one of the exploited resources, the lead mines. Possessing potential data to examine the settlement type, it thus gains significance under criterion D.

This property type addresses multiple areas of significance including the archaeological investigation of historic-aboriginal and historic non-aboriginal cultures. Such property types exist exclusively as archaeological resources. The property type represents exploration and settlement as an expression of the initial intensive and large scale exploitation of lead, fur, and other natural resources. And, it provides data upon industry as the property type relates to mining, processing, and trade of lead and the processing, storage, and trade of furs. These areas of significance gain importance for the property type at the regional level: the upper Mississippi and lower Missouri river valleys.

The regional trading post/Amerindian village property type documents this cultural interaction within a trading situation as an historical archaeological site. This specific example contains evidence of a major Mesquakie village which spans a critical period of culture change. Potential structural remains include multiple lodges, a council house, work areas, communal ceremonial areas, storage pits, dwellings associated with the trader, and engagees, fur storage cellar and craft structures, fur and lead

warehouses, and agricultural storage areas such as cribs and granaries.

Research potential focuses upon the interaction between the two culture groups. The property type provides the opportunity to investigate a period of intensive culture change for the historic Amerindian group, perhaps of sufficient magnitude to be viewed as a new cultural entity. Equally significant, the type allows the examination of the adaptation of the Euro-American component to the trading situation. The remains enable a more precise definition of the physical components of the type which to date are poorly understood. Intrasite study of these remains can address the techniques of natural resource exploitation, processing, and shipping. The property type also offers data upon the social structure as reflected in the spatial organization of the property and complementary written and pictorial documentation. The post's interaction with regional commercial centers should be evident through transportation facilities and the resource's artifact inventory and illuminated through historical documentation. This relationship will be primarily economic but may also include religious and political affiliation depending upon the functions of the post. The post should also be examined as an element of the subsistence and settlement pattern of the Amerindian group, most often a semi-permanent, seasonally occupied agricultural village. Extensive examination of the property type in relation to historical documentation should also better define its temporal and regional boundaries.

Only limited historical archaeological documentation exists for the regional trading post/Amerindian village property type. Major theoretical contributions exist in the papers of the American Fur Trade Conference (see Thorne 1984; Dickason 1984; Lee 1984). Lee's study is based upon an examination of a fur trading post at Fort St. Joseph in Ontario. Kay (1977) provides a broad examination of the effects of the fur trade on Wisconsin Amerindian groups. Wishart (1971) offers an historical geographical study of the fur trade which focuses upon specific kinds of posts and their distribution in the central and upper Midwest. And, Price [C.], Girard, and Harris (1979) propose a locational model for different levels of the fur trading posts in the southeast Missouri area.

Few archaeological investigations examine the regional trading post as a specific type separated from others by locational and functional determinants. The study by Lee (1984) provides a theoretical example. Other historically documented examples include the 1720s Fort D'Orleans, Fort Osage, the 1863-1864 Laclede post in the St. Louis metropolitan area, the 1808-1809 to 1813 Fort Madison, the 1843 Dousman estate, and Fort Des Moines II (1843). Except for Fort Des Moines II, these properties have either not been located archaeologically, have been partially or wholly destroyed by later utilization of the site or urban expansion, or have been excavated only from the

perspective of their physical components with little or no consideration of the specific functions represented. However, excavations and architectural remains at the Dousman residence have offered insight into structures associated with the processing and storage of furs and a contemporary office (Mckay 1985; 1987).

Fort Des Moines II (13PK61) and the associated Raccoon River Indian Agency (13PK54) were contemporaneous with the last phases of acculturation of the Mesquakie and Sauk. Represented functions include trading, military, diplomatic, agricultural, craft, and industrial components (Gourley 1985). Thus, the significance of the property type derives from the data it can provide upon the interaction of the Amerindian and Euro-American cultures in a trading relationship.

While examples of the property type existed at several noted locations, only two archaeological sites are now known to survive: Fort Des Moines II, which represents a later phase of acculturation, and the Dubuque Trading Post. While the location of Fort Madison has been pinpointed, its integrity still remains in question.

IV. Registration Requirements

Because the property type is based upon the interaction of both components, the physical requirements currently include archaeological sites which preserve a portion of both the Euro-American and Amerindian settlements. And, to possess sufficient data to address potential research questions, the archaeological evidence should be complemented by historical documentation. The property should relate specifically to the exploitation of one or more resources in a generally sparsely populated, frontier region. This element acknowledges the need for initial Euro-American adaptation to the location, its partial or total isolation from large centers, and its external economic and perhaps political and religious dependence upon regional commercial centers. Given the limited knowledge of the property type and their poor state of preservation, for example Fort Des Moines II, Fort Madison, Fort Osage, Villa Louis, and the Dubuque Trading Post, those sites which possess a partial representation of both cultures have sufficient integrity for potential nomination. The expansive nature of such sites are likely to demand examination of partial archaeological representations.

I. Name of Property Type: Euro-American Lead Mining and Processing Properties

II. Description

The Euro-American lead mining and processing property type examines archaeological sites associated with the technological aspects of lead mining within the context of Euro-American settlement. Its approximate beginning date of 1820 removes it from Amerindian-Euro-American interaction. Its end date at about 1920 recognizes the continuation of rather superficial exploitative techniques which this property type represents into the early twentieth century. The property type excludes sophisticated mining technology which was initiated in some areas of the Upper Mississippi Valley Lead Region by 1870. These later techniques depended upon the accumulation of large amounts of capital and upon business organization beyond the level of individual enterprise, partnership or small company.

The type includes a variety of property subtypes: exploitative sites such as exploratory mining pits, lead mining shafts, and adits and lead processing sites, the lead furnaces. Exploratory lead mining pits have vertical, shallow, usually circular openings. Their depth varies according to the amount of overburden. In the Mines of Spain Area, they attain a depth of about six to eight feet. If placed in insecure soil, the sides of deep mining pits may be shored with log cribbing or rubble stone walls. Their frequent occurrence in profuse clusters reflects the position of the lead resource in a concentration of parallel veins.

Mining shafts begin as exploratory pits. However, in this instance, the miner discovered evidence of lead and continued to sink a vertical hole or shaft to the lead vein. Evidence of superstructures such as windlassess appear rare, but the shafts like the pits are secured with cribbing or rubble stone walls in insecure soils. In the Upper Mississippi Valley Lead Region, shafts rarely descend below the water table or deeper than 60 to 100 feet. Horizontal drifts along the deposits extend from the shafts at multiple levels. Because of the frequent collapse of their entrance, shafts and pits can appear similar at their entrance.

Adits provide horizontal access to lead deposits through the side of an incline. They also allow the drainage of water from deep shafts and drifts. Adits as well as the drifts may contain evidence of timber shoring and wooden or later metal tracks, mineral tubs, mining tools, and evidence of hand drilling.

Miners in the Upper Mississippi Valley Lead Region initially utilized a number of temporary smelting furnaces. The log heap furnace consisted of a small basin covered with a layer of logs on top of which was placed a box of smaller logs within which the mineral was smelted. The basin collected the melting ore. The log furnace contained a hopper-like hole lined with flat stones which was excavated into a hillside. A channel leading from the base of this

hopper carried the melting ore from the hopper to a collecting trench. The ash furnace separated the lead from congealed lead and ash. The construction of the ash furnace paralleled the log furnace but contained a considerably longer flue. Miners employed these three types until the development of the more complex, permanent, and efficient cupola, blast, and Scotch hearth furnaces after the mid-1830s. These three furnaces combined the hearth, flue, and means of collecting the lead into a more permanent stone structure and required the use of bellows to increase the air supply into the furnace.

The Mississippi Valley includes two major lead regions, southeast Missouri and the Upper Mississippi Valley including northeast Iowa, southwest Wisconsin, and northwest Illinois. Contained within the driftless region, the Upper Mississippi Valley Lead Region lacks the deep overburden mantling the Missouri mines. This environmental factor allowed the survival of less sophisticated techniques into the twentieth century. Miners in Missouri were forced to adopt such techniques by the 1870s to tap deep lead resources after surfacial ones were quickly depleted. These rich but deep resources attracted large, well financed companies and corporations which could afford more elaborate equipment. The hand operations common to the upper Mississippi lead mines also meant that miners quickly abandoned less productive veins and those which reached below the water table. And, unlike Missouri, the productive soils adjacent to the upper Mississippi lead mines allowed miners to supplement their income through agriculture which tended to prolong mining on an individual basis. These two factors define the boundary of the property type. Their form and longevity grew from the shallowness of the overburden and the adjacent arable soils. Therefore, its boundaries are currently limited to the Upper Mississippi Valley Lead Region in Iowa, Wisconsin, and Illinois.

Exploratory mining pits, shafts, and adits tend to cluster in east-west alignments, the direction of productive veins, with fewer exploratory pits cutting north-south to expose adjacent deposits. Such mining sites often occur on top of or on the sides of hills and concentrate along benches in the depressions of small ravines. Log heap furnaces can occur almost anywhere in the vicinity of contemporary mines with the exception of excessively steep areas. However, they are more likely to appear along streams to facilitate the movement of ore. The ground or log furnace was built into a hillside and frequently adjacent to a stream or river for transportation purposes. The more sophisticated furnaces required water power to run their bellows and relatively large streams or rivers to move their lead.

Thus, this property type associated with American settlement in the Driftless Region. It specifically relates to lead mining utilizing a limited technology and one depending upon individual enterprises, partnerships or small companies which possessed limited capital. Because the miners worked rich deposits for short durations, later, more sophisticated operations removing less productive

ore likely destroyed these evidences. Areas of limited fertility and comparatively rough terrain within the Upper Mississippi Valley Lead Region which experienced less intensive agricultural or urban development are more likely to contain the lead mining and processing properties representing these temporary, exploitative operations.

III. Significance

The property type, evidence relating to lead mining and smelting, represents the technological level and distribution of lead mining as expressed within the context of Mining and Bulk Products: Lead Mining in the Mines of Spain. Their level of technology with support from historical documentation strengthens the understanding of the degree of organization which guided the mining effort.

Areas of significance relevant to this property type include historical non-aboriginal archaeology as the source of physical data, exploration and settlement which paralleled the discovery of lead in the Upper Mississippi Valley Lead Region, and industry from a technological and organizational perspective. This property type possesses a local level of significance. Comparable areas exist in southwest Wisconsin, especially in Grant, Lafayette, Iowa, and Green Counties, and in northeast Illinois, particularly the Galena vicinity. The Mines of Spain Area protects a large number of associated sites whose variation can assist a more refined definition of the property type.

Because of the ability to address important research questions, the property type gains significance under criterion D. It reflects the mining activities of American settlers after ca. 1820 as the region was alienated from its Amerindian inhabitants. Investigation of the remains of exploratory pits, shafts, and adits and smelters allows a better definition of site composition, mining methods, and the level of mining technology. A distributional study can define how the miners viewed their resource, for example as one to be quickly exploited or as an agricultural supplement to be tapped as needed, and where the miners anticipated its presence, i.e. the locational determinants of the properties. Thus, the density of sites related to this property type in juxtaposition to agriculturally-related property types such as farmsteads reveals the economic orientation and values of the miner as a migratory worker temporarily living within the community or as a permanent settler supplementing his agricultural income.

In general, the historical documentation of the region is relatively abundant. Studies which specifically examine the development of the lead mining technology and related economic organization for the Mines of Spain Area include Auge, Gibson, and Klein (1986), Straffin (1973), and Pruszko (1983).

However, only Pruszko offers an examination and analysis of the some of the resources. Current physically-oriented studies primarily enumerate site locations.

The Euro-American lead mining and processing property type closely relates to the lead mining community property type. One focuses upon the technological parameters while the other examines the organization of the contemporary mining communities. The lead mining and processing property type also relates to the Euro-American trading post/Amerindian village property type in the sense that both examine the exploitation of lead. But one chronologically precedes the other and the economic and social ramifications of that exploitation are quite different. The lead mining and processing property type also relates to the rural community property type because occupants often supplemented their income @through lead mining. The latter type's focus upon the development of agriculture and rural community forms separates the two.

IV. Registration Requirements

The registration of this local expression of lead mining and processing requires a relatively dense concentration of exploratory mining pits, shafts, and adits to enable definition of their physical composition, of the technology which produced them, and of their specific locational determinants. Depending upon the period, the presence of some form of smelter may not be necessary. Evidences of early mining operations should contain early smelter forms such as log heap or log furnaces since these miners tended to reduce their own lead. By the 1840s, miners more frequently transported their ore to more sophisticated furnaces if extant in the general locality. Thus, evidences of later mining are not necessarily associated with processing sites. Mining pits, shafts, and adits, and smelters must retain sufficient physical integrity to relate necessary physical data upon site composition and environmental distribution. Since a large quantity of these resources often concentrates within specific areas, all examples need not be free of disturbances.

I. Name of Property Type: Lead Mining Community/Camp

II. Description

Euro-American lead mining communities and satellite mining camps frequently developed within a lead mining area. Some proved to be short-lived, existing during the period required to tap accessible lead deposits. A few obtained permanence, lasting beyond the mining era. These permanent forms are excluded

from this type. The presence of such communities therefore normally paralleled the period of productive mining activity which in the Upper Mississippi Valley Lead Region was closely tied to low technology mining operations beginning in the 1820s. Therefore, this community type also excludes those founded, built, and at least partially operated by large mining companies which may have engendered a greater degree of stability. In the initial decades of productive operation, a population of transient miners operating as individuals, as partners or as a small company as well as farmers worked these upper Mississippi Valley mines. As early accessible surface veins became depleted in the 1850s, much of this transient mining population moved onto more promising deposits. Thus, in this region the temporary mining communities occupied by these mobile groups tended to be inhabited during the period of greatest production, between 1820 and 1860s. A few miners may have lingered in the vicinity of these communities perhaps well beyond this date into the late nineteenth century. However, since the original forms of social association likely disintegrated after the major period of occupation, the community ceased to exist. For this reason, the end-date for this property type within the Upper Mississippi Valley Lead Region is provisionally set to about 1860s following the period of greatest productivity ending in the 1850s.

The lead mining community/camp property type is viewed as a form of nucleated community, a common element of the American midwestern settlement pattern. These small, frequently unplatted communities often contained a concentration of dwellings with associated outbuildings, vegetable garden, animal pens, and activity areas as well as a small number of buildings associated with such business, craft, and industrial entrepreneurs as a mercantile store, blacksmith, saloon, local grist mill, and lead smelter. These communities may have supported a public building or a hall above a store for informal meetings, township meetings, or possibly for educational or religious purposes. The absence of such public functions depends upon the stability of the community and the presence of an adjacent larger community which may have partially fulfilled these functions. Camps removed from the immediate vicinity of the mining community may have also loosely associated with them through the community's limited economic services and informal and formal means of social association. Therefore, for proper analysis of their social relationships, these camps are included with the mining community. They contained at least one or usually more dwellings with related support structures.

Other than their location adjacent to relatively productive mines, additional locational determinants remain undefined. Those in or near the Mines of Spain Area also occur along the Mississippi River, likely because the waterway provided a means to transport lead smelted in nearby furnaces out and supplies in. This dispersed form of community pattern focusing primarily upon the

resource is also noted for the southwest Wisconsin lead mining region (Fay, Garfield, and Neville 1986).

Thus, the lead mining community and related camps, a form of nucleated community, were asscciatd primarily with the American mining occupance of the Upper Mississippi Valley Lead Region in northeast Iowa, southwest Wisconsin, and northwest Illinois from 1820 to the 1860s. Many of these small, short-term communities were thus not destroyed by their later expansion. Their location in rough terrain also thwarted extensive settlement in their vicinity. However, the apparent tendency in the Mines of Spain Area to locate along water courses likely led to some degree of physical disturbance through later shoreline development.

III. Significance

The lead mining community/camp property type represents the Special Purpose Settlements: Lead Mining Communities context. Although these forms are recognized in other areas of the Upper Mississippi Valley Lead Region, these sources fail to describe their form in much detail (Fay, Garfield, and Neville 1986; Fatzinger 1971: 24). Therefore, evidence of their physical composition and social organization is primarily drawn from the Mines of Spain Area and limited historical commentary. The boundaries of the property type likely coincide with the Upper Mississippi Valley Lead Region. They are a local community form possessing a local level of significance. The area of significance includes historic non-aboriginal archaeology and exploration and settlement. Such a temporary community form belonged to the early years of settlement and adjustment to an unfamiliar natural and social environment.

As a contribution to the understanding of its physical and social composition, the lead mining community and camp property type gains significance under criterion D. Investigation will potentially yield data upon its physical compositon and intra-community spatial relationships between such components as dwellings and their associated support structures, the entrepreneurial structures, public buildings, and other public activity areas. The definition of the legal status of these communities will indicate how the inhabitants themselves viewed their community's permanence.

The organization of the physical representation of these communities complemented by historical documentation should offer a view of their social structure. Such questions concern the degree of dependence upon other communities to perform social functions. Although the social relationship is probably primarily an economic dependence, Dubuque as the county seat and perhaps small satellite communities provided at least minimal governmental services and likely religious and educational ones as well as offering

membership in voluntary organizations. A temporary entity, these communities themselves probably formed few institutions. Thus, exactly how they maintained internal order, whether through voluntary organizations such as an association of miners or vigilante groups, through informal associations and/or through family networks remains undetermined. Also, such communities may have formed temporary associations at public meetings to accomplish specific functions and then disbanded. And, small companies may have effected some coherence in the community by regulating working habits. Thus, archaeological and historical analysis of this property type will illuminate the process by which new community bonds were created.

The lead mining community/camp property type closely relates to the lead mining and processing property type. It represents the social component of the technological property type. Since farmers may have utilized their services, it also associates with the rural community property type. As part time miners, farmers may have smelted and traded their ore at these locations as well as procuring limited economic and perhaps other social services at the lead mining communities.

V. Registration Requirements

As primarily archaeological entities, sites related to the lead mining community/camp property type and possessing local significance need not be completely free of disturbances. To date, few in the Upper Mississippi River Valley Lead Region have been entered on the National Register or received in-depth investigation. Any standing architectural remains will assist the study of their physical composition but are not a requisite for their registration. The mining communities and camps must minimally retain archaeological evidence of one or preferably more dwellings with related support structures and some evidence of their overall physical organization as well as at least the partial remains of entrepreneurial or public structures if once extant. As historical archaeological sites, some historical documentation must complement the physical evidence to enable the investigation of their internal social structure and external relationships to other communities.

I. Name of Property Type: Rural Community

II. Description

The period of significance for the upper midwestern rural community property type dates from initial agricultural settlement of the area to that period when the rural community no longer served as a social unit. Its end date,

then, parallels that period when inhabitants of community began to associate more heavily with social institutions in central places beyond its boundaries. This tendency to look beyond the community in some areas began as early as the 1890s and in others awaited the early twentieth century. Thus, for northeast Iowa, its period of significance is provisionally placed between 1830 and about 1920.

Because the rural community functioned as an integral social unit, it is viewed as a single property type possessing several property subtypes. This property type recognizes that individual components did not exist in isolation but clustered into specifically bounded areas perhaps covering about four miles. The location and size of this area depended upon such factors as environmental constraints, transportation networks, and kinship ties. Property subtypes included the farmstead which was in turn composed of one or more dwellings, related outbuildings, outdoor work areas, discrete trash middens, and landscape features such as cemeteries. The kinds of outbuildings and their placement varied through time principally according to changes in types of agricultural production and implements. Houseplaces within a community included the dwelling and at least some of the outbuildings identified with farmsteads. Whether engaged as a farmer or general laborer, the inhabitants still had to provide, preserve, and store their own food resources. Special purpose activity areas within the rural community might include isolated churches, schools, township halls, mills, taverns and hotels, mercantile stores, and craftsmen, particularly blacksmiths. Comparatively large, isolated industrial complexes such as flouring or lumber mills might appear later in the development of the rural community, after 1860, as entrepreneurial ownership by companies and corporations became more frequent. Such operations might include the main industrial structure, support buildings and storage areas as well as associated employee housing (McKay 1984; 1987; Mason 1984; Price, C. 1979).

Between initial settlement and the 1850s, rural communities often hugged the forest or particularly the prairie-forest border in northeast Iowa. Settlers often viewed prairie soils as unproductive and also lacked adequate implements to cultivate them. In the hilly Driftless Region, they tended to cultivate on level hill-tops and along the broader valleys. Settlers established individual farmsteads and houseplaces in the rural community within or adjacent to timber stands and springs. In the lead mining region, the location of rich lead deposits initially drew them to the area. They then relatively quickly supplemented their profits from mining by farming adjacent lands as their fertility became apparent. Houseplaces probably tended to locate adjacent to farmsteads as the residence of laborers or perhaps of relatives operating as part-owners or to appear near mineral deposits. These residents may have functioned both as part time miners and farm laborers (Danhof 1969: 121-22; Bogue 1963: 47; Ross 1951: 13; Grennan 1980: 4; Fay,

Newall, and Garfield 1986).

The location of special purpose activity areas within the rural community for northeast Iowa remains poorly defined. Frequently utilized services usually appeared along routes of transportation to facilitate accessibility to one or several communities. The need for a water source to run water-powered local industries such as saw and grist mills tied them to streams, but not rivers whose power they could not harness. As central places became well-established and the local transportation network improved, the isolated economic services migrated toward them away from the rural community. This movement particularly characterized those rural communities adjacent to large central places such as trade centers or county seats (McKay 1984; 1987; Mason 1984; Price 1979).

After initial settlement, some larger, extra-local industrial enterprises, particularly saw and grist mills, smelters, and other operations requiring space and relying on water power, located on transportation routes whether roads or the river adjacent to their power source just beyond the limits of central places (for example McKay and Fosha 1986; McKay 1987). They retained access to necessary natural products, services, and extra local markets for their finished products; attracted part time laborers from the pool of local farmers or farm-laborers residing within the rural communities; and harnessed the water power central to their operation. Such isolated industrial components remained in the rural community for a longer period than some of the smaller enterprises, often to the turn of the century.

The rural community thus comprised a common form of midwestern American settlement from the period of settlement into the early twentieth century. While the dispersed form of settlement characterizing rural communities allowed the utilization of broader land areas, it also provided cohesiveness through social networks established within the community.

The broad expanse covered by the rural community allows spatially confined disturbances to occur within it. For example, depending upon their number, one or more farmsteads may suffer destruction leaving a sufficient number intact to convey site development. Yet, broad disturbance such as urban sprawl inhibits the understanding of the variations among the components and their relationship to each other and the physical environment. Thus, the aerial extent of the property type both detracts from and enhances physical integrity depending upon the extent of the disturbance. Additionally, the rapid and extensive alterations in agricultural methods and farm consolidation has resulted in the destruction or extensive alteration of many nineteenth century farmsteads. Similarly, the small activity areas and by the second half of the nineteenth century, the large, isolated industrial sites were abandoned. Thus, farmsteads and special purpose activity areas which have

remained on the landscape as archaeological sites from the early twentieth century retain some of the characteristics lost during later modernization of farming operations. Often, the configuration of abandoned special purpose activity areas remain as archaeological sites and are partially protected by their rural locations. Finally, the isolated rural industrial resources which suffered extensive alteration or destruction in urban areas remain as archaeological sites or ruins in rural environments. Therefore, while the location of rural communities often protects them from the extensive destruction of urban areas, changes in agriculture have often destroyed at least part of a single rural community.

III. Significance

The rural community property type relates to both the Changing Iowa Farm and General Manufacturing: Lumber Milling contexts. The Midwest agricultural landscape from American settlement to late nineteenth or early twentieth century was almost exclusively organized into rural communities. Post mid-nineteenth century lumber mills operated by companies or corporations occasionally located in adjacent areas. Thus, the lumber mill within the Mines of Spain Area is viewed as a subtype of this property type. This perspective acknowledges the potential interaction between the mill as a special purpose activity area and the inhabitants of the rural community as a limited source of lumber, as a potential work force, and as a possible local market. Structures adjacent to the mill may represent employee habitations whose residents also interacted with the rural community.

The rural community property type relates to the following areas of signficance: agriculture, historical non-aboriginal archaeology, exploration and settlement, and community development under "other." The area of agricultural significance includes technological development as evident by the changing forms of structural remains and the local farm products, particularly the ways in which they affect the farmer's reliance upon external markets and need for cooperative neighborhood assistance. Most of these properties gain signficance because they encapsule evidence of past settlement forms whose interpretation is enlightened by complementary historical documentation. The rural community also allows the investigation of early settlement forms. The area of significance denoted as community development recognizes not only the founding but the growth and change of community forms through time. This later category essentially supercedes such areas of significance as commerce and industry by emphasizing the significance of special purpose activity areas within the context of the whole community.

Rural communities exist across the Midwest. However, some are more intact and/or more amenable to investigation than others. They then possess local

significance because they are most importantly a local phenomenon. One becomes more significant than another on the basis of the preservation of its physical components, quality of historical documentation or other special attributes such as ethnic settlements.

The rural community property type gains significance under criterion D as a resource enlightening the development of agriculture and the social relationships which internally cemented rural areas and related them to central places. Investigations can from a community perspective establish specific locational factors affecting rural communities and their components and define the physical elements which might delimit community boundaries and the general size. Compositional studies of rural communities can distinguish farmsteads from houseplaces and characterize the variety of special purpose activity areas.

Comparative investigations can identify and explain variations among the kinds of social bonds that united rural communities across the Midwest. In-depth studies of the farmstead and its components, particularly family cemeteries, can address family composition and examine the importance of kin ties across the community and the priority of specific relationships. The internal social structure is often in part represented by the physical evidences, for example, the interrelationship between farmsteads, cemeteries, churches, schools, and community halls. An understanding of the organizations and periods which these evidences represent remains as one clue to the kinds of social interactions within the community. But, other forms such as informal visiting, work groups, and those church organizations which met in private homes are accessible only through historical documentation. A combination of the physical representations with other forms of historical documentation can offer a relatively detailed understanding of the founding and development of the rural community.

Examination of the economically-oriented special purpose activity area indicates those services most critical to the rural community and the degree of involvement in the market economy. For example, a custom mill served the local area while a flouring mill operated over a broader region. Also, the place of the comparatively large industrial special purpose activity area in the rural community as a seasonal or permanent employer, the existence and nature of the trade between it and the community, and the degree of participation of local families in the enterprise itself indicates the level of involvement in market production. Thus, investigation of the special purpose activity area not only allows definition of a poorly understood community component but also focuses attention upon the local as opposed to the extra-local trade patterns, the source, housing, and organization of its labor force, and the kinds of associations maintained within the immediate community.

Rural communities in the upper Midwest have received little physical investigation to date. While works by Atherton (1954), Bogue (1963), Danhof (1969), Doyle (1978), Hine (1980), and Russo (1974) suggest general social patterns, exactly how these patterns were organized on the landscape and the variations in the patterns require further consideration (see Abbott and McKay 1978; McKay 1984; Schmits, McKay, Mendel, and Hedden 1986; Price, C. and Price 1978; 1980; Price, J. and Price 1975; 1979; 1981; Price, J., Price, and Saucier 1985).

The rural community is tied to the lead mining communities and camps and lead mining and processing property types. Farmers themselves often engaged in mining on a part time basis. Therefore, some of their income derived from the lead trade either in the mining communities or in Dubuque. They sought daily supplies and services and provided products to these communities. Also, members of the mining community may have participated in some of the social institutions within the rural community. Thus, in the Upper Mississippi Valley Lead Region the three property types can become closely intertwined.

IV. Registration Requirements

Minimum requirements for the registration of the rural community property type include the preservation of portions of most farmsteads. Because the rural community incorporates a relatively high number of examples, not all the farmsteads need remain. The farmsteads may be represented as both buildings and archaeological sites. But, a sufficient number of properties represented by their dwellings and outbuildings should remain to represent the different periods and contemporary kinds of agricultural and social development within the rural community. For those farmsteads which are no longer intact, their location can be pinpointed cartographically. The locations of special purpose activity areas should be known and preferably standing or represented as archaeological examples. Thus, integrity of design composes an important consideration for registration. Also, retention of the original setting, that is the general environmental setting and existence of central places on which the rural community depended, assists interpretation.

I. Name of Property Type: Commemorative Monument: An Expression of Boosterism

II. Description

Although recognized as important properties, commemorative monuments are rarely nominated as an expression of community boosterism in Iowa. The

beginning date in the late nineteenth century, about 1870, is currently rather vaguely defined. Nineteenth century central places participated in boosterism as early as their initial settlement period. However, boosterism as a form of antiquarianism failed to emerge until later in the community's development, the date depending upon the period of its founding. In the Midwest, this phenomenon commonly occurred after 1880 and more extensively from 1890 to 1940 (McKay 1985).

Because it is a local expression of a nation-wide phenomenon, many forms of the commemorative monument exists. Most are statues or small decorative architectural forms. Architectural style depends upon the period in which the monument was erected and often relates to a past event to achieve a feeling of permanence or express symbolic meaning. For example, the heavy Romanesque style extant most commonly from 1870 to 1900 or somewhat later and the Victorian Gothic of a similar period or its vernacular expression of medieval traits in the late nineteenth century suggest the permanence and strength of the community which erected it.

The commemorative monument property type frequently stands as a center piece in a city or small rural park setting or within a park-like area adjacent to a building usually associated with a government function. Thus, the property type is associated primarily with late nineteenth and twentieth century urban areas and less frequently with small central places and small rural parks adjacent to urban areas. It is a specific expression of American boosterism of that period.

Because the architectural style and the setting of the commemorative monument conveys specific meaning, more than minimal defacement or alteration and change in the original setting or location detracts from this symbolism.

III. Significance

The commemorative monument property type relates to the Late Nineteenth-Twentieth Century Boosterism context. Characteristic of central places, this movement generally appears in several phases. Related to the rapid industrialization of the second half of the nineteenth century, boosterism emerged from the growing nineteenth century ideal of individual progress, a drive to excel economically, in short to gain wealth and the associated social stature. Applied at the level of the central place, it was expressed as a drive to attract the railroad, to develop a large industrial base, to attract educational and other county and state public institutions, to be the most beautiful, largest, and populous central place in the locale, state or nation. Expositions and business directories, guide books, and other promotional materials were intended to sell such places to a mobile public. Therefore,

boosterism was a spirit aimed at achieving a specific goal in the future.

A somewhat later, closely related phenomenon perhaps emerging as the central places experienced frustration with the attainment of their primarily economic goals became the search for the security of their central place. While they continued their improvement program and sale of their assets to outsiders, residents, usually a relatively small number of prominent public leaders, began to gather information about their past, most often their beginnings. These facts usually emphasized successes, greatness, progress, and firsts. Therefore, they created selective histories. The plethora of late nineteenth and early twentieth century histories remains as one example of this effort. Despite their apparently inadequate interpretations of the past in accordance with late twentieth century standards, these histories gave their rapidly changing, late nineteenth-twentieth century lives a feeling of security anchored in the past. This form of historicism was fact oriented. The past was viewed as a series of discrete, true happenings. Because the future of these communities remained hazy, their past had to be certain and reliable. It was known, the future appeared uncertain. Commemorative monuments became one ramification of this historicism. Such monuments were often a statue or a small architectural form representing an important historical figure or an important event.

This property type relates to the social history area of significance. It represents a specific phase of development, the booster spirit of the late nineteenth and twentieth centuries. And because the property type is an expression of a specific series of events during a particular period, it gains significance under criterion A. Although a national phenomenon, the commemorative monument property type is an expression of one central place and is thus locally significant.

Commemorative properties gain significance as a criterion consideration. Monuments viewed only as a grave or viewed as a direct expression of the event or person which they represent lack significance. However, as a representation of past events or persons by a later generation, as a cultural expression by those who erected the monument, the type possesses significance.

IV. Registration Requirements

Because the commemorative monument property type gains significance as a symbol of past historical monuments, sufficient physical elements must remain to communicate this associative value. Thus, the structure must retain its integrity of design and materials. Since the placement and surroundings in a small urban park, a small rural park or park-like area adjacent to a public

building enhances this meaning, integrity of location and setting are also important. And, because of its symbolic importance, this resource must maintain integrity of feeling and continue to evoke through its overall appearance a feeling for the past. Thus, the property type maintains integrity through its design, materials, location, setting, and feeling.

Many commemorative monuments are also grave markers or may simply be intended to note the place of an event or recognize an important community member. As such, they cannot gain significance. To acquire significance under the criterion consdieration related to commemorative properties, the intent of the builder and the resource's purpose as an expression of boosterism and attendant antiquarianism must receive clear support from historical documentation.

G. SUMMARY OF IDENTIFICATION AND EVALUATION METHODS

The Mines of Spain State Recreation Area has been the subject of archaeological investigation since the late nineteenth century. Into the early twentieth century, studies focused upon the visible sites such as the burial mounds and mound groups. Early notation of mounds were made in the Dubuque vicinity by H.T. Woodman, a local resident, and P.L. Norris of the Bureau of American Ethnology in the 1870s. Sites located in this period, 13DB1, 13DB7, and 13DB88, are outside the Mines of Spain Area. Mound exploration occurred by the 1880s. Richard Herrmann, Senior, whose North American Indian collection is preserved by the Dubuque County Historical Society, did extensive collecting and excavation at the turn of the century (Till 1977: 312-13). He also supervised the excavations at the Julien Dubuque Monument (Herrmann 1922).

Attempting to isolate the site of Dubuque's establishment, Marshall McKusick of the Univertiy of Iowa excavated the site of a miner's cabin and a Late Woodland burial (13DB17) in 1968 (McKusick 1968). While surveying along the mouth of Catfish Creek and the bluffs of the Mississippi to the southeast in an attempt to locate the village of Kettle Chief and Dubuque's trading post, Dean Straffin located two historic and six prehistoric sites in 1973. Straffin conducted a pedestrian survey along the base of the Mississippi River bluffs, the crest of the bluffs, and sections of the lateral side valleys. He located burial mounds (13DB10, 13DB12, 13DB13, 13DB14, and 13DB15), prehistoric habitation sites (13DB11 and 13DBB17), and the Mesquakie village and miner's cabin site adjacent to a Late Woodland site (13DB9 and 13DB19) (Straffin 1973). Straffin also excavated a thirty foot exploratory trench to locate archaeological deposits related to the Mesquakie village. Anton Till's 1977 surface survey for the Iowa's Great River Road Cultural and Natural Resources survey along the bluffs and terraces of the Mississippi encountered four additional sites. They included three burial mounds (13DB43, 13DB45, and 13DB46) and one prehistoric habitation site (13DB44) (Till 1977).

The 1981 survey by the Office of the State Archaeologist for the Iowa Department of Natural Resources relocated ten of these sites and identified and recorded a total of 133 prehistoric and 79 historic sites. The area was sampled through a pedestrian survey of cultivated areas and surface manifestations in forested areas. A shovel-assisted survey also examined areas along the forested benches and terraces of Catfish Creek (Abbott 1982a). A second survey in 1982 tested a predictive site location model relating cultural manifestations to such enivronmental variables as landscape surface deposits, native vegetation, hydrology, and mineral resources. The resulting survey completed the inspection of cultivated areas and performed a shovel-assisted test of forested ridges and terraces as well as rockshelters, a controlled surface collection of seven previously recorded sites, controlled

post hole testing at two others, and the mapping of nine mounds, mound groups, and five clusters of lead mines. This survey located 85 additional sites and relocated 44 others reaching a total of 218 sites in the Mines of Spain Area (Abbott 1982b; 1983).

Abbott's 1982 and 1983 studies also constructed the prehistoric environment and described the current environment within the Mines of Spain Area. Additional reports provide data upon geology, vegetation, fauna, soils, and speology specific to the Mines of Spain Area (Aley and Aley 1985; Blewett, Lehman, and Winter 1983; Pruszko 1983; Legg 1981).

Several research reports examining the historic period describe portions of contexts specifically related to the Mines of Spain Area. They include the establishment of the Mesquakie Village of Kettle Chief and Dubuque's trading post, lead mining and processing, and the agricultural history of the locale (Auge 1976; Auge, Gibson, and Klein 1986; Schermer and Kurtz 1986; Pruszko 1983). Additionally, several reports provide the specific historic background for the lead mining, agricultural rural communities, and lumber milling (Hartman 1986; 1987; personal communications 1987; Pruszko 1983; Auge, Gibson, and Klein 1986), and the Julien Dubuque Monument (Historic American Building Survey 1934).

Properties located by the surveys conducted within the Mines of Spain Area from 1973 to 1983 serve as the basis of context selection. Because the Mines of Spain Area is a state land management area possessing a high concentration of sites, the approach was spatial rather than topical or temporal. This aerial approach affords comprehensive site protection in an area likely containing additional, undocumented sites. Their inclusion into one Multiple Property Group focuses research efforts upon specific contexts. After the contexts were chosen, they were dovetailed with the Iowa Bureau of Historic Preservation's list of contexts. Although selection occurred based upon local site data, the contexts also relate to broader regional and national cultural developments.

Property types also emerged from the site survey data. However, during context development, general property types common to the context within its area of significance but not necessarily within the Mines of Spain Area were included when these data were available. Because all but one is an archaeological property, types are based primarily on function. The single exception is identified with the role it played in late nineteenth century society, its function.

Requirements for property integrity emerged in part from an understanding of the condition of each property type within the Mines of Spain Area. However, they also developed from a general understanding of the kinds of data which

must be retained by each property to address the stated research questions as well as from a knowledge of the general condition of parallel properties in the area for which the type is significant.

H. MAJOR BIBLIOGRAPHICAL REFERENCES

Abbott, Larry
1981 Ms. field notes recording the 1981 archaeological survey at the Mines of Spain Conservation Area, Office of the State Archaeologist, Universtiy of Iowa, Iowa City.

1982a The Preliminary Archaeological Assessment of the Mines of Spain Area, Dubuque County, Iowa. Contract Completion Report, No. 195. Office of the State Archaeologist, University of Iowa, Iowa City.

1982b A Predictive Model for Location of Cultural Resources, Mines of Spain Area, Dubuque County, Iowa. Contract Completion Report, No. 200. Office of the State Archaeologist, University of Iowa, Iowa City.

1982c Ms. field notes recording the 1982 archaeological survey at the Mines of Spain Conservation Area by the Office of the State Archaeologist, University of Iowa, Iowa City.

1983 The Cultural Resources of the Mines of Spain Area, Dubuque County, Iowa. Contract Completion Report, No. 206. Office of the State Archaeologist, Eastlawn, University of Iowa, Iowa City.

Abbott, Larry and Joyce McKay
1978 A Cultural Inventory for the Crow Creek Expanded Flood Plain Informational Study: Scott County, Iowa. Contract Completion Report, No. 140. Office of the State Archaeologist, Iowa City.

Acrea, Kenneth
1985 Historic Context Report: The Iowa Wood Products Industries. Submitted by the Bureau of Historic Preservation, State Historical Society of Iowa, Des Moines.

Aley, Thomas and Catherine Aley
1985 Evaluation of the Mines of Spain, Dubuque County, Iowa for Designation as a National Landmark Status. Submitted to the National Park Service, Midwest Region by Ozark Underground Laboratory, Protem, Missouri.

Alex, Lynn M.
1986 Exploring Iowa Past: A Guide to Prehistoric Archaeology. University of Iowa Press, Iowa City.

Atherton, Lewis
1954 Main Street on the Middle Border. Indiana University Press, Bloomington.

Auge, Thomas
1976 Julien Dubuque. Palimpset, 57, 1.

1980 Historical Survey of Dubuque Mining. A report submitted to the Bureau of Historic Preservation, State Historical Society of Iowa, Des Moines.

Auge, Thomas E., Mike Gibson, and Robert Klein
1986 The Mines of Spain in its Historical Context. A report submitted to the Iowa Department of Iowa Natural Resources, Des Moines.

Bailey and Hair
1865 Iowa State Gazetteer. Bailey and Hair, Chicago.

Belthius, Lyda
1948 The Lumbering Industry in Eastern Iowa. Iowa Journal of History and Politics, 46: 115-55.

Benn, David W.
1978 The Woodland Ceramic Sequence in the Culture History of Northeast Iowa. Mid-Continental Journal of Archaeology, 3 (2): 215-83.

1979a Archaeological Investigations at the Keller Mounds (13AM69) and Related Manifestations: Insight into Woodland Indian Mythology. Research Papers 3, 3, Office of the State Archaeologist, Iowa City.

1979b Some Trends and Traditions in Woodland Culures of the Quad-State Region in the Upper Mississippi Basin. Wisconsin Archaeologist, 60 (1): 47-82.

Benn, David, R. Clark Mallam, and Arthur Bettis
1978 Archeological Investigations at the Keller Mounds (13AM69) and Related Manifestations: Insights into Woodland Indian Mythology. Research Papers, 3(3). Office of the State Archaeologist of Iowa, Iowa City.

Benn, David et al.
1980 Hadfield Cave: A Perspective on Late Woodland Culture in Northeast Iowa. Report 13. Office of the State Archaeologist of Iowa,

Iowa City.

Berthoff, Roland
1971 An Unsettled People: Social Order and Disorder in American History. Harper and Row, Publishers, New York.

Bidwell, Percy Wells and John I. Falconer
1941 A History of Northern Agriculture, 1620 to 1840. Peter Smith, New York.

Blewett, Tom, Jim Lehnmann, and Sue Winters
1983 Vegetation Survey of the Mines of Spain, Phase II: Community Analysis. Contract Completion Report submitted to the Iowa Department of Natural Resources, Des Moines.

Boszhardt, Robert F. and David Overstreet
1981 Preliminary Investigations: Archaeology and Sediment Geomorphology, Navigation Pool 12, Upper Mississippi River. Submitted to the Army Corps of Engineers, Rock Island District, Contract No. DACW25-81-C0045 by the Great Lakes Archaeology Research Center, Inc., Wauwatosa, Wisconsin.

Brice, Petride & Associates, Inc.
1985 Cultural Resources of the CBD Loop Arterial Project Area, Phase II Investigation. Submitted to the City of Des Moines by Brice, Petride & Associates, Waterloo and Des Moines.

Bogue, Allen
1963 From Prairie to Corn Belt: Farming on the Illinois and Iowa Prairies in the Nineteenth Century. University of Chicago Press, Chicago.

Callender, Charles
1978 Great Lakes-Riverine Sociopolitical Organization and Fox. In Handbook of North American Indians, edited by William C. Sturtevant and Bruce Trigger, 15: 610-21, 136-47. Smithsonian Institution, Washington, D.C.

Calvin, Samuel and H.F. Bain
1899 Geology of Dubuque County. Iowa Geological Survey, 10.

Catlin, George
1841 The Manners, Customs, and Conditions of the North American Indians [volume 2]. Egyptian Hall Piccadilly, no place given.

Champion, Fabian
n.d. The Old Settlers Association of Dubuque. Ms. at the Dubuque County Historical Society, Dubuque.

Chandler, R.W.
1829 Map of the United States Lead Mines on the Upper Mississippi River. R.W. Chandler, Galena.

Childs, Chandler
1984 Dubuque Frontier River City, edited by Robert F. Klein.
[1857] Research Center for Dubuque Area History, Loras College, Dubuque.

Childs, C. and E. Arntzen
1873 Dubuque City Directory for 1873-1874. C. Childs and E. Arntzen, Dubuque.

Chouteau, Auguste
1804 Map of the Dubuque Estate. Book B, p. 81, Recorder's Office, St. Louis County Courthouse, St. Louis. Ms. printed in Auge, Gibson, and Klein 1986: 11-12.

Chouteau, Pierre
1810 Inventory of the Dubuque Estate. Ms. at the Archives, Missouri State Historical Society, Columbia. Translated by Thomas Auge, Loras College, Dubuque.

Danhof, Clarence H.
1969 Change in Agriculture: The Northern United States, 1820-1870. Harvard University Press, Cambridge.

Davis, James E.
1977 Frontier America, 1800-1840: A Comparative Demographic Analysis of the Frontier Process. The Arthur Clark Company, Glendale, California.

De Werthern, H.
1858 Mineral Region of Dubuque and Vicinity. H. De Werthern, St. Louis.

Dickason, Olive P.
1984 The Brazilian Connection: A Look at the Origin of the French Technique for Trading With Amerindians. In Rendezvous, Selected Papers of the Fourth American Fur Conference, edited by Thomas

Buckley, pp. 27-42. North American Fur Trade Conference, St. Paul.

Doyle, Don Harrison
1978 The Social Order of a Frontier Community, Jacksonville, Illinois. University of Illinois Press, Urbana.

Dubuque Enterprise
1904 Dubuque's Grave Was Not Desecrated. Dubuque Enterprise, 3 (43): 1-2.

Ekberg, Carl
1985 Colonial Ste. Genevieve: An Adventure on the Mississippi Frontier. Patrice Press, Gerald, Missouri.

Fatzinger, Dale R.
1971 Historical Geography of Lead and Zinc Mining in Southwestern Wisconsin, 1820-1920: A Century of Change. Unpublished doctoral dissertation, Michigan State University, East Lansing.

Fay, Robert, Leonard Garfield, and Becky Neville
1986 Lead and Zinc Mining. In Industry, Cultural Resources Management in Wisconsin, edited by Barbara Wyatt, volume 2, no. 3. Historic Preservation Division, State Historical Society of Wisconsin, Madison.

Foley, William
1971 A History of Missouri: 1673-1820 [volume I]. University of Missouri Press, Columbia.

Gallagher, James, et al.
1985 Oneota Ridged Field Agriculture in Southwest Wisconsin. American Antiquity, 50 (3): 605-13.

Goddard, Ives
1975 Fox Social Organization, 1650-1850. In Papers of the Sixth Algonkian Conference: 1974, edited by William Cowan, pp. 128-40. Natural Museum of Man Mercury Series, Canadian Ethnology. Paper No. 23. Ottawa.

Goldstein, Lynn
1983 The Southeastern Wisconsin Archaeology Project: 1982-1983. Submitted to the Historic Preservation Division, State Historical Society of Wisconsin, Madison by the University of Wisconsin-Milwaukee.

1985 The Southeastern Wisconsin Archaeology Project: 1984-1985. Submitted to the Historic Preservation Division, State Historical Society of Wisconsin, Madison by the University of Wisconsin-Milwaukee.

Goodspeed, Weston
1911 History of Dubuque County, Iowa. Goodspeed Historical Association, Chicago.

Gordon, Michael
1978 The American Family: Past, Present, and Future. Random House, New York.

Gourley, Kathryn
1985 The Raccoon River Indian Agency Predicted Site Locations. Ms. at the Bureau of Historic Preservation, State Historical Society of Iowa, Des Moines.

Grennan, Colleen
1980 A Comparative Analysis of Land Use and Vegetation in Dubuque County From 1836 to 1979. Thesis submitted to the Faculty of Loras College, Dubuque.

Griffin, James B.
1978 The Midlands and Northeastern United States. In Ancient Native Americans, edited by Jesse D. Jennings, pp. 221-279. W.H. Freeman and Company, San Francisco.

Grindell, John LeRoy
1905 The Settlement of the Lead Mining Region of Wisconsin, Illinois, and Iowa. Unpublished doctoral dissertation, University of Wisconsin, Madison.

Gutman, Herbert G.
1976 Work, Culture, and Sociey in Industrializing America. Alfred A. Knopf, New York.

Harrison and Warner
1874 Atlas of Dubuque County, Iowa. Harrison and Warner, Clinton.

Hardie & Scharle
1891 Hardie & Scharle's Dubuque Directory. Hardie & Scharle, Dubuque.

Hartman, George B.

1942 The Iowa Sawmill Industry. Iowa Journal of History and Politics, 40 (1): 52-93.

Hartman, Gerda Preston
1986 Historical Research on the Mines of Spain Area: Abstracts, Personal Interviews, and Recollections. Ms. at Loras College, Dubuque.

1987 Prestons: The Affectionate Family, With Love. Unpublished Ms. Gerda Preston Hartman, Old Massey Road, Dubuque, Iowa.

1987 Correspondence providing data upon family geneaology, property inheritance, and farmsteads within the Mines of Spain State Recreation Area dated October 30, November 30, and December 3. R.R. 3, Old Massey Road, Dubuque, Iowa 52001.

Hayes, Samuel
1957 The Response to Industrialism, 1885-1914. The University of Chicago Press, Chicago

Henning, Dale
1970 Development and Interrelationships of Oneota Culture in the Lower Missouri Valley. Missouri Archaeologist, 32: 1-180.

Herrmann, Henry
1972 Land of Promise and Fulfillment, Life and Story of Richard Herrmann, Sr. Henry Herrmann, Dubuque.

Herrmann, Richard
1922 Julien Dubuque, His Life and Adventures. Times-Journal Company, Dubuque.

Hine, Robert V.
1980 The American West: An Interpretive History. Little Brown and Company, Boston.

Historic American Building Survey
1934 Plans of the Dubuque Monument drawn by the Historic American Building Survey. Ms. at the Dubuque County Historical Society, Dubuque.

Hoffman, M.M.
1930 Antique Dubuque, 1673-1883. Telegraph Herald Press, Dubuque.

Horton, Loren
1972 The Urbanization Process in Early Iowa Town Planning and Growth in Dubuque, 1833-1861. Research paper, University of Iowa, Iowa City.

Hudak, Curtis M.
1988 Geological and Geomorphological Context, Trukey River Valley. Ms. on file, Bureau of Historic Preservation, State Historical Society of Iowa, Des Moines.

Iowa Department of Natural Resources
n.d. Mines of Spain Outline of Resource Studies Planning Document. Ms. at the Department of Natural Resources, Mines of Spain Conservation Area, Dubuque.

1982-84 Farm Crop Lease Agreement. Ms. on file at the Department of Natural Resources, Des Moines.

Iowa Department of Transportation
1986 Request for Determination of Eligibility to the National Register of Historic Places for Archaeological Site 13PK61, Fort Des Moines No. II and Environs (M-2787CV81-77). Submitted to the Federal Highway Administration by the Iowa Department of Transportation, Office of Project Planning, Des Moines.

Iowa Natural History Foundation
1980 The Mines of Spain, Dubuque, Iowa. Preliminary Resource Assessment, Des Moines.

Iowa Publishing Company
1906 Dubuque County, Iowa [map]. Iowa Publishing Company, Dubuque.

Jillson, Willard R.
1924 Early Mineral Explorations in the Mississippi Valley, 1540-1840. Transactions of the Illinois State Historical Society, 31: 41-57.

Kay, Jeanne
1977 The Land of La Bayes: The Ecological Impact of the Green Bay Fur Trade. Unpublished doctoral dissertation, University of Wisconsin, Madison.

Kirk, Fred H.
1939 Life at the Illinois Lead Mines From 1828-1856. Thesis,

State University of Iowa, Ames.

Kniffen, Fred and Henry Glassie
1966 Building in Wood in the Eastern United States. Geographical Review, 56 (1): 40-66.

Knox, James C.
1987 Historical Valley Floor Sedimentation in the Upper Mississippi Valley. Annals of the Association of American Geographers, 77 (2): 224-44.

Langworthy, Lucius H.
1910 Dubuque: Its History, Mines, Indian Legends, etc.
[1855] [Dubuque Literary Institute]. Reprinted in Iowa Journal of History and Politics, 8: 366-422.

Lee, Ellen Rose
1984 Fort St. Joseph, Ontario. Settlement Patterns and Building Use at Fur Trade Centers. In Rendezvous, Selected Papers of the Fourth American Fur Conference, edited by Thomas Buckley. North American Fur Trade Conference, St. Paul.

Legg, Richard G.
1981 Mammel Inventory of the Mines of Spain State Area. Contract Completion Report submitted to the Iowa Department of Natural Resource, Des Moines.

Leonard, A.G.
1897 Lead and Zinc Deposits of Iowa. Iowa Geological Survey, 6: 13-65.

Lewis, Kenneth
1977a An Archaeological Perspective on Social Change, the Virginia Frontier. In Comparative Frontier Societies, edited by David Miller and Jerome Stephens, pp. 139-59. University of Oklahoma Press, Norman.

1977b Sampling the Archaeological Frontier: Regional Models and Component Analysis. In Research Strategies in Historical Archaeology, edited by Stanley South, pp. 151-202. Academic Press, New York.

1979 Settlement Pattern and Functional Variations on the South Carolina Frontier. Conference on Historic Site Archaeology, Papers, 13: 188-237.

Logan, Wilfred D.
1976 Woodland Complexes in Northeastern Iowa. Publications in Archaeology, 15. National Park Service, Washington, D.C.

Ludvigson, Greg A. and James A. Dockal
1984 Lead and Zinc Mining in the Dubuque Area. Iowa Geology, 9: 4-9.

MacBride, Thomas H.
1899 Forestry Notes for Iowa, Dubuque County. Iowa Geological Survey, 10: 3-9.

McCormick, Patricia A.
1984 Becoming Trappers: The Transformation to a Fur Mode of Production at Fort Chipewgan. In Rendezvous, Selected Papers of the Fourth American Fur Conference, edited by Thomas Buckley. North American fur Trade Conference, St. Paul.

McGrath, Kerry
1986 The Casebolt Farm: An Archaeologist's View of a Rural Missouri Household from the Frontier Period to the 20th Century. Paper presented in the Archaeology of Missouri Symposium, Missouri Academy of Science, Warrensburg.

Mahoney, Timothy R.
1982 River Towns in the Great West, 1835-1860. Doctoral dissertation, University of Chicago, Chicago.

McKay, Joyce
1984 Historic Settlement Patterns of Coon Creek Valley. Submitted to the Mississippi Valley Archaeology Center, Inc., University of Wisconsin, La Crosse.

1985a Architecture As Archaeological Artifact. Doctoral dissertation, Brown University. University Microfilms, Ann Arbor.

1985b Archaeological Investigations at the Preserve House, Villa Louis, Prairie du Chien. Submitted to the Historic Preservation Division, State Historical Society of Wisconsin, Madison.

1987 Historical Archaeological Culture Unit [in preparation]. Master Plan for Archaeological Resource Protection in Missouri. Historic Preservation Program, Division of Parks, Recreation, and Historic Presevation, Missouri Department of Natural

Resources, Jefferson City.

McKay, Joyce and Michael Fosha
1986 Woodland Mill Historic Site: Pershing State Park, Linn County, Missouri. A report submitted by Environmental Systems Analysis, Shawnee Mission, Kansas to the Missouri Department of Natural Resources, Jefferson City.

McKusick, Marshall
1968 Field notes and manuscripts on the excavations at 13DB17. Ms. at the Archives, Office of the State Archaeologist, University of Iowa, Iowa City.

Mallam, Clark
1976 The Iowa Effigy Mound Manifestations in Iowa: An Interpretive Model. Report 19. Office of the State Archaeologist, University of Iowa, Iowa City.

1984 Some Views on the Archeology of the Driftless Zone in Iowa. Proceedings of the Iowa Academy of Science, 9, 1: 16-21.

Mason, Roger D.
1984 Euro-American Settlement Systems in the Central Salt River Valley of Northeast Missouri. Cannon Reservioir Human Ecology Project, American Archaeology Division, Universtiy of Missouri, Columbia.

Meeker, Moses
1908 Early History of the Lead Region of Wisconsin. Wisconsin
[1872] Historical Collection, 6: 271-96.

Moline, Norman T.
1971 Mobility and the Small Town, 1900-1930. Department of Geography Research Papers, No. 132, University of Chicago, Chicago.

Newhall, J.B.
1957 A Glimpse of Iowa in 1846. State Historical Society of
[1846] Iowa, Iowa City. [Original: W.D. Skillman, Burlington].

Northwest Publishing Company
1892 Platbook of Dubuque County, Iowa. Northwest Publishing Company, Philadelphia.

O'Brien, Michael, et al.
1984 Grassland, Forest, and Historical Settlement.

University of Nebraska Press, Lincoln.

Oglesby, Richard
1963 Manuel Lisa and the Opening of the Missouri Fur Trade. University of Oklahoma Press, Norman.

Overstreet, David
1984 Archeological Reconnaissance Survey of Pool 10. Upper Mississippi River, Grant and Crawford Counties, Wisconsin and Allamakee and Clayton Counties, Iowa. Ms. at Great Lakes Archaeological Research Center, Wauwatosa.

1985 Archaeological Investigations, Navigation Pool 11, Upper Mississippi River Basin. Submitted to the Rock Island District, Army Corps of Engineers, contract no. DACW25-84-C-0014 by Great Lakes Archaeological Research Center, Inc., Wauwatosa.

Owen, David Dale
1844 Report of a Geological Exploration of Part of Iowa, Wiskonsin, and Illinois [executed in 1839]. House Report Exc. Doc. 26th Cong., 1st Session, Doc. 239, volume 368. Washington, D.C.

Parish, John C. (editor)
1910 The Langworthys of Early Dubuque and Their Contributions to Local History [series of autobiographies]. In Iowa Journal of History and Politics, 8: 315-66.

Parrish, William E., Charles T. Jones, and Lawrence Christensen
1980 Missouri: The Heart of the Nation. Forum Press, St. Louis.

Price, Cynthia
1979 An Archaeological, Historical, and Architectural Literature Review for a Portion of the Mark Twain National Forest and a Cultural Resources Survey of 77 Drill Sites in the Mark Twain National Forest, Shannon, Oregon, and Carter Counties, Missouri. Submitted by the Center for Archaeological Research, Southwest Missouri State University, Springfield to Amax Exploration, Inc.

1985 Patterns of Cultural Behavior and Intra-Site Distribution: Faunal Remains at the Widow Harris Site. Historical Archaeology, 19 (2): 40-56.

Price, Cynthia, Jeff Girard, and Suzanne Harris
1979 Archaeological Investigations at 23BU123, 23BU179, and

23BU201: Three Prehistoric and Hisoric Sites in the Cane Creek Valley, Butler County, Missouri, 1978. Submitted by the Center for Archaeological Research, Southwest Missouri State Universtiy, Springfield.

Price, James and Cynthia Price
1975 Archaeological Investigations in the Ozark National Scenic Riverways, 1983-1983. Submitted by the Center for Archaeological Research. Southwest Missouri State University, Springfield to the National Park Service, Midwest Archaeological Center, Naylor, Missouri.

1978 Investigation of Settlement and Subsistence Patterns in the Ozark Border Region of Southeast Missouri During the First Half of the Nineteenth Century, the Widow Harris Cabin Project. Submitted by the American Archaeology Division, University of Missouri, Naylor. Paper presented at the Annual Meeting of the Society for Historical Archaeology, San Antonio, Texas.

1980 An Archaeological and Historical Literature Review of the Cape Girardeau-Jackson Metropolitan Area, Cape Girardeau County, Missouri. Submitted by the American Archaeology Division, University of Missouri, Naylor to the U.S. Army Corps of Engineers, St. Louis District, St. Louis.

Price, James and Cynthia Price
1979 An Investigation of Nineteenth Century Settlement and Subsistence Systems on the Ozark Border in Southeast Missouri. Research proposal submitted to the National Science Foundation by the Center for Archaeological Research, Southwest Missouri State University, Springfield.

1981 Changing Settlement Systems in the Fourche Creek Watershed in the Ozark Border Region of Southeast Missouri and Northeast Arkansas [2 volumes]. Submitted by the Center for Archaeological Research, Southwest Missouri State Universtiy, Springfield to the Soil Conservation Service.

Price, James, Cynthia Price, and Roger Saucier
1985 Archaeological Investigations in the Ozark National Scenic Riverways: 1983-1984. Submitted by the Center for Archaeological Research, Southwest Missouri State University, Springfield to the National Park Service, Midwest Archaeological Center.

Prior, Jean
1984 The Mines of Spain, Dubuque County, Iowa. Application to the

United States Department of the Interior as a National Landmark. Submitted by the Iowa Geological Survey, Iowa City.

Pruszko, Rudy
1983 Speleological Survey of the Mines of Spain, Dubuque County, Iowa. Submitted to the Iowa Department of Natural Resources, Des Moines by Consulting Speleologist, Caves Unlimited, Dubuque.

Riley, Thomas J.
1987 Ridged-Field Agriculture and the Mississippian Economic Pattern. In Emergent Horticultural Economies of the Eastern Woodlands, edited by William F. Keegan, pp. 295-304. Occasional Paper 7, Center for Archaeological Investigations, Carbondale, Illinois.

R.L. Polk & Co.
1885 Dubuque City Directory, 1884-1885. R.L. Polk & Co., Chicago.

Rogers, Suzanne Dockal
1976 Settlement Patterns in the Tete Des Morts Valley of Iowa, 1833-1860. Masters Thesis, SUNY College at Oneota, Cooperstown Graduate Programs, Cooperstown, New York.

Rollings, Willard
1984 Prairie Hegemony: An Ethnological Study of the Osage From Early Times to 1840. Doctoral dissertation, Texas Tech. University.

Ross, Earle Dudley
1951 Iowa Agriculture: An Historical Survey. State Historical Society of Iowa, Iowa City.

Russo, David
1974 Family and Communities: A New View of American History. American Association for State and Local History, Nashville.

Sabo, George, David Waddell, and John H. House
1982 A Cultural Resource Overview of the Ozark-St. Francis Forest, Arkansas. Submitted by the Arkansas Archeological Survey, Fayetteville, Arkansas to the USDA Forest Service, Ozark-St. Francis National Forest, Russelville.

Schafer, Joseph
1932 The Wisconsin Lead Region. State Historical Society of Wisconsin, Madison.

Schermer, Shirley J. and Royce Kurtz
1986 Archaeological and Historical Studies, Mines of Spain, Dubuque, Iowa. Contract Completion Report, No. 242. Office of the State Archaeologist, University of Iowa, Iowa City.

Schmidt, Louis B.
1920a The Internal Grain Trade of the United States, 1850-1860. Iowa Journal of History and Politics, 18: 94-124.

1920b The Westward Movement of the Wheat Growing Industry in the United States. Iowa Journal of History and Politics, 18: 396-412.

Schmits, Larry, Joyce McKay, Rolfe Mendel, and John Hedden
1986 Cultural Resource Investigation at the Midway Mine, Bates County, Missouri-Volume 3. Submitted by Environmental Systems Analysis, Shawnee Mission, Kansas to Pittsburg and Midway Coal Mining Company, Amsterdam, Missouri.

Schoolcraft, Henry R.
1819 A View of the Lead Mines of Missouri. Charles Wiley & Company, New York. [Reprinted by Sino Press, New York, 1972].

Shanon, Fred
1945 The Farmer's Last Frontier: Agriculture, 1860-1897. Harper & Row, New York.

Smith, Bruce D.
1978 Variation in Mississippian Settlement Patterns. In Mississippian Settlement Patterns, edited by Bruce D. Smith, pp. 479-503. Academic Press, New York.

Speth, Janet
1986 Fox. In Historic Indians, Cultural Resource Management Plan in Wisconsin [volume 2, 4], edited by Barb Wyatt. Historic Preservation Division, State Historical Society of Wisconsin, Madison.

Stanley, David
1988 Technical Report Associated with the National Register of Historic Places Nominations of Prehistoric Archaeological Sites 13AM100 and 13AM120. Highland Cultural Research Center Publication No. 120, Highlandville, Iowa [draft copy].

Stanley, Lori and David Stanley

1986 The Archeology of Allamakee County, Iowa: An Overview and Guide [volume I]. Submitted to the Allamakee County Historic Preservation Commission by Highland Cultural Research Center, Highlandville, Iowa.

Stewart-Abernathy, Leslie
1986 Urban Farmstead: Household Responsibility in the City. Historical Archaeology, 20 (2): 5-15.

Stoltman, James B.
1979 Middle Woodland Stage Communities in Southwestern Wisconsin. In Hopewell Archeology, edited by David J. Brose and Nomi Greber, pp. 122-39. Kent State University Press, Kent.

Straffin, Dean
1973 Historic Sites Survey of the Mines of Spain Site, Dubuque. Submitted to the Bureau of Historic Preservation, State Historical Society of Iowa, Des Moines.

Swisher, Jacob A.
1945 Mining in Iowa. Iowa Journal of History and Politics, 43: 305-56.

Tanner, H.S.
1836 Notes on the Wisconsin Territory. H.S. Tanner, Philadelphia. [Republished by Lt. Albert Lea as The Book that Gave Iowa Its Name, State Historical Society of Iowa, Iowa City (1935)].

Thorne, T.C.
1984 The Chouteau Family and the Osage Trade: A Generational Study. In Rendezvous: Selected Papers of the Fourth North American Fur Trade Conference, Edited by Thomas Buckley, pp. 109-20. North American Fur Trade Company, St. Paul.

Till, Anton
1977 Dubuque County Archaeology. In Iowa's Great River Road Cultural and Natural Resources, Part 2, pp. 311-348. Contract Completion Report, No. 108. Office of the State Archaeologist, University of Iowa, Iowa City.

United States Government Land Office
1838 Plat of T88N R3E and T88N R2E. Ms. on microfilm at the Bureau of Library and Archives, State Historical Society of Iowa, Iowa City.

Van der Zee, Jacob
1915 Early History of Lead Mining in Iowa Country. Iowa Journal of History and Politics, 13: 3-52.

W.W. Hixson & Co.
1927-1929 Plat Book of Dubuque County, Iowa. W.W. Hixson & Co., Rockford, Illinois.

Walthall, John A.
1981 Galena and Aboriginal Trade in Eastern North America. Illinois State Museum, Scientific Papers, vol. 17.

Wedel, Mildred M.
1959 Oneota Sites on the Upper Iowa River. Missouri Archaeologist, 21 (2-4).

Western Historical Company
1880 The History of Dubuque County, Iowa. Western Historical Company, Chicago.

Wiebe, Robert H.
1967 The Search for Order, 1877-1920. Hill and Wang, New York.

Wisehart, David
1971 An Historical Geography of the Fur Trade of the Upper Missouri Valley. Doctoral thesis, Universtiy of Nebraska, Lincoln. University Microfilms, Ann Arbor.

Wolfe, J.M.
1875 Directory of the City of Dubuque, 1875-1876. J.M. Wolfe, Dubuque.

Wright, Curtis
1981 Geological Study of the Mines of Spain. Contract Report submitted to the Iowa Department of Natural Resources, Des Moines.

Oral Interviews

Auge, Thomas and Mike Gibson, Loras College, Dubuque (9/29/87).

Green, William, Office of the State Archaeologist, University of Iowa Iowa City (1/27/88).

Hartman, Gerda Preston, RR 3, Olde Massey Road, Dubuque

(9/30/87, 10/3087, 12/3/87).

Wilkie, William, Loras College, Dubuque, (9/30/87).