

# **THE BULLETIN**

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of Archaeology for New York State



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## LOUIS A. BRENNAN 1910-1983

On Thursday, March 17, 1983. Louis Brennan passed away at his home in Ossining, New York. It soon became evident that the degree of loss to all concerned was far greater than that realized by those who already knew the extent of his influence on the archaeology of Northeastern North America. As the tributes to Lou still come in it is obvious that a comprehensive obituary will have to wait and be the subject of considerable research.

At this point, however, it should be emphasized that Lou's passing will be a great loss to all of us involved with archaeology, particularly within New York State. Coming to the NYSAA with a varied background including graduation from Notre Dame, service in the United States Navy during World War II, and a newspaper editor, he was able to utilize this experience to strengthen the NYSAA. Annual meetings can be held and programs initiated on archaeology, but it is the amount and quality of the published results that really stand the test of time. Were it not for Lou's continual insistence on reporting New York State would not enjoy its current reputation as one of the most active states involved in successful programs of professional and nonprofessional archaeology.

Lou began his association with the NYSAA in the 1950's and became Editor of *The Bulletin*, starting with Number 19 in July of 1960. He followed in the footsteps of Charles Knoll who resigned his editorship in the same year. Lou's last bulletin was Number 85 and this represents a prodigious effort over the years. In addition he took on the responsibilities of the editorship of the *Archaeology of Eastern North America* published by the Eastern States Archaeological Federation. All through his tenure as editor of both these journals he remained a steadfast believer in the archaeology of the Northeast. Fortunately he was able to attract enough manuscripts to enable researchers to have now a comprehensive regional record of significant excavations, analyses and syntheses.

Drawing upon his work in the Northeast and his general enthusiasm for archaeology he was able to produce several books of broader significance. Included are *No Stone Unturned*, *Artifacts of Prehistoric America*, and *The Buried Treasure of Archaeology*. His own personal research focused upon the prehistory and historical archaeology of the Lower Hudson Valley. Besides teaching courses in archaeology at local colleges he recently became a Director of MALFA (Material Archives and Laboratory for Archaeology) in Katonah, New York.

At the April 16, 1983 Annual Meeting of the NY SAA in Glens Falls, New York, Father John Lee, President of the Lewis H. Morgan Chapter, gave a very fine eulogy for Lou followed by another by NYSAA Vice President, Gordon DeAngelo. Both these presentations aptly characterized Lou as a very human person who stimulated all those who came in contact with him, and one with timeless energy for everything archaeological.

This issue of *The Bulletin and Journal of Archaeology for New York State* marks the first volume since Louis Brennan's death. Fortunately, there is enough quality material on hand to ensure the membership issues in the next months. The membership is, however, encouraged to keep the manuscripts coming to this office as early and frequently as possible. A healthy backlog of material should always be available.

It was with great appreciation that I accepted the honor at the 1983 Annual Meeting of being appointed Editor. Although no one can probably equal Lou's accomplishments in the publication field, it is possible that with the assistance of the membership built up over the years, *The Bulletin* will continue to be a vital part of professional and nonprofessional archaeology in New York State. The interest in New York State archaeology, as evident by the steady sales of NYSAA publications, is something to be carefully maintained because a great many individuals have spent countless hours developing this tradition. Louis Brennan was, of course, an outstanding example of one of these individuals, and for this reason the NYSAA plans to honor him with a memorial volume which will attest to and summarize his vast range of interests and archaeological contributions in the Northeast.

Charles F. Hayes III  
Editor

COVER: A miner. Ransom (1966:228) after Harper's New Monthly Magazine, 1860.

## THE O'NEAL-FORSHEE IRON MINING SETTLEMENT

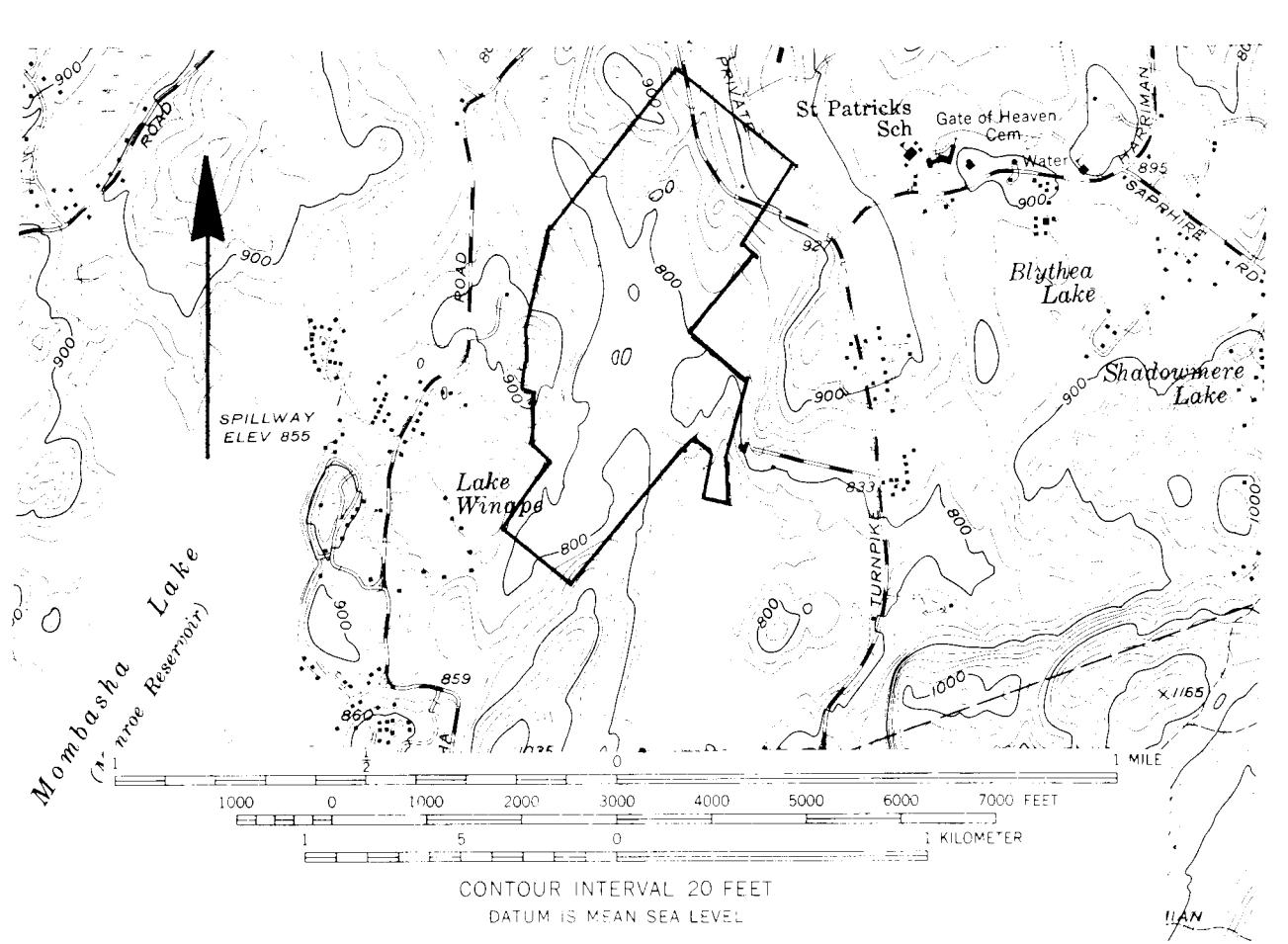
*Edward L. Bell*

*Inc. Orange County Chapter*

The O'Neal<sup>1</sup>-Forshee iron mining settlement, also designated as "OR-MO-10H"<sup>2</sup> is located in the Town of Monroe, Orange County, New York (Figure 1). The area that is the focus of this study revealed a number of historic foundation groups, with scatterings of surface artifacts, after a walk-over survey was conducted in the spring of 1979. Subsequently, historical research and a controlled surface reconnaissance of a portion of the site was performed from January to August 1980 by local high school and college students under a National Endowment for the Humanities *Youthgrant*, and a report (Bell 1980) documenting the settlement was prepared and given to various research facilities<sup>3</sup>. This paper intends to bring the essential points of that report to the archaeological community, as well as to present new data gathered and interpretations formulated during subsequent research.

### I. THE RESEARCH PROBLEM

Although the iron industry and its associated personnel were instrumental in the expansion of Monroe and the surrounding region, little specific data were available to interested scholars or laymen.



**Figure 1.** The O'Neal-Forshee iron mining settlement site (OR-MO-10H), based on Brooks (1860-1861) and Knight, Bush, & Thompson (1930a). Scale: 1" = 2000 feet. United States Geological Survey (1957).

The lifestyles of Orange County's iron miners had never been documented in any detail, and to our knowledge an archaeological investigation of an Orange County iron mining settlement had never been conducted. Studies of industrial complexes, including company towns and industrial villages (Wallace 1978; Alanen 1979; Porter 1981) were and are being carried out more and more frequently, but the Orange County area remained devoid of research focusing on industrial settlements<sup>4</sup>.

Therefore, an archaeological investigation of the O'Neal-Forshee iron mining settlement would have several benefits:

- (1) Documenting a minute, yet important aspect of the historic Lower Hudson River Valley iron industry, it would fill out a lacuna in the local historical and archaeological record.
- (2) Since the iron industry provided employment to many English and Irish immigrants (Rosa 1938b: unpag.), an examination of the structures and artifacts associated with this group could provide both qualifiable and quantifiable data which might be used to document the socio-economic condition (and possible changes thereof) of a nineteenth century ethnic population.
- (3) Although operating within a very complex, adaptive cultural framework, company policies, attitudes, and concerns played a major role in the development of the mining settlement. With this background, we could begin to frame hypotheses concerning how those attitudes and concerns may have become manifest in the settlement.
- (4) This preliminary, descriptive investigation would provide a number of inductively drawn hypotheses which could later be tested during future archaeological investigations.
- (5) Together, this information would supply data to a number of historians, archaeologists, ethnographers, and preservationists, who might then use it in comparative studies of other industrial communities in the Northeastern United States.

In the following pages we discuss the methodology involved and provide a brief, contemporary geomorphological description of the site. We then give a detailed historical perspective of the O'Neal-Forshee mining operations which supplies the framework for a partial delineation of the mine's functional role in a resource-flow system. We are then able to explore the home and family life of the occupants of the O'Neal-Forshee settlement by an examination of the historical and archaeological record of the O'Neal-Forshee area. The paper concludes with an interpretation of the relationship between the iron company and its employees.

## II. PROJECT METHODOLOGY

Our preliminary archaeological assessment consisted of two major endeavors, each utilizing its own methodology<sup>5</sup> and accomplishing its own goals.

### a.) Research methods.

The purpose of our historical research was three-fold: (1) to confirm the settlement's location and seek out its historical context; (2) to enable the accurate interpretation of features observed and artifacts recovered in the field investigation, and (3) to compile the available data regarding the early iron industry in Orange County,<sup>6</sup> thereby assembling a resource which may be of value to other investigators.

### b.) Field methodology.

The archaeological fieldwork conducted at OR-MO-10H consisted of an extensive surface reconnaissance to (1) produce a map of the project area, including the related cultural and natural features, and (2) acquire a limited surface collection of artifacts, which (albeit perhaps limited in their temporal, spatial, and typological representation) could perhaps reveal the lifestyle and on-site activities of the settlement's occupants, and provide the temporal parameters of the occupation.

Using an engineer's transit and tapes, our crew located the various features of the site by shooting long transects over the terrain. What appeared to be groups of geographically related features were assigned section letters, and each feature observed within a section was given a number (e.g., E1, E2, etc.). Also, when we deemed it advisable, intra-feature areas were designated with a letter following the feature number; the only such cases were areas A and B within feature G1. (J4A, being a feature of its

own right, is the only exception.) To avoid confusion, we did not use the letter "I" as a section designation, so that the sections go from A-H and J-K.

After a feature had been located by transit, one or two persons would carefully remove leaves and branches, by hand, to expose the feature and any surface artifacts. This proved to be an effective technique in that it preserved the substrata of the site, yet allowed us to collect enough material to make useful interpretations. This was not a haphazard method, for some of the material our crew recovered measured less than one cubic centimeter. Locations of most diagnostic artifacts were plotted, as well as the features themselves, on small-scale maps; photographs were taken of features and important artifacts. Surface material collected in this manner was brought to the laboratory to be washed, sorted, catalogued, and analyzed.

Although covering a majority of the occupied area, we were not able to survey the northwestern or southeastern portions due to a limited schedule. These areas do contain foundations however, and will be one focus of future investigations. Further historical data has recently come to light which, coupled with our own review of the archaeological data, has provided new insights and necessitates that we supplement or revise some of our initial interpretations; these are included infra.

By incorporating historical research with preliminary archaeological methodology, we have succeeded in documenting this relatively unknown, nineteenth century settlement.

### III. PRESENT-DAY ENVIRONMENTAL SETTING

The O'Neal-Forshee area lies between the 790' and 960' contours, and a simplified topographical description of the site would include a valley-like feature running approximately northeast to southwest, with hills rising up on either side. Numerous small streams, swamps, and other wetlands are scattered about, but appear more frequently in the southern portion of the site. Most of the foundations we have identified as the remains of dwellings are located near these riparian features.

Perhaps the most distinguishing features are the open-pits that constitute the O'Neal mine. These run along a portion of the valley-like feature, and at least two of the pits are water-filled throughout the year<sup>7</sup>. The Forshee mine consists of three shafts and a series of open-pits, running approximately north to south. Mine dumps were noted between Sections J and K, and west of the O'Neal mine.

During our investigation, we located many smaller pits scattered throughout the site and have tentatively identified these as prospect and/or colliers' pits. Other pits, larger in size than the conjectured prospect/colliers' pits but smaller than the mines, were located in Section E. One of these, a partially ore-lined pit, had two possible wells at the bottom. Locations east of Section G evidenced ore fill at the perimeters of swampy areas. We hypothesize that operations were conducted in this vicinity aimed at extending the useable land. The two wells at the bottom of the pit in Section E would lead us to believe that the land-filling operations occurred at the time of the site's occupation, although we did stumble upon a large, concrete pipe section in the area. This may have been carried from another locale and simply dumped, as the site's roadways were passable by truck as recent as twenty years ago. As early as 1930, however, a previous owner planned to build a dam so that a lake would form on the property (Knight, Bush, & Thompson 1930a). Also, a rock-crushing machine,<sup>8</sup> powered by electricity, was used to convert the O'Neal's waste ore to road-building material; this machine was constructed on the site after 1930 (Griffen 1981, pers. comm.). Until further testing is carried out, it remains inconclusive whether the land-filling operations were conducted during or after the occupation.

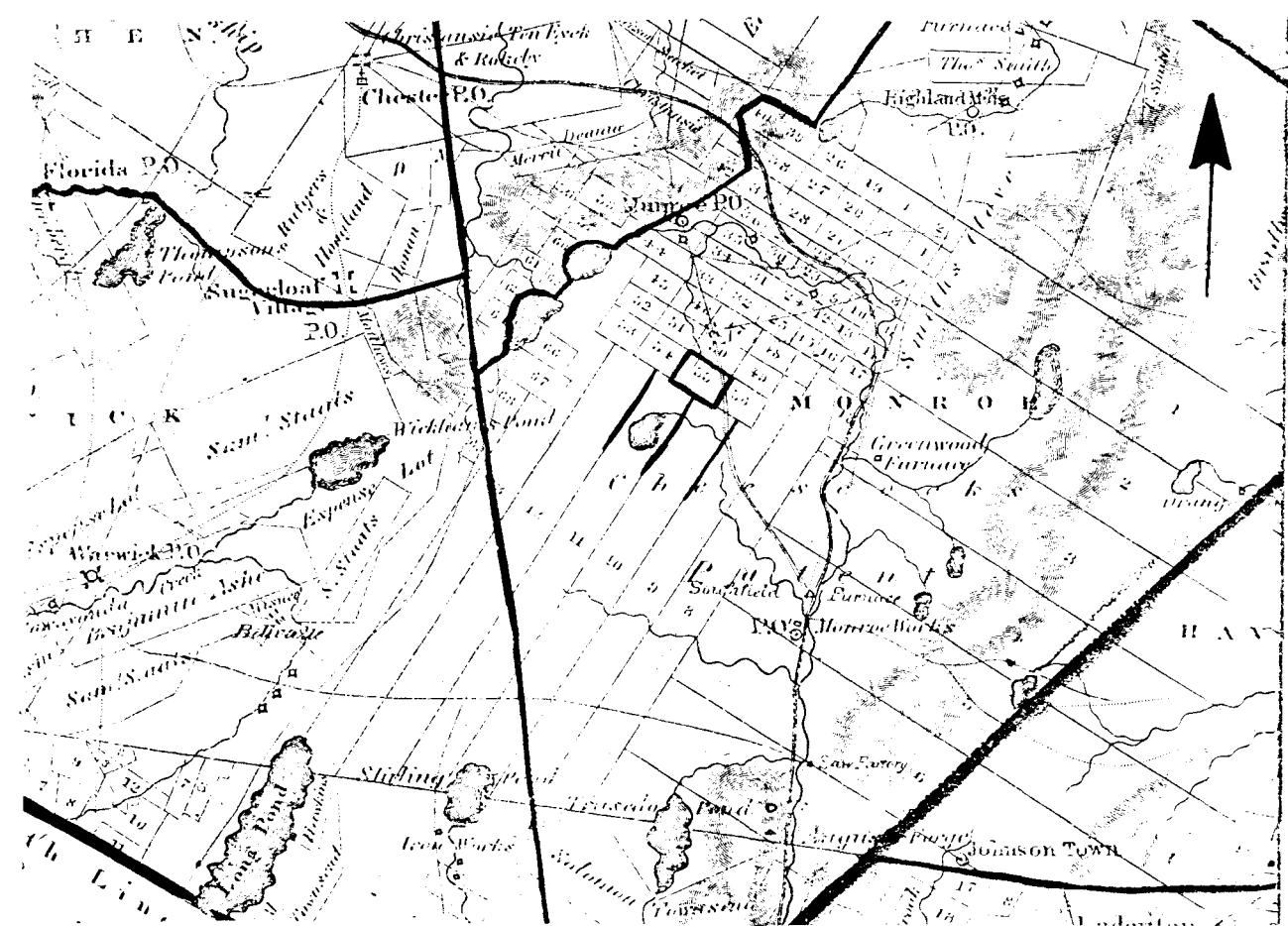
Miles of cut-and-fill roadways traverse the site, and crushed gravel was still visible on one or two of the main thoroughfares. This gravel may be of recent origin, from the nearby rock-crushing machine. Two bridges were located near Section H, one of which was possibly used during lumbering and/or charcoal-making operations, given its sturdy design. As expected for this portion of the county, stone walls criss-cross the entire tract. Recently, vandals clear-cut large swaths of trees, but this appears to have stopped. Most of the site is still overgrown by small, deciduous trees and heavy brush, although cedars, hemlocks, and other evergreens were noted as well. Apple trees, some quite ancient, were identified in Sections D and E.

#### IV. THE HISTORICAL SETTING

*a. The O'Neal-Forshee area in relation to the Greenwood Ironworks and the West Point Foundry.*

The O'Neal-Forshee area, an aggregate parcel made up of different properties acquired over time, was originally part of Great Mountain Lots 10 and 11, and Farm Lot 55 of the Cheesecocks Patent<sup>9</sup> (see Figure 2. Burr 1829; Brooks 1860-1861; Knight, Bush, & Thompson 1930a). Although Ransom (1966:140-141, 237) feels that the O'Neal mine was used by James Cunningham—the original proprietor of the Greenwood Ironworks—to help supply his blast furnace during the War of 1812, primary documentation does not support this. The earliest probable date that the area was used by an iron proprietor was November 11, 1823. On that date, William and Charlotte O'Neal conveyed the mineral rights of Cheesecocks Patent Farm Lot 55 to Gouverneur Kemble of the West Point Foundry in Cold Spring, Putnam County. The document granted Mr. Kemble "... the privilege of digging blasting raising and carting and transporting . . ." the iron ore (Orange County Deeds: *Lib.BB*, pg. 141ff.). Kemble purchased part of this tract in three parcels of eighty, twenty, and two acres, respectively, from the O'Neals on May 7, 1832 (Orange County Deeds: *Lib. 45*, pp. IIIff.).

The West Point Foundry interests were leasing other mines in the general area, as well as in Cold Spring (see Figure 5), to supply ore for a charcoal-burning blast furnace located near the foundry at this time (Ransom 1966: 142, 237). The foundry's owners purchased the Greenwood Ironworks in



**Figure 2.** A portion of the Cheesecocks Patent. The borders of parts of Great Mountain Lots 10 and 11, and Farm Lot 55, have been emphasized. Scale: 1" = c. 2 1/2 miles. Burr (1829).

Greenwood (now Arden) and leased or purchased the associated mines (including the O'Neal) between 1827 and 1832 (*ibid.*: 141-142; e.g., see Orange County Deeds: *Lib.* 76, pg. 476f.). After 1843, foundry pig iron, mostly produced at Greenwood, was delivered to the West Point Foundry (Rutsch, et al. 1979: 53). As the foundry area became denuded, it became more and more expensive to transport charcoal and other raw materials to Cold Spring. Consequently, the foundry owners abandoned their blast furnace in 1844 (*ibid.*: 53, 78) favoring the less-expensive pig iron from the Greenwood Ironworks.

In 1836, Robert P. Parrott became Superintendent at the West Point Foundry (DePeyster 1878: 7; R.D.A. Parrott 1921:5), and within the following year bought one-third interest in the Greenwood Ironworks properties. Among these were the three O'Neal lots of eighty, twenty, and two acres, purchased by Kemble in 1832. (Orange County Deeds: *Lib.* 76, pg. 476ff.; Ransom 1966: 142). Peter P. Parrott, Robert's brother, was put in charge of the Greenwood furnace and mines in 1837<sup>10</sup>. In 1838 Robert Parrott married Gouverneur Kemble's sister, Mary, joining the Kembles and the Parrots by marriage, in addition to their business relations (Rosa 1938a: unpag.). On December 1, 1839, Gouverneur Kemble, and his brother William, sold their remaining two-thirds interest in the Greenwood properties to Robert Parrott for \$20,000 (Orange County Deeds: *Lib.* 66, pg. 469ff.; Ransom 1966: 142). The O'Neal mine parcel, included in this transaction, grew as contiguous properties were purchased by the Greenwood interests<sup>11</sup>. Land was also being leased or bought in many other areas of Orange and Rockland Counties (Cf. Orange County Deeds: *Lib.* 188, pg. 59ff.).

Land was not only being exploited for its mineral resources; acres of property were also needed for lumber and charcoal. A saw mill was near the furnace in Greenwood (R.D.A. Parrott 1921:7), and "an important branch of the business was the cutting annually of ten thousand cords of wood and turning it into charcoal" to supply the furnace (*ibid.*: 9). The result was that, as in Cold Spring, the land became denuded and the owners were forced to switch their adaptive strategy from utilizing charcoal to using a coal-powered furnace. The anthracite-burning Clove (or Greenwood No. 2) furnace went into blast on July 1, 1854 (Ransom 1966: 143). The original Greenwood furnace continued production until 1871, one of the last charcoal blast furnaces in the area (*ibid.* 147; Cf. Balch 1882: 38).<sup>12</sup>

The onset of the Civil War spurred growth in the Lower Hudson River Valley iron industry. During this period, the West Point Foundry produced cannons for the Union forces (R.D.A. Parrott 1921: 13-16), and the Greenwood Ironworks was kept busy supplying pig iron to the foundry. Likewise the local supplying mining communities expanded as the demand for ore increased.

The Greenwood Ironworks (later to be called the Parrott Iron Company) and the West Point Foundry would remain inextricably connected, by both business and family relations, until the two companies ceased production around 1885 (Rosa 1938b: unpag.). Various factors, such as the development of the Great Lakes mining region, and the expensive, yet necessary practice of importing coal to the denuded Lower Hudson River region, are cited as contributing to the demise of the area's iron industry.

#### *b. Mining at the O'Neal.*

The actual process of mining the ore was accomplished by man, animal, and steam power, by drill, "hammer, and brawn". In 1938, C. B. Rosa (1938b: unpag.) interviewed Charles Green (then seventy-six), who began working at the mine in 1871 when he was only nine, and quit ten years later. Rosa's interview provides us with great insight into the day-to-day operation of the mine.

Green said that a crew would usually start at 7:00 a.m. at the mine and finish around 11:00 a.m. or noon. (The depth of the drill holes determined a day's work; the drillers would stop when the holes were ready for blasting.) The blasting crew used black powder in the early years and later used dynamite. When the holes were detonated, the ore broke off in a scoop-like section which the "muckers" loaded into carts and wheelbarrows to be hauled to the surface.

Green's first task at the mine was to drive mules around a winch that hauled ore from out of the mine. Once on the surface, the larger pieces of ore were broken up with hammers and then loaded into "heavy carts" to be sent to the furnace. A teamster would make two trips of two and one-half tons per load per day, to the Greenwood furnace. About three-hundred loads were made daily from the O'Neal mine (*ibid.*).

The New York State Census of 1865 (63) said that, in that year, the O'Neal mine was using "steam and horse" power. The steam power was probably employed to run pumps to remove the ever-accumulating water, the mines being well below the water table. Rosa said that many times the miners found themselves knee-deep in water when the pumps failed (Rosa 1938b: unpag.). Green said that the men washed and changed their clothes in the "engine house" before going home.<sup>13</sup> It is likely that the water pumps would be housed here.

To find their way around, the miners used candles which they stuck on a rocky ledge or the floor of the mine. A short time before Green quit in 1881, the Parrotts supplied all of the mines with kerosene lamps. The lamps were unpopular because the flame gave off a strong odor and a black smoke which would permeate the air. The men would cough and spit up black particles. "It didn't take long to get rid of those lamps," Mr. Green said. "The men flattened them with their hammers pretty quickly down there, and we threw them away as fast as they'd bring them."

According to Green, at the day's end the miners never brought their candles out of the mine—even if much of it was left. These candles were left for the rats to eat. The rats were big, but were friends, for supposedly they warned of possible cave-ins well before the miners sensed danger. In this sense, the rats were comparable to the canaries used at Pennsylvania coalmines to warn of poison gases. At one time, great numbers of rats raced to climb out of one of the O'Neal shafts. Seeing this, the miners didn't wait around. That same night, Shaft No. 4 caved-in, but no one was in it at the time, thanks to the rats! This story (charming as it is!) may be apocryphal, since we encountered another account of the same event—an article written for the Monroe Gazette by Charles Post (1966a: unpag.) when he was ninety-three years of age. The article gives a child's-eye view of the same cave-in. When it occurred, Post said that he and other miner's children, including a "Charley Green," were in the "Turkeytown" or "O'Neil Mine" Schoolhouse (see *infra*) near the mine. Charles Green would have been seventeen or eighteen at the time (Rosa 1938b: unpag.).

. . . One summer's day in 1879 or 1880 [Post was six or seven, respectively], while the teacher was copying work on the small blackboard . . . the school work was going at its usual rate in loud studying and schuffling, suddenly the little school house trembled quite noticeably, the little ill-fitting sash rattled, [and] all studying and work ceased. The teacher turned and faced the pupils, but all were sitting upright and orderly. After a few seconds there came a deep rumbling sound, not unlike a distant earthquake. The girls and boys sat very quietly. The 22 year old teacher, Miss Elizabeth Barnes, stood at her desk like the statue of Dewitt Clinton in the smoothing iron at Newburgh. Then we heard footsteps on the run, along the outside of the school, they continued to the front and jumped into the room at the open door.

It was Mary Savage, daughter of the boss at the mine. She was much excited and ready to cry as she said in a loud voice, "Please may I go down and see if my father is hurt? Number four has just caved in." The little room . . . now turned into a hubbub, the smaller ones began crying aloud, many were talking, [and] all were hurrying toward the door.

The teacher, with chalk in one hand and book in the other, started to the door with both hands raised above her head said, "Now let us wait and then if there is anyone hurt, then you may all go home."

All returned to their seats orderly, then the teacher said, "Johnson Kelly and Charley Green." That was as far as she got. The two boys were running down the aisle barefooted . . . while the teacher called to them, "Now don't stay long, hurry right back." In a short time the boys came in, panting and sweating, saying that no one was hurt . . . [Post 1966a: unpag.].

The O'Neal mine was one of the last mines to supply the Greenwood furnace, and closed down with the demise of the Parrott Iron Company around 1885. When the mine was abandoned, Shaft No. 4 had already caved-in and Shaft No. 5 had reached its practical limits for the methods then available. In the process of excavations, the miners had left huge pillars of ore to help support the roof, and the company then decided to "shoot its pillars." Shooting pillars is dangerous work, analogous to removing the footings of a bridge, piece-by-piece. In an attempt to lessen the danger of a cave-in, timbers were placed to support the ceiling; but the attempt failed because "when the explosive let loose on a few of the pillars a distance down the tunnel . . . the whole mine caved-in" (Rosa 1938b: unpag.). Other work here would have been too expensive, so apparently this shaft was then abandoned.

When the O'Neal mine closed after perhaps sixty-two years, the pumps were shut off and probably

dismantled. Because at least three of the five shafts were excavated below the water table, the shafts flooded and remain so to this day.

c. *The Forshee mine.*

This mine was opened by the Parrotts before 1842 to supply the Greenwood furnace (see Figure 3; Beck 1842).<sup>14</sup> The workings here are mostly open-pits, with three shafts scattered around the area. The main area of this mine was an open-pit, about four-hundred feet long and fifty feet deep. Ransom (1966:235) said that the ". . . ore was highly prized by ironmasters, most of it sufficiently free from pyrites to eliminate preliminary roasting," i.e., before smelting. The mine closed about 1874, but was reopened January 1880, and worked until June of that year. In this period, 2,000 tons of ore was extracted (*ibid.*). A deed for the parcel of land adjacent to the Forshee property described one boundary as ". . . the west side of the mine hole (formerly hickory sapling standing on the east side of the railroad track in mine)," thereby indicating that a railroad track (probably for ore carts) once existed on the site (Orange County Deeds: *Lib.* 1508, pg. 354f.).

## V. RESOURCE-FLOW SYSTEMS

The multitude of separate iron companies in the Lower Hudson River Valley iron industry were intrinsically related in many ways. They were well aware that they were subject to a fluctuating national economy, and complained with one another about problems besetting them all.<sup>15</sup> We see this awareness

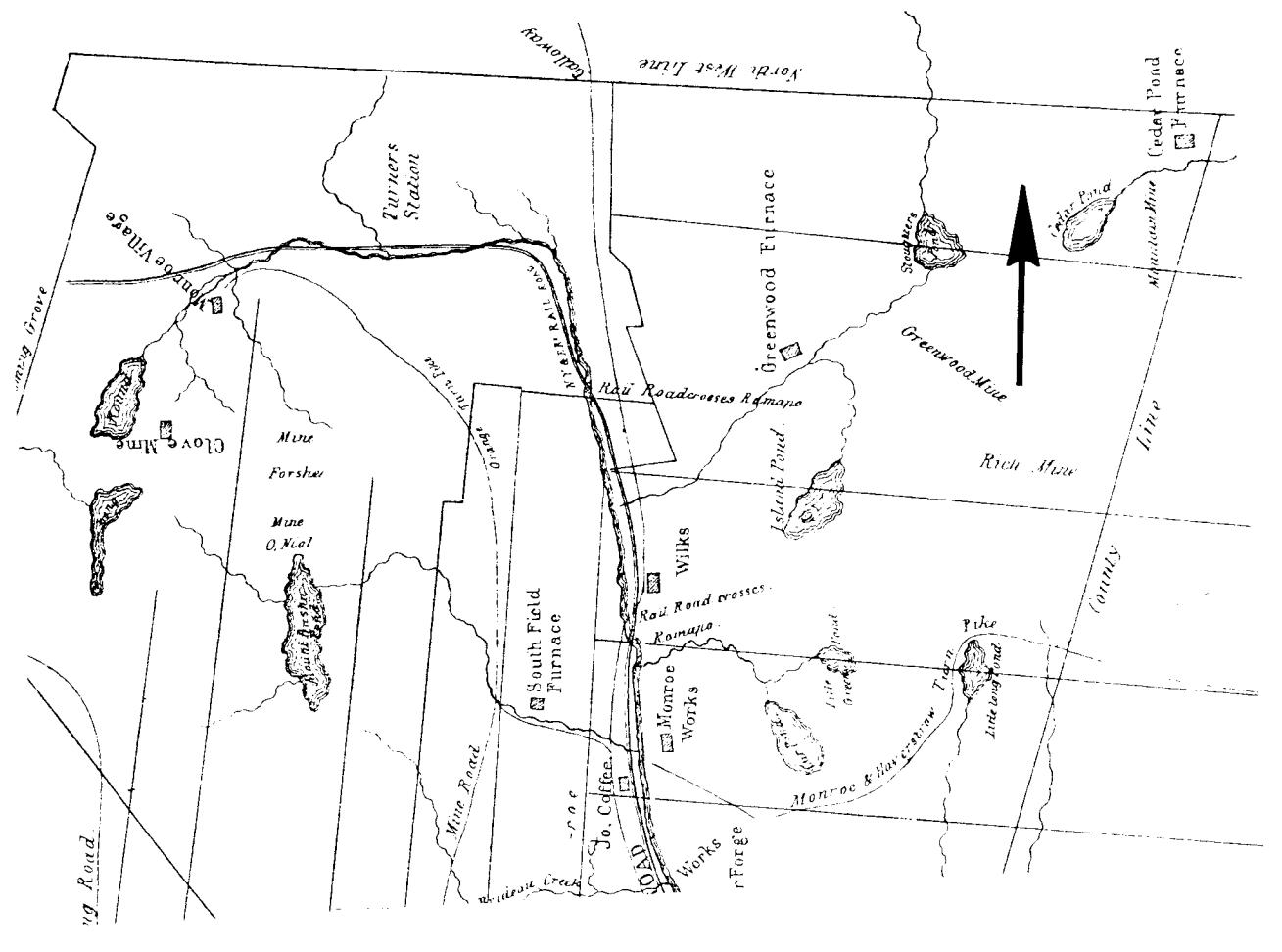


Figure 3. The location of the two mines have been incorrectly placed. No scale. Beck (1842).

and concern when Peter P. Parrott is reluctant to purchase ore from the Sterling Iron and Railway Company, while ". . . the iron business continues in such a very depressed and unsatisfactory condition" (P.P. Parrott 1875; Bell 1980: 57), and again when Robert Parrott is worried because an 1877 coal-workers strike threatens his supply of that critical resource (R.P. Parrott 1877; Bell 1980: 58).

We have seen that both the West Point Foundry and the Greenwood Ironworks-Parrott Iron Company interests owned and operated the O'Neal-Forshee mines, and various other mines, furnaces, and the foundry. The Parrots and the Kembles were related by marriage as well as by business. Business dealings among other iron companies were common, and when these ties are sketched out, we can begin to understand the complex web of relations. These relations, including the exploitation, transportation, and modification of resources, *both within* and among companies, constitute what we shall refer to as the *resource flow system*.

Resource-flow systems illustrate that the area's industrialists were exploiting a wide range of natural resources, including ore, limestone, anthracite coal, and wood, and transporting them to areas where they would either be immediately converted to more useable products (e.g., pig iron, charcoal, and board-wood) or sold to other iron companies.

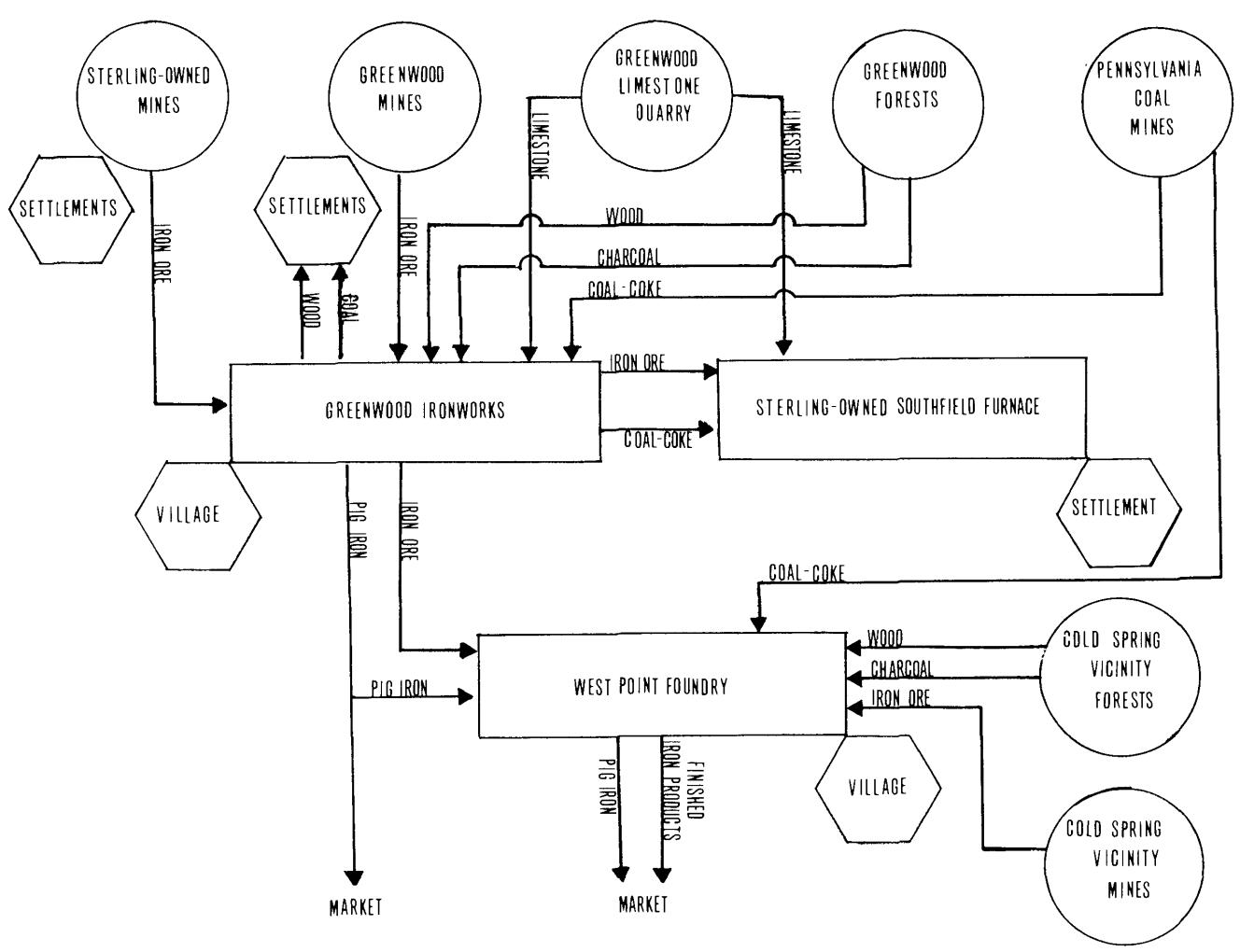
Figure 4 shows raw materials, such as ore flowing from area mines, charcoal and wood from forests surrounding the mines, limestone from Greenwood's quarry, and coal or coke from coal-producing areas of the United States, to various levels of the consuming/producing hierarchy. Most of the ore, charcoal, wood, limestone, and coal or coke went to the Greenwood Ironworks, which primarily produced foundry pig iron (Ransom 1966: 143). O'Neal mine ore supplied not only the two Greenwood furnaces, but the Greenwood-owned Woodbury furnace as well (*ibid.*: 237). In addition to their own resources, ore was either purchased from the Sterling Iron and Railway Company's iron mines (in Sterling Forest), or traded for Greenwood's own ores and limestone, delivered to the Sterling-owned Southfield furnace as early as 1875 (Bell 1980: 57). It is not clear whether Greenwood's ore and/or limestone was used *directly* by the Sterling Iron and Railway Company's blast furnace, but there were aborted negotiations for the purchase of coke by Sterling from the Greenwood Ironworks (see Figures 5 and 6; Bell 1980: 58, 65).

As noted, the West Point Foundry interests were leasing iron mines (including the O'Neal) in the Greenwood area to supply their own charcoal-burning blast furnace in Putnam County as early as 1823 (Ransom 1966: 142, 237). Ore and charcoal was also brought in from local sources (Rutsch, et al. 1979: 78). Some of the pig iron produced at Cold Spring was sold to at least one other manufacturer (*ibid.*). Following 1844, when the foundry abandoned its blast furnace, pig iron (mostly produced at the Greenwood Ironworks) was delivered to Cold Spring (*ibid.*: 53). In this way, the foundry's supply of pig iron, needed to produce marketable items, was assured.

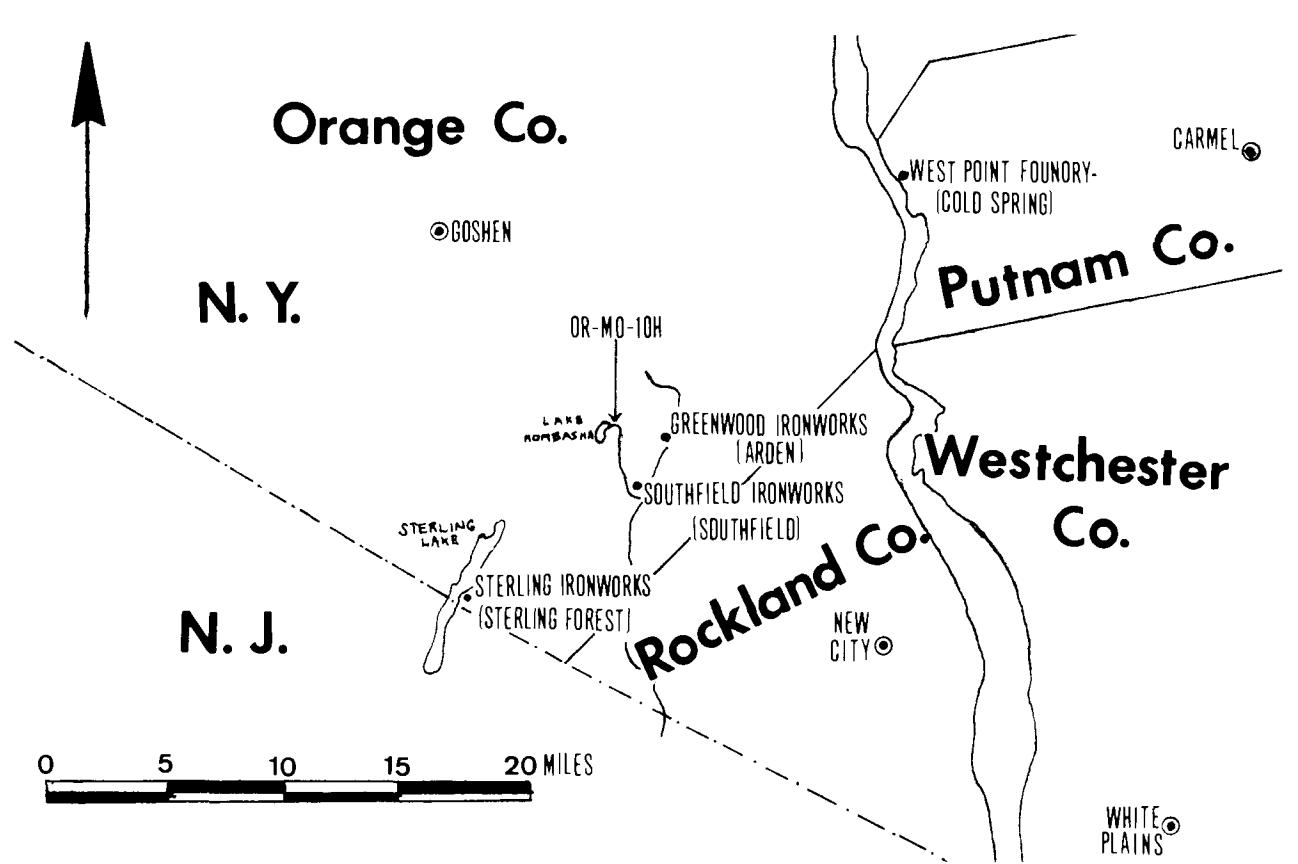
An indispensable unit of the resource-flow system was, of course, the workers. Functionally, the O'Neal-Forshee settlement primarily represented a population of *resource extractors*, but to some degree the settlement was also on the receiving end of the system in two basic ways. First, profits made by the company as a result of the miners' labor filtered back to the settlement in the form of cash wages and scrip, along with the limited opportunities offered by the settlement and the company. Secondly, at least some of the resources (e.g., board-wood and coal), and possibly company- and foundry-produced items (such as the coal-burning stoves used by the O'Neal-Forshee occupants), found their way to the various villages and settlements associated with the West Point Foundry, the Greenwood Ironworks-Parrott Iron Company, and the Sterling Iron and Railway Company. The employees were not merely filling a functional role, extracting resources to power the system; the workers were tapping the resource-flow system as a means to their own particular ends. The system was indeed one aspect of their adaptive strategy.

## VI. HOME AND FAMILY LIFE AT A MINING SETTLEMENT

The earliest historical evidence for occupation of the O'Neal-Forshee area is a map dated 1851 (see Figure 7; Sidney 1851). The majority of the archaeological evidence revealed dates of c. 1860 to 1880, although we did find bottle fragments which date from c. 1840 to 1860.



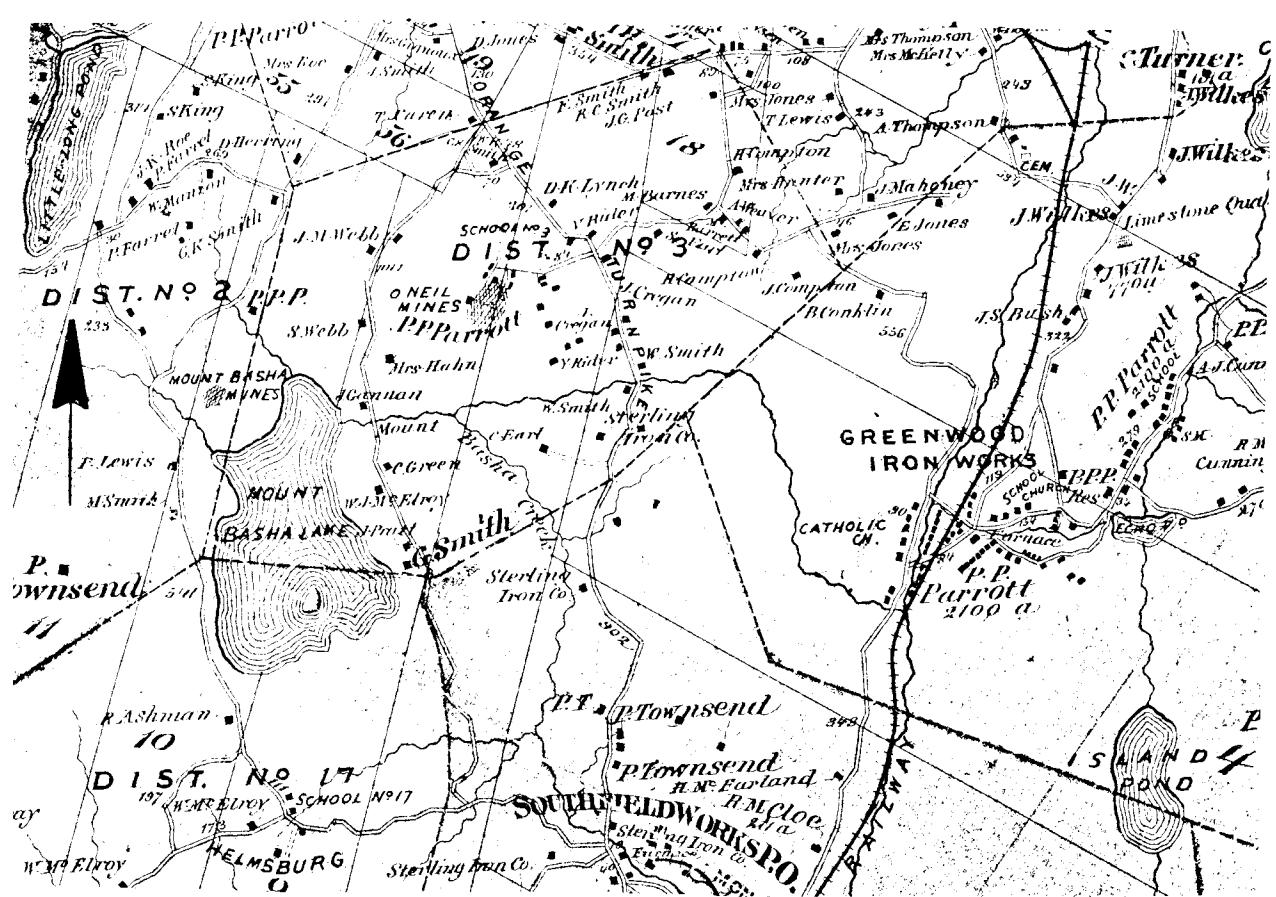
**Figure 4.** Diachronic model of the resource-flow system among selected companies. Data compiled from Ransom (1966:142-237), Rutsch (1979:53, 78), and Bell (1980:57-58, 65).



**Figure 5.** Southern New York State showing the O'Neal-Forshee area (OR-MO- IOH), and selected iron companies. Scale: 1" = 10 miles. Adapted from New York State Office of Parks and Recreation (1978).

According to the historical record, twenty-three men were reported employed at the "Nail" mine in 1855, with average monthly wages (exclusive of board) of \$25.00 (New York State Census 1855: line 30). Ten years later, just at the end of the Civil War, fifty to eighty men and five to ten boys were employed at the O'Neal. By 1865, wages had risen to thirty-five dollars monthly, excluding board (New York State Census 1865: 63). C.B. Rosa (1938b: unpag.), who was probably paraphrasing the former miner Charles Green, reported that, following the Civil War, three-hundred men and boys (composed of English and Irish nationalities) were ". . . engaged about the premises" of the O'Neal mine. It is not clear if all employees were occupants, or if the figure represents the total number of occupants (who were not necessarily employed at the mines). When more survey data is gathered, we will be better prepared to assess the population of the area.

Tax records list the property as "O Neal Mine & Forshay [sic] & farm" in 1878 and as the "Forshee and O Neal Mine & farm" in 1879 (Bell 1980: 220-221). This indicates that farming (probably dairying, as we recovered many milk-can fragments and other dairy-related artifacts) was occurring on the land as early as 1878. R.D.A. Parrott (1921: 10) noted that the occupants were allowed "the free use of the land for grazing cattle; the opportunity for securing free wood for domestic use as well as for making baskets, spoons, ladles, and trays; [and] the unrestricted use of the woods for shooting and fishing. . . ." Another writer (Post 1966b: unpag.) observed that "each family had a garden, a pig or two, some chickens and a cow. . . ." Faunal evidence from the settlement include possible pig, chicken, and cow remains, although no non-domestic animal remains (except possible opossum or skunk) were revealed. Perhaps hunting and fishing occurred less frequently than animal husbandry and small-scale agriculture. As noted *supra*, supplies were procured from the company store in Greenwood; teamsters would take orders and deliver the goods to the mines. This did not rule out purchasing items from the village of Monroe (R.D.A. Parrott 1921: 10; Rosa 1938b: unpag.; Bell 1980: 264).



**Figure 6.** The limestone quarry is shown on the upper right. Scale: 1" = 16 1/2 rods. Beers (1875).

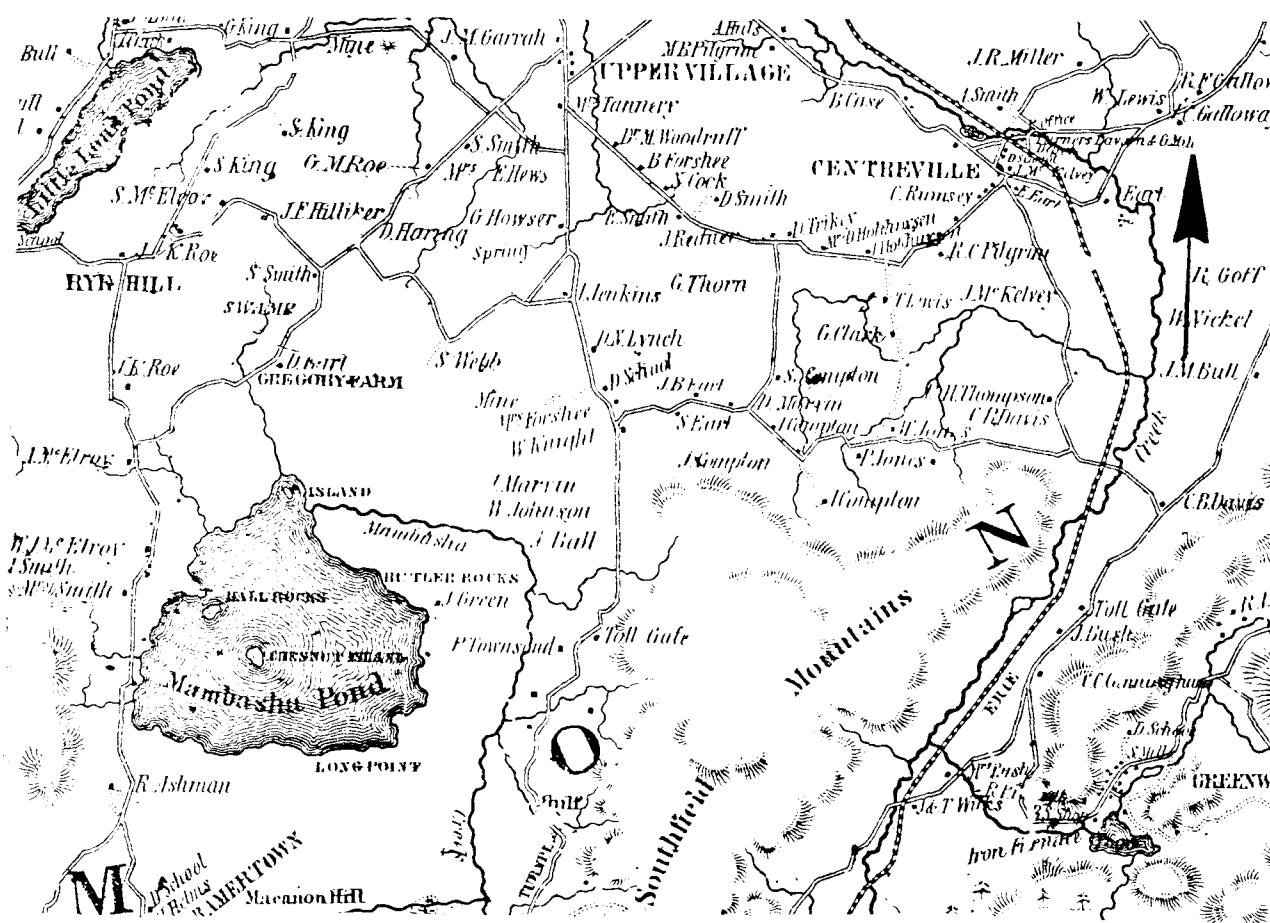
During the post-Bellum period, "the miners lived in at least forty frame houses which were full of boarders" (Rosa: *ibid.*). Post (1966b: unpag.) reported that

The houses built at the mine were cool and cheap, boarded up with wide boards with battens at the joints, one story high and painted brown; the boss's house was sided with bevel siding, [and was] two stories high. . . .

An interesting feature of the settlement was the "O'Neil Mine" or "Turkeytown" one-room school house, still standing to this day (Bell 1980: 84). Although the land was donated by Peter P. Parrott to the Monroe School District No. 3 in 1860, the school was built prior to 1851 (see Figure 7), contrary to the conclusions reached by Sweeny (1974: 1-2; Cf. Orange County Deeds: *Lib.* 295, pg. 161ff; Sidney 1851). The schoolhouse was physically moved after 1915, when Orange Turnpike was relocated (Sweeny: *ibid.*). The school continued to be used by area children well after the mine closed and the settlement was abandoned (Carey 1981: pers. comm.).

This nineteenth century occupation was, for the most part, similar to the "*unplatted/squatters' location*" described by Alanen (1979: 51) as ". . . poorly built housing strung out along haphazardly arranged streets and pathways. . . ." Providing only a school as its lone "service," the O'Neal-Forshee settlement cannot be classified as a village. The settlement differs from Alanen's company towns and model villages, not only in the managerial-worker relationships (to be explored infra), but also in that the settlement provided no urban services or facilities for its inhabitants (*ibid.*).

At a number of the Parrott iron workings, settlements more or less like the O'Neal-Forshee developed. The Hogencamp mine near Southfields had ". . . 20 houses, several barns, a school house, a store and a combination saloon and dance hall" (Ransom 1966: 236). The Pine Swamp mine nearby was also ". . . the center of a small village, with homes, barns, stores, and even a saloon" (*ibid* : 238).



**Figure 7.** The word "mine" appears next to "Mrs. Forshee" and "W. Knight," and the schoolhouse is shown. No scale. J. C. Sidney (1851).

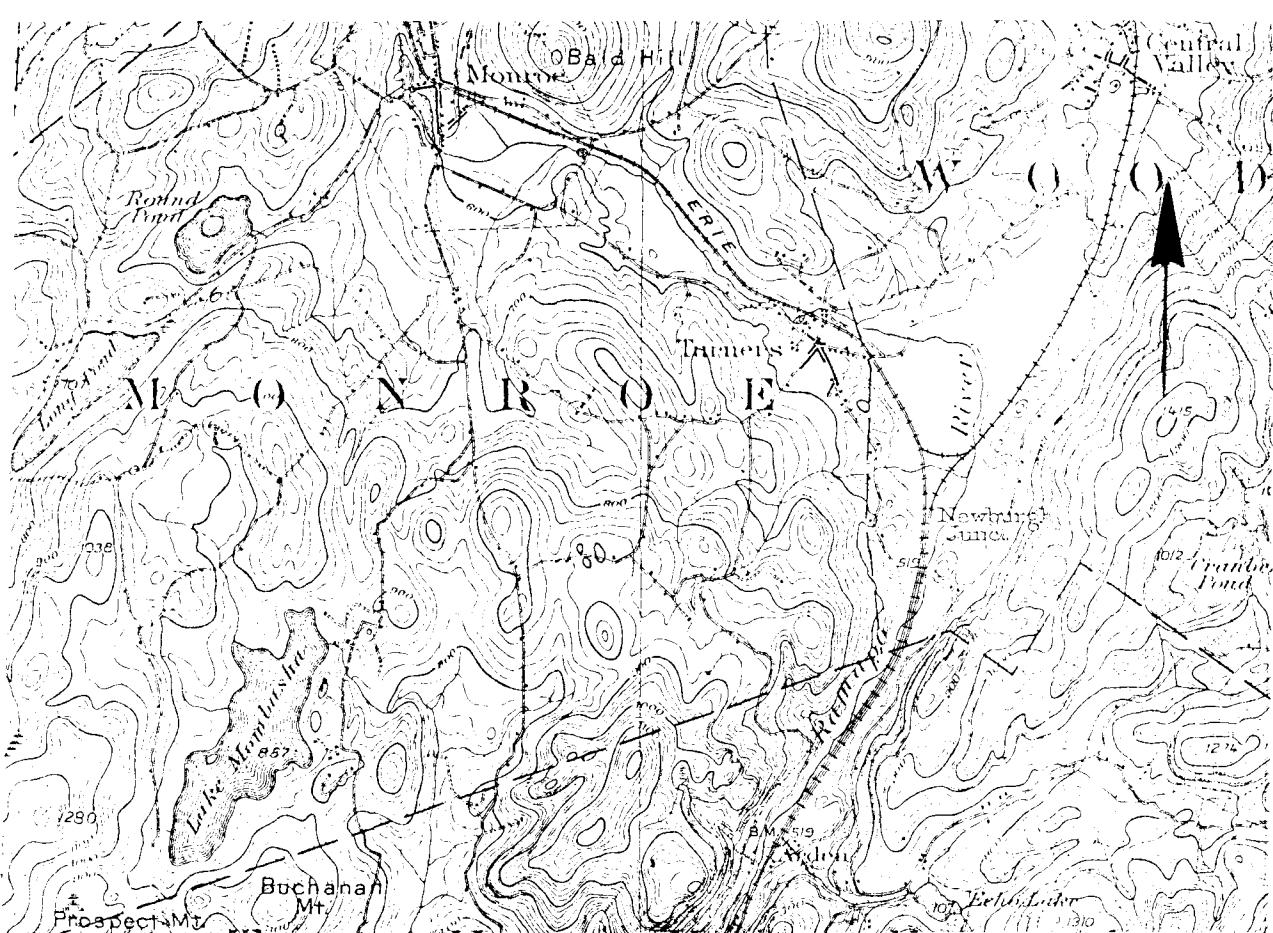
Certainly many other small communities emerged around the various industrial sites of the region (Bell 1980: 83-84), and it would be interesting to see how these compared to the O'Neal-Forshee settlement.

The O'Neal mine, one of the last mines to supply the Greenwood furnace, closed with the demise of the Parrott Iron Company around 1885 (Rosa 1938b: unpag.). An interview with Bernard Carey (1981: pers. comm.), a Monroe resident who attended the O'Neal Mine School from 1914 to 1925, remembered seeing the decaying remains of the settlement in his childhood. This indicated to us that the settlement was abandoned by at least 1914. A United States Geological Survey (1902) quadrangle (see Figure 8), surveyed in 1899, shows no occupation of the site at that time, and the archaeological evidence tends to support these dates.

## VII. SUMMARY OF FIELD RESULTS

The field results section of our original report (Bell 1980: 86-182) contained a section by section, feature by feature, description and interpretation of the archaeological remains. Only a general overview of this data is provided here.

The project area was divided into ten sections; Sections A, B, and C are not included within this discussion, as they do not appear to have been associated with the settlement, but with a nearby homestead. Figures 9 and 10 show that Section A, B, and C lay outside the property boundaries shown on the Brooks (1860-1861) map. Table 1 indicates construction techniques, structure size, and possible functions that the forty-one features listed served.<sup>16</sup> Most of the structures simply utilized readily



**Figure 8.** A portion of a United States Geological Survey (1902) quadrangle, surveyed in 1899, shows no occupation of the site. Scale: 1" = 1 mile; contour interval = 20 feet.

available fieldstones which were laid dry-wall fashion. All of the stone foundations were originally laid dry-wall, and only two had mortar added to the foundation walls (i.e., "pointed") at a later date. Interestingly, three structures utilized waste ore within the walls, but this was always supplemented with other materials (e.g., fieldstone). Three structures utilized the exposed bedrock in addition to other materials. Where noted, crude, apparently hand-molded bricks were interspersed within the foundation walls. In two cases our crew noted heavy brick concentrations; it is not clear whether the bricks were somehow combined within the structure *per se*, or if they are the remains of chimneys, etc. Soil was pushed against the outside walls of some foundations, and may have provided some insulation value. Overall, the builders seemed to have used what was readily available<sup>17</sup> and at the lowest cost.

The twenty-six features we have identified as possible dwellings have a median size of 21 1/2 feet by 14 1/2 feet. Dwellings with possible cool storage, shed, and work areas, both attached to and incorporated within the structures, were observed. At times, outbuildings (including privies barns, and animal pens) served these functions.

Artifacts recovered here date from c. 1840 to well into the twentieth century, with the majority falling in the 1860 to 1880 range; most of the datable artifacts were bottle fragments. We have attributed those artifacts dating post-1900 to "trashing"-deposition after the occupation-for reasons mentioned *supra*. Dairying is indicated by innumerable milk can fragments, pail fragments, and a possible milk strainer, possible cow bones, and by those features we have interpreted as barns. Also recovered were the faunal remains of possibly pig, chicken, skunk or opossum, and horse or mule.<sup>18</sup>

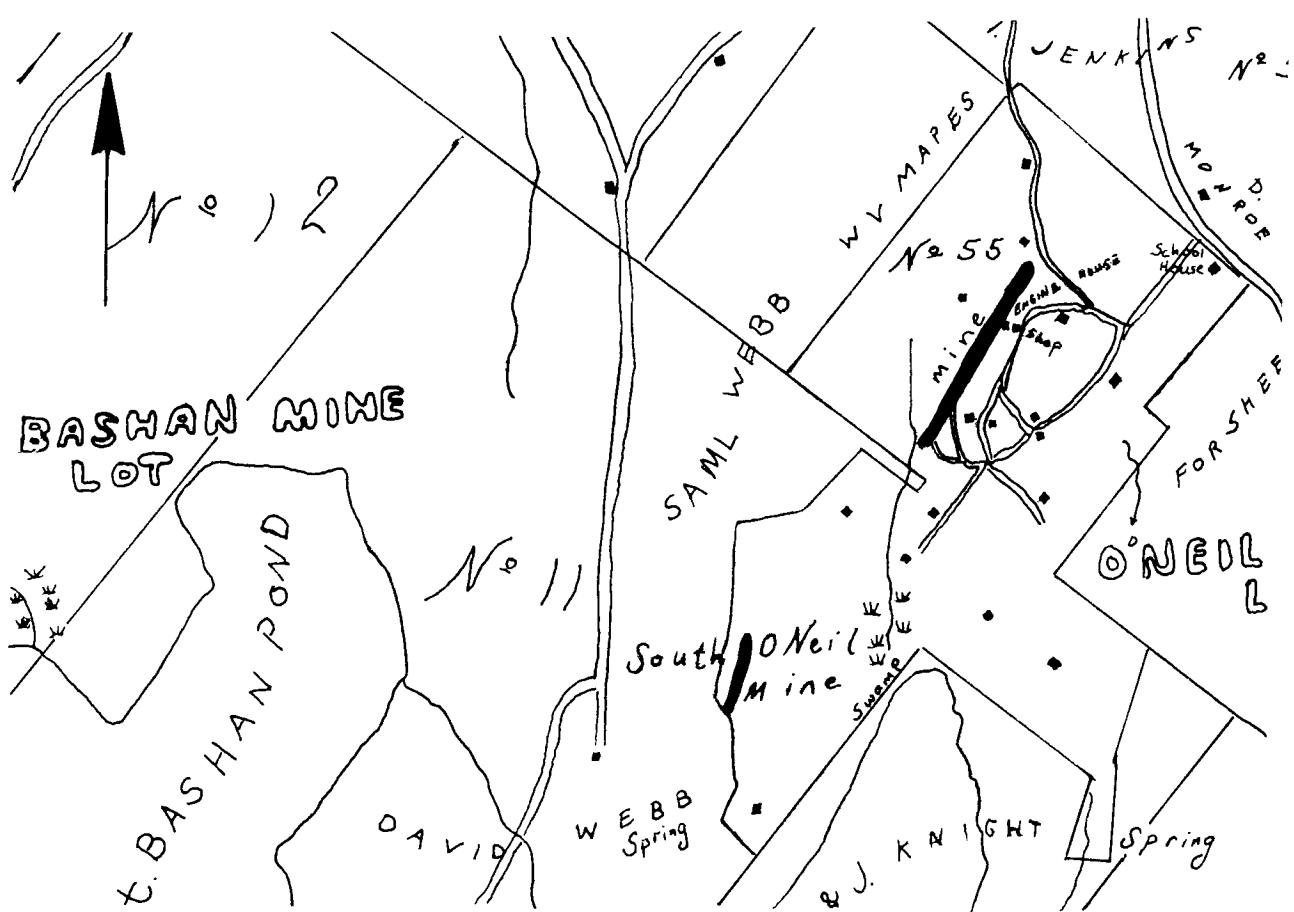
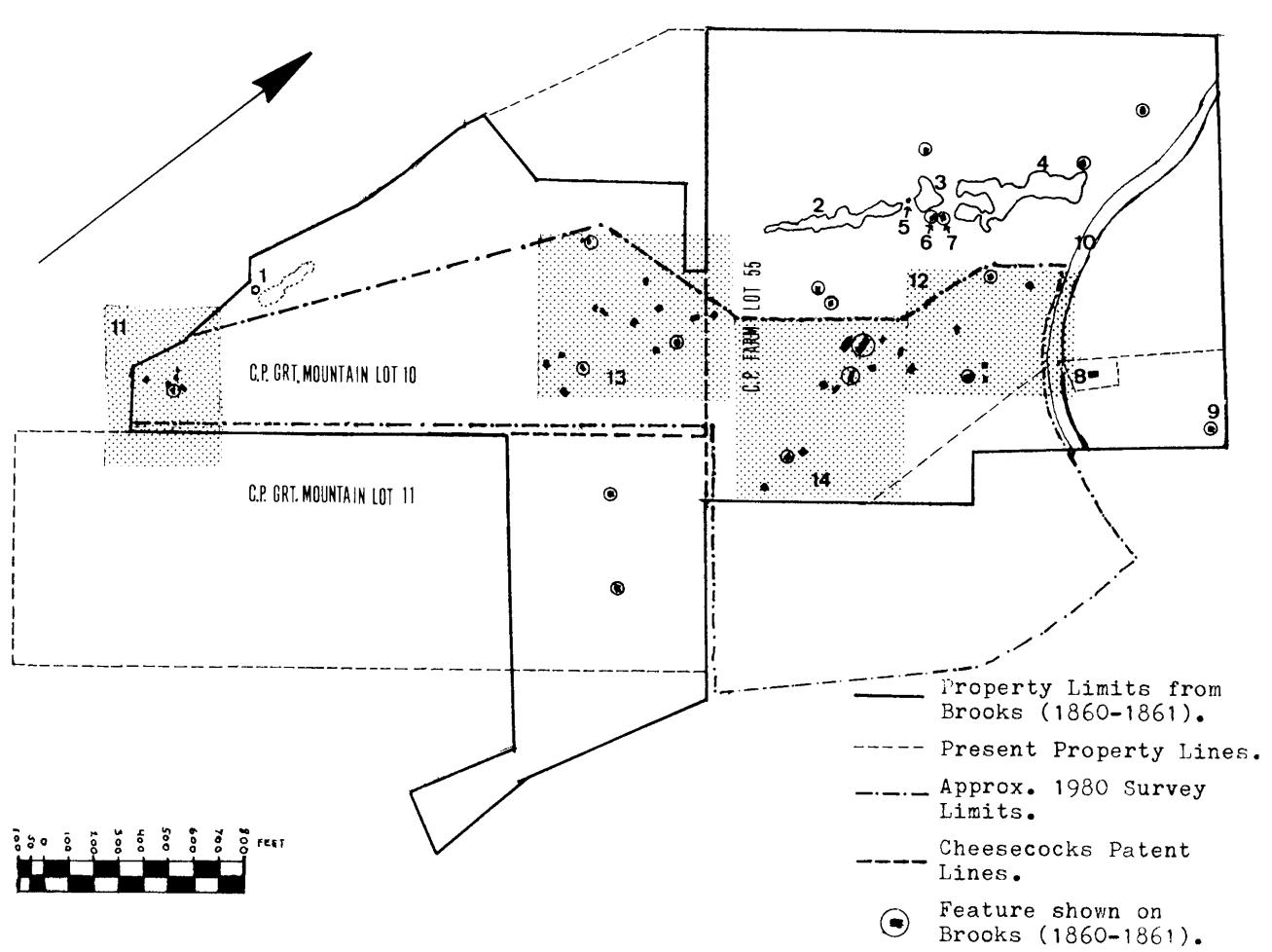


Figure 9. Tracing of a portion of Brooks (1860-1861). Scale: 1" = 16 chains or 1056 feet.

Food preservation was certainly occurring at the site (indicated by the presence of cool storage areas, i.e., "root" cellars), although we found few stoneware crock fragments. Apparently, wooden barrels served this function as we found many possible barrel hoop fragments. An analysis of the recovered ceramic fragments show that the occupants were predominantly using whiteware and ironstone (38.7% and 36.0% of the estimated number of vessels, respectively), with stoneware and hard-paste porcelain (both at 9.0%), redware (3.6%), buffware (2.7%), and soft-paste porcelain (0.9%) contributing to the total.

Some of the common artifacts (i.e., those found in many features) that we recovered include kerosene lamp chimney and globe fragments and coal stove fragments. Most of the latter were similar or identical in design, suggesting a common source—perhaps the company store. Windowpane fragments, and apparently hand-molded bricks with different tempering agents (e.g., possible shell, pebble, and coal) were found in many areas. Artifacts called "heel plates"—originally tentatively identified as "boot heel reinforcers or protectors" and subsequently confirmed by a Sturbridge Village, Massachusetts shoemaker—were used to increase the life of a pair of boots; heel plates were recovered from features D5, H4, and J5 (see Plates 2 and 3).

The O'Neal-Forshee area holds a great potential for further archaeological research and testing of our preliminary hypotheses. As noted *supra*, areas laying outside our 1980 survey perimeter do contain foundation remains. Once investigated, such areas will provide the source for a more definite, broader understanding of the O'Neal-Forshee area.



**Figure 10.** Archaeological base map of the O'Neal-Forshee settlement site, based on Knight, Bush, & Thompson (1930a; 1930b) and Brooks (1860-1861). Scale: 1" = 600 feet. 1, approximate position of Forshee shaft and open-pits; 2-4, southern, middle, and upper pits, respectively, of the O'Neal mine; 5, approximate position of the rock-crushing machine foundation; 6, "engine house" location; 7, "shop" location; 8, "O'Neal Mine" or "Turkeytown" schoolhouse; 9, original schoolhouse" location; 10, Orange Turnpike or Orange County 19; 11-14, see enlargements, Figures 11-14, respectively. Shaded areas represent magnetic anomalies.

**Table 1.** Sizes, construction techniques, and possible functions of features investigated during the 1980 field survey.

Associated Privy					X			
Associated Well			X	X			X	X
Animal Pen							X	
Barn/Shed								X
Barn Shed/ Cool Storage Shed							X	X
Root Cellar		X				X		
Dwelling/ Cool Storage								
Dwelling/ Work Area			X					
Dwelling/Shed								
Dwelling			X	X	X	X	X	X
Mounding		X			X			
Bricks Interspersed Brick Concentrations				X				X
Laid Dry Wall, Pointed Later				X		X		
Laid Dry Wall			X	X	X	X	X	X
Bedrock Utilized								
Cut Ore							X	X
Partially Cut Ore							X	X
Cut Stone			X	X	X			
Partially Cut Fieldstone			X	X		X	X	X
Fieldstone			X	X	X			
Size (feet)								
Feature	D1	15 x 13½						
	D2	28 x 12						
	D3	29 x 20 (int.)						
	D4	39 x 27						
	D5	33 x 7						
	D6	15 x 13						
	D7	21 x 18						
	E1	24 x 12						
	E2	12 x 11						
	E3	18 x 12						
	E4	44 x 20						
	E5	60 x 48						
	E6	58 x 37						
	E7	32 x 12						
	E8	23 x 14						

Table 1. Continued.

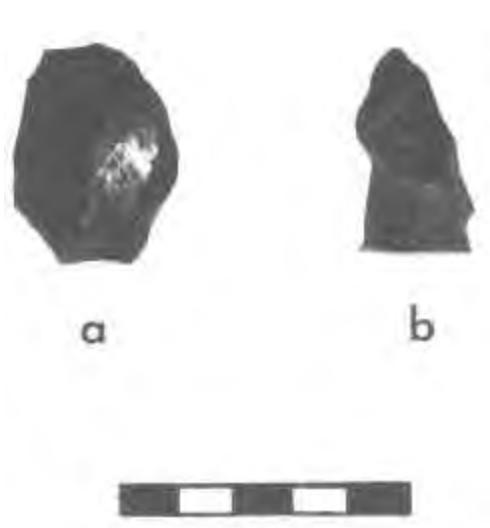
Associated Privy		X		X		X		X
Associated Well								
Animal Pen								
Barn/Shed								
Barn Shed/ Cool Storage Shed							X	
Root Cellar			X	X	X			
Dwelling/ Cool Storage				X				
Dwelling/ Work Area					X			
Dwelling/Shed						X		
Dwelling		X	X		X	X	X	X
Mounding		X	X				X	X
Bricks Interspersed					X			
Brick Concentrations								
Laid Dry Wall, Pointed Later								
Laid Dry Wall		X	X	X	X	X	X	X
Bedrock Utilized								
Cut Ore								
Partially Cut Ore		X						
Cut Stone			X	X	X		X	
Partially Cut Fieldstone								
Fieldstone								
Size (feet)								
Feature	E9	37 x 11	X					
	E10	11 x 9	X					
	F1	22 x 19	X					
	F2	15½ x 13½	X					
	F3	17 x 12	X					
	G1	32 x 17	X					
	G2	6 x 5½	X					
	G3	10½ x 9	X					
	G4	21 x 17	X					
	G5	9 x 9	X					
	G6	29 x 11½	X					
	G7	16 x 15	X					
	G8	15 x 14	X					
	G9	24 x 24	X					
	H1	10 x 10 or X						
		10 x 40						

Table 1. Continued.

Associated Privy							
Associated Well						X	
Animal Pen				X			X
Barn/Shed							X
Barn Shed/ Cool Storage							
Shed			X	X			X
Root Cellar		X			X		
Dwelling/ Cool Storage							
Dwelling/ Work Area			X				
Dwelling/Shed	X						
Dwelling			X	X	X		
Mounding					X		
Bricks Interspersed Brick Concentrations	X						
Laid Dry Wall, Pointed Later							
Laid Dry Wall	X	X	X	X	X	X	
Bedrock Utilized							X
Cut Ore							
Partially Cut Ore							
Cut Stone					X		
Partially Cut Fieldstone							
Fieldstone	X		X		X		
Size (feet)	H2 20 x 25 with x 10 ex- tension.	x 15	X				
Feature	H3 38 x 18	X					
	J1 21 x 21	X					
	J2 25 x 17	X					
	J3 23 x 19	X					
	J4 12 x 7 ft. 19½ x 18 ext.	X					
	J4A 7 x 6	X					
	J5 42 x 16, (barn?)	X					
	24 x 15, (animal pen?)						
	12 x 11, (shed?)						

**Table 1.** Continued.

Associated Privy	
Associated Well	
Animal Pen	
Barn/Shed	
Barn Shed/ Cool Storage	
Shed	
Root Cellar	x
Dwelling/ Cool Storage	
Dwelling/ Work Area	
Dwelling/Shed	x
Dwelling	x
Mounding	x
Bricks Interspersed	
Brick Concentrations	x
Laid Dry Wall, Pointed Later	
Laid Dry Wall	x x
Bedrock Utilized	
Cut Ore	
Partially Cut Ore	
Cut Stone	x
Partially Cut Fieldstone	x
Fieldstone	x x
Size (feet)	K1 20 x 19, ext. 10 x 8, int. 28 x 20 K2
Feature	



**Plate 1.** Possibly utilized gray flint biface (D5-43) (left) and gray flint utilized flake (F1-10) (right). Scale in centimeters.

### VIII. MANAGERIAL-WORKER RELATIONS

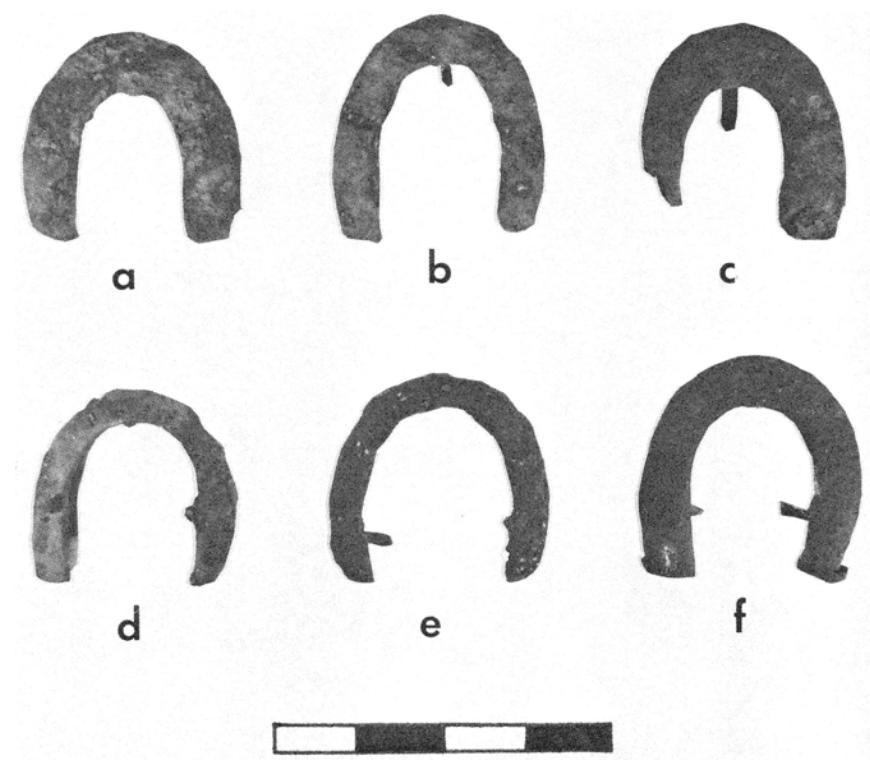
In their functional context, managers and workers occupied a critical and *complementary* niche in the resource-flow system. Wages and a limited amount of "services" (e.g., the company store, the school house located near the settlement, and property for houses, gardens, livestock, etc.) were offered by the Parrott company in exchange for labor, and at least two critical natural resources from the O'Neal-Forshee area: ore and charcoal. These are their *functional* roles, detailed by economics. What we wish to explore now are the specific aspects of the relationship between the Parrott company and its employees. What can be inferred from the few surviving contemporary documents and accounts, in the context of some recent studies (Alanen 1979; Porter 1981; Wallace 1978) of Northeastern industrial communities?

Peter P. Parrott, eventual owner of the Greenwood Ironworks, resided in Greenwood,<sup>19</sup> and probably visited his other holdings frequently. "Robert [Parrott] would come across the mountains from Fort Montgomery, calling at a mine on the way in hope of finding Peter there" (R.D.A. Parrott 1921:11). Peter's presence was perhaps felt more in Greenwood, where his home overlooked the ironworks and the workers' village. The more distant mining settlements, occupied by the "mountaineers" as Richard Parrott called them, probably enjoyed a somewhat higher degree of freedom.

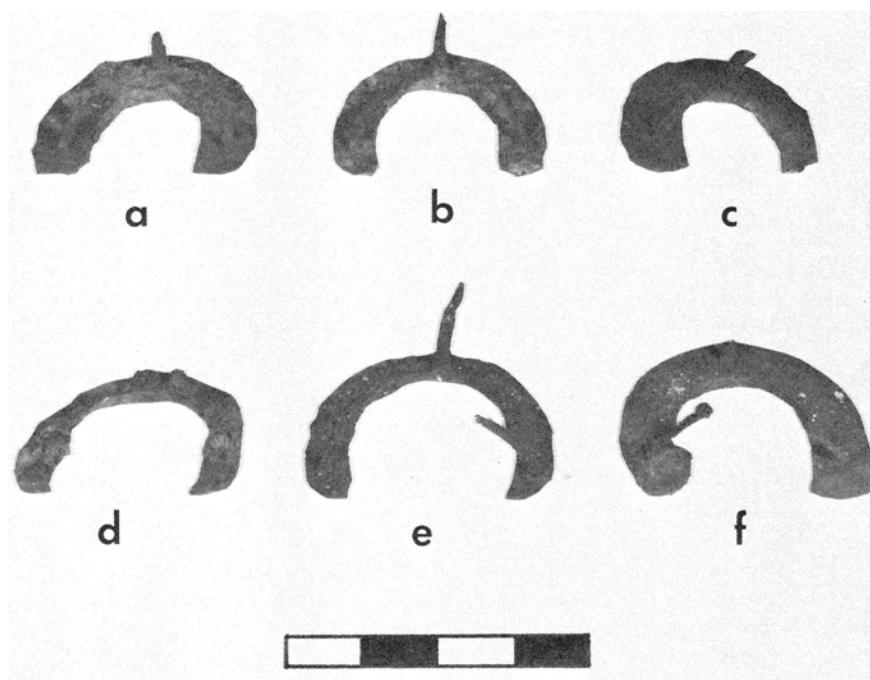
The free use of the land for grazing cattle; the opportunity for securing free wood for domestic use as well as for making baskets, spoons, ladles, and trays; the unrestricted use of the woods and ponds for shooting and fishing, all tended to make the mountaineer indifferent to discipline. His labor was irregular owing to his independence. The village [Greenwood] was "dry" by regulation but nearby centers were "wet" without regulation. The consequence was that walking, to and fro, was a compelling pastime and personal liberty was in full swing. The new freedom of the present day pressed but lightly then, if at all! [*ibid.*]

And if Mr. Parrott was like many of his contemporaries, his relationship with his employees was personal, mutual, and somewhat *paternalistic* (Cf. Porter 1981: 11-13; Wallace 1978: 16, 51, 55). It was understood that both provided something for the other.

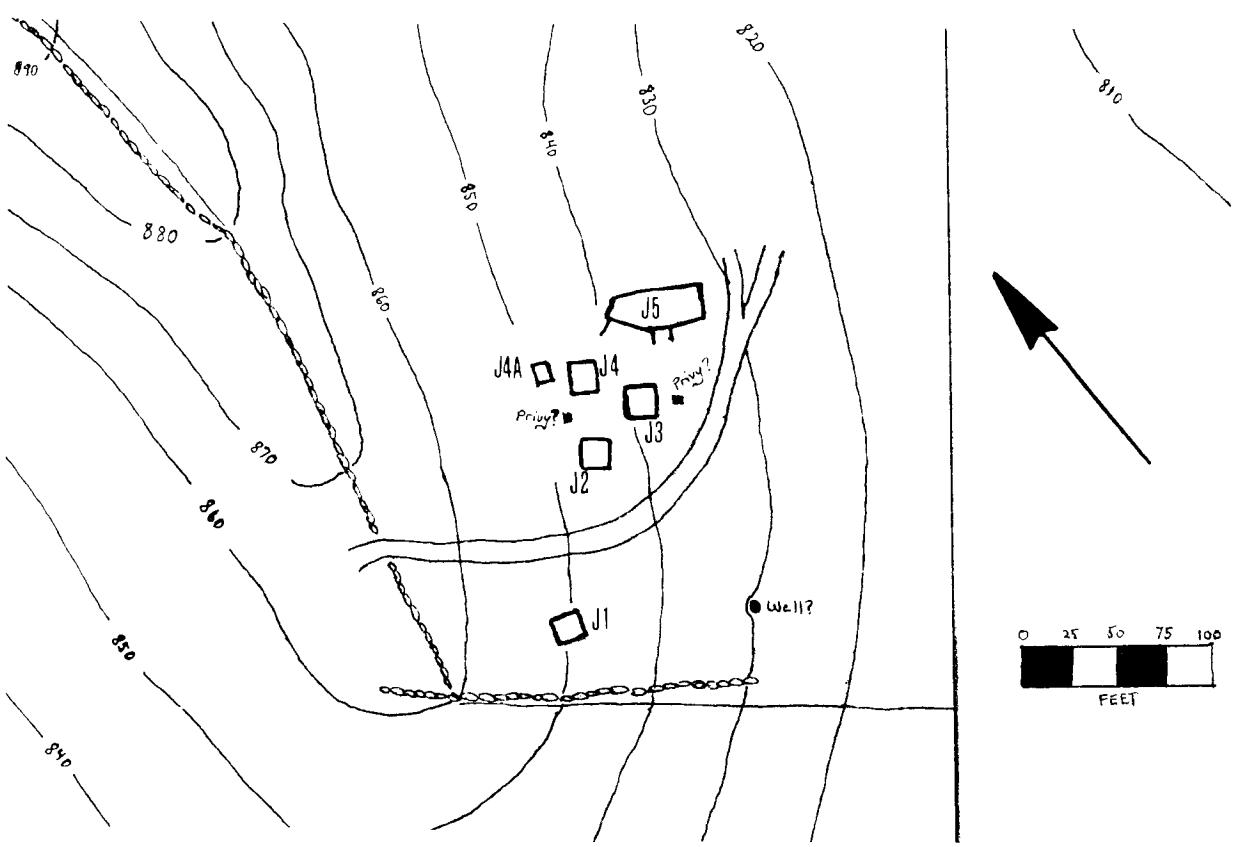
But of course the occupants were in no way removed from the rather industrial atmosphere, living in close proximity to the mines, and to the "Boss's" (probably a foreman's) house. In fact, one aspect of managerial-working class distinctions was exemplified in the house styles at the O'Neal-Forshee



**Plate 2.** Iron heel plates, obverse. Top row: all from D5; bottom row: (l. to r.) first from H4, last two from J5. Scale in inches.



**Plate 3.** Iron heel plates, reverse, showing protruding nails. Scale in inches.



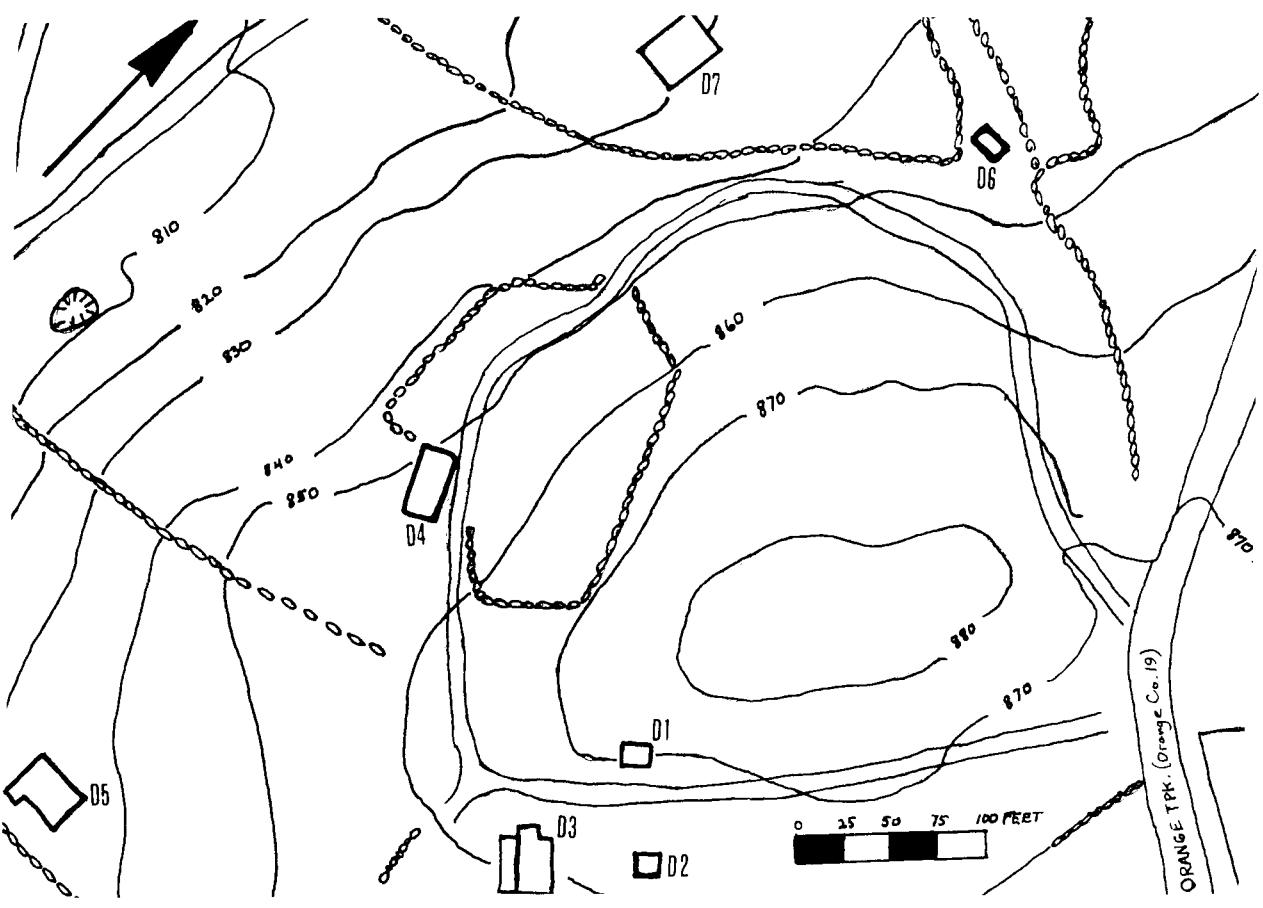
**Figure 11.** Section J, based on Knight, Bush, and Thompson (1930a), and United States Geological Survey (1957). Scale: 1"= 100 feet.

settlement: the boss's two-story house had beveled siding, whereas the one-story workers' dwellings had board-and-batten exteriors. The boss's house also had a larger garden, compared to workers' gardens (Post 1966b: unpag.).

Perhaps to some degree, the workers were limited by the company's practice of having the men purchase their supplies at the company store, although purchases were also made in the village of Monroe (Rosa 1938b: unpag.; Parrott 1921: 11; Bell 1980: 264). Before 1880, running accounts were kept at the company store in Greenwood, with a worker's order deducted from his salary. This often resulted in a man having no pay left at the end of a month, but credit was always extended if a man needed food or clothing. "The company was good about that," remarked Charles Green (Rosa: *ibid.*). After 1880, scrip ("trade-tickets") were issued as part of a worker's salary. The trade-tickets were only redeemable at the company store, and as Richard Parrott (1881; Bell 1980: 80) remarked, the scrip ". . . system permits us to keep the men out of debt rather better than when they had other accounts at our store. . . ."

It is not known to what degree the company was involved with housing arrangements. The settlement's configuration is amorphous; little formal planning went into its design. A glance at contemporary maps show that the settlement grew slowly, so it seems most likely that as space was needed, a crew would be sent to construct a house. The dwelling sites appear very individualized, with the outbuildings varying in size, location, number, and function.

It could be inferred that the relatively personal relationship that seemed to exist between the company and the workers was also implied by the individualistic settlement pattern exhibited at the site. Compare the O'Neal-Forshee area with classic "company towns" or "model villages." Alanen (1979:51) writes that ". . . the strict corporate controls and regulations found in these communities meant that their influence extended far beyond town boundaries." Workers in these types of communities lived in



**Figure 12.** Section D, based on Knight, Bush, and Thompson (1930b). Scale: 1" = 100 feet.

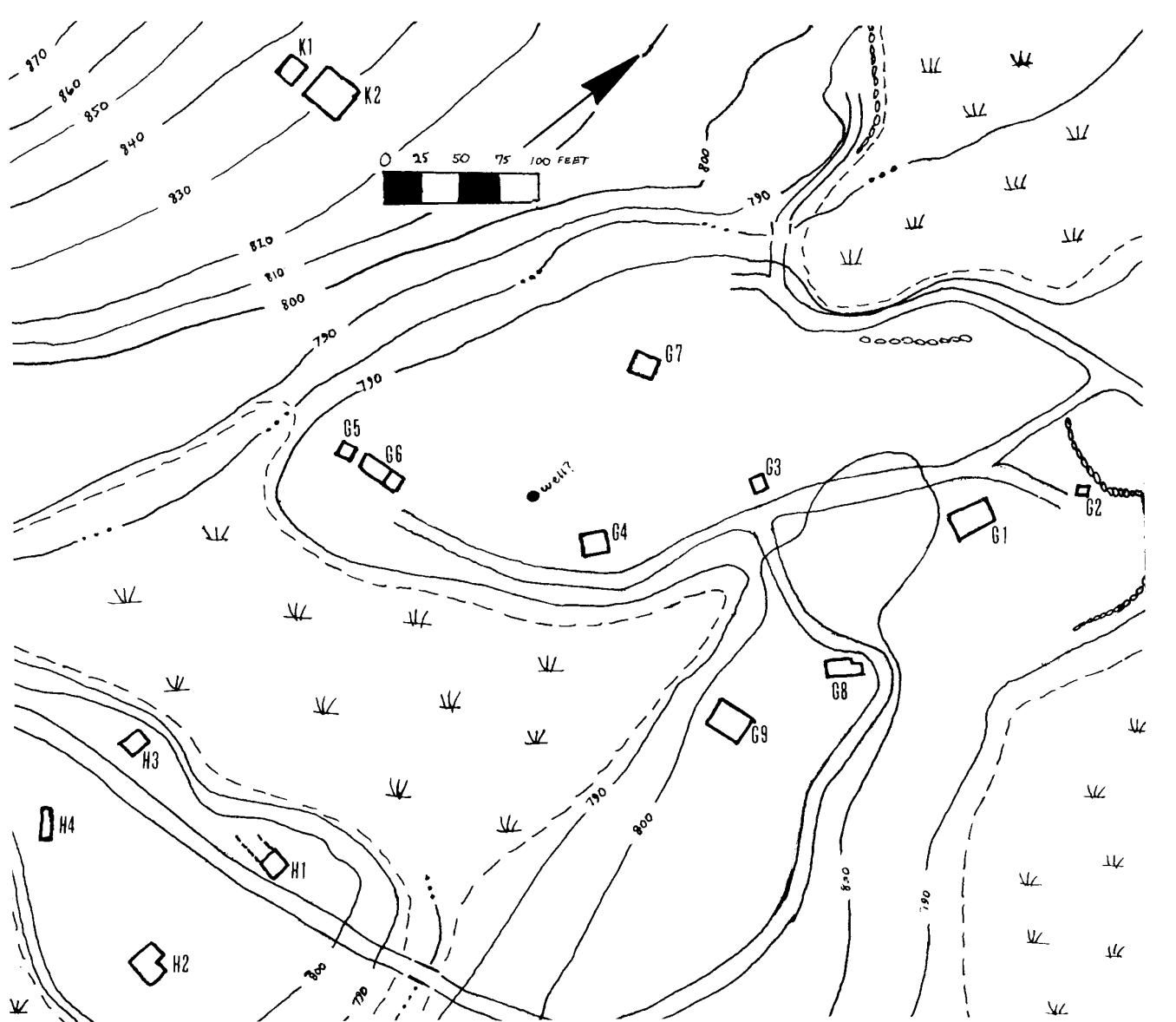
monotonous row housing or tenements which were constructed, owned, and controlled by the companies. This system certainly allowed less room for individualism and independence than what the O'Neal-Forshee occupants seemed to have experienced.

Overall, managerial-worker relations appear to have been relaxed and personal. Salary was probably sufficient to support a family (Rosa: *ibid.*), and in addition, the workers were permitted to expand their subsistence base by gardening, raising livestock, taking in boarders, piece-work such as making baskets, and perhaps hunting and fishing (R.D.A. Parrott 1921: 10; Post 1966b: unpag.; Griffin 1981: pers. comm.). Workers could feed themselves and their families, and perhaps save enough money to improve their lifestyles. For nineteenth century Pennsylvania mill workers (Wallace 1978: b3), and probably for our own iron miners as well, this meant bringing relatives across from England or Ireland, moving on to better job opportunities, or even to homesteads in the West.

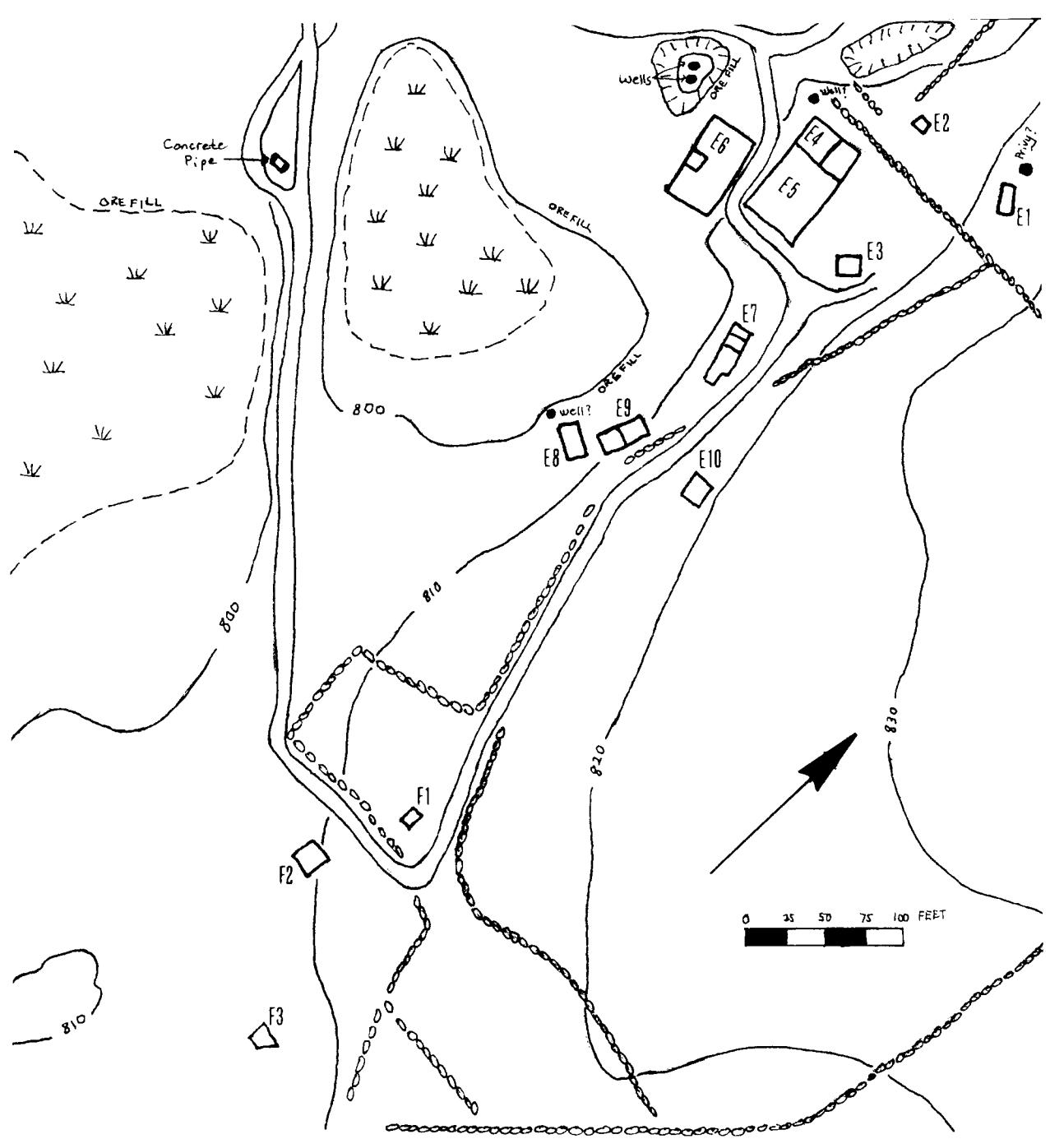
#### IX. CONCLUSIONS

This paper had allowed us to explore the historical significance of the O'Neal-Forshee iron mining settlement. We have seen that a complex resource-flow system operated among the mines, the Greenwood Ironworks, the West Point Foundry, and other entities of the Lower Hudson River Valley iron industry. Employees and managers were an indispensable part of the system, and we have attempted to seek out the nature of this managerial-worker relationship.

Examinations of the minutiae of large industrial complexes, such as the Greenwood Ironworks, and their various aspects (viz., the mining settlements), will perhaps allow for an understanding of the larger



**Figure 13.** Sections G, H, and K. Based on Knight, Bush, and Thompson (1930a; 1930b), and United States Geological Survey (1957). Scale 1"= 100 feet.



**Figure 14.** Sections E and F, based on Knight, Bush, and Thompson (1930a). Scale: 1" = 100 feet.

social and economic processes that were operating at similar industrial sites in the Northeast. We have attempted to seek out these processes by examining the historical and archaeological evidence in their industrial, economic, and social contexts. Certainly this examination has at least served to document the activities of an interesting cultural group. Further historical and archaeological research is needed to fill out our present view of the settlement, the related iron industry, and the subsequent use of the property after the nineteenth century occupation.

## ENDNOTES

1. There are many spelling variations to the name, including "O'Neill," "O'Neil," "O'Nail," and "Nail." Since "O'Neal" appears on the earliest documents (viz., deeds and tax records), we have adopted the original spelling, except where a variant appears within a quotation.
2. "OR-MO-10H" was adopted for identifying the entire mining settlement area and all of its features and artifacts, after the area was recorded with that numbering system during a seven township survey conducted by members of the Inc. Orange County Chapter in 1979. Because the full extent and nature of the mining settlement area was not fully realized, four separate designations were used: "OR-MO-06H" for the Forshee mine, "OR-MO-07H" for the O'Neal mine area, "OR-MO-09H" for the southern portion of the settlement, and "OR-MO-10H" for an area in the northern portion of the settlement. The last designation now encompasses all of these areas.
3. Copies of the report are available at: Newburgh Free Library, Local History Room, Newburgh, N.Y.; Monroe-Woodbury Sr. High School, Central Valley, N.Y.; Orange County Historian's Office, Goshen, N.Y.; Putnam County Historical Society, Cold Spring, N.Y.; State Historic Preservation Office, Albany, N.Y., and Simon's Rock College Library, Great Barrington, Massachusetts.
4. James M. Ransom's (1966) *Vanishing Ironworks of the Ramapos*, although an excellent research endeavor which proved invaluable in our own research and documentation, contained mostly general data on industrial settlements and their occupants' lifestyles.
5. Although our research strategy was independently developed, Alanen (1979: 50-58) discusses methodology similar to that employed on our project.
6. In the original report (Bell 1980: 23-85) we provided a substantial historical context within which the more site-specific research could be found. This included a brief history of Orange County and the early American iron industry, as well as the structures and processes associated with the industry. Having provided that context, we then dealt with the history of ironworking in Orange County, narrowed the focus to a history of the Greenwood Ironworks, and finally zeroed in on the settlement associated with the O'Neal and Forshee mines, which iron mines supplied ore to the Greenwood Ironworks.
7. The village of Monroe was recently engaged in negotiations to purchase the land, and has plans for a reservoir (Wysochi 1981: 1-2).
8. It was tentatively hypothesized (Bell 1980: 73, 143-144, 178) that the rock-crushing machine foundation was the remains of the engine house noted in the historical record (Rosa 1938b: unpag.). The Brooks' (1860-1861) map shows the location of the engine house, and when transposed onto the archaeological base map (Figure 10), it was found that the location did not coincide with that of the rock-crusher foundation. Since both features lay outside the area we were able to survey in detail, only their presences will be discussed in this paper.
9. The patent was granted by Queen Anne of England in 1707, and subsequently surveyed between 1735 and 1749 by Charles Clinton (Ransom 1966: 179). Clinton reported that Amerindians had discovered iron in the vicinity of the O'Neal mine (Freeland 1898: 11-13). It is less likely that the Amerindians were utilizing the ore per se, rather than nearby mica and/or possible hematite deposits. A gray flint biface and a utilized flake, the only Amerindian artifacts recovered during the investigation, does suggest visitation by Amerindians (see Plate 1).
10. Ruttenber and Clark (1881:806) err on the date Peter was put in charge of the Greenwood Ironworks.

11. A deed for the 1886 court-ordered sale of the Parrott properties revealed that the entire O'Neal-Forshee mining tract grew to 204.768 acres (Orange County Deeds: *Lib.* 345, pg. 416ff.). The aggregate parcel is composed of the original O'Neal parcels (granted in 1832 by Orange County Deeds: *Lib.* 45, pg. Ill:; and six other parcels, plus ingress-egress rights to a seventh parcel, all bought by Robert and Peter Parrott between 1846 and 1869. (These deeds are recorded in: Orange County Deeds: *Lib.* 88, pg. 16ff.; *Lib.* 136, pg. 68f:; *Lib.* 135, pg. 236f:; *Lib.* 180, pg. 418ff., and *Lib.* 221, pg. 261ff.) Robert Parrott conveyed the undivided two-thirds part of the seven parcels (and other holdings) to his brother Peter on April 8, 1865 (Orange County Deeds: *Lib.* 188, pg. 59ff.). Peter Parrott obtained the last third part sometime before the sale in 1886.
12. Balch (*loc. cit.*) said that the furnace ceased production in 1872.
13. Brooks (1860-1861) shows the location of an "engine house" and a "shop." See Figure 9.
14. Ransom (1966: 235) says that the Parrotts first acquired the Forshee mine about 1839.
15. E.g., see the letters between the Greenwood Ironworks-Parrott Iron Company and the Sterling Iron and Railway Company (Bell 1980: 57-68).
16. Our interpretations as to a certain area's function were derived inductively from artifact assemblages, and from the feature's size and configuration. Our hypotheses, stated as they are here and in the text of "Life At The Mines" (Bell 1980) can form the basis for a logico-deductive approach to future analyses, to allow for testing of these hypotheses.
17. The land is littered with stones. Evidence of land clearing operations show up, among other things, in the stone walls that criss-cross the site.
18. Mules were used at the mines for hauling ore (Rosa 1938b: unpag.; Jones 1976: unpag.).
19. Greenwood was renamed Arden after Marie Antoinette Arden, Peter P. Parrott's wife (Ransom 1966: 340).

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Dedicated, with love, to my parents and family.

-E.L.B.

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## ARCHAEOLOGY OF GLACIAL KETTLES IN NORTH-CENTRAL SUFFOLK COUNTY: A PRELIMINARY REPORT

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### ABSTRACT

A scatter of surficial lithic artifacts of Late Archaic and Woodland age and a rock-filled pit or hearth site, as well as a problematical artifact not previously reported from Long Island, are described from a series of now-dry glacial kettles in north-central Suffolk County. Their relationship to existing coastal sites is discussed.

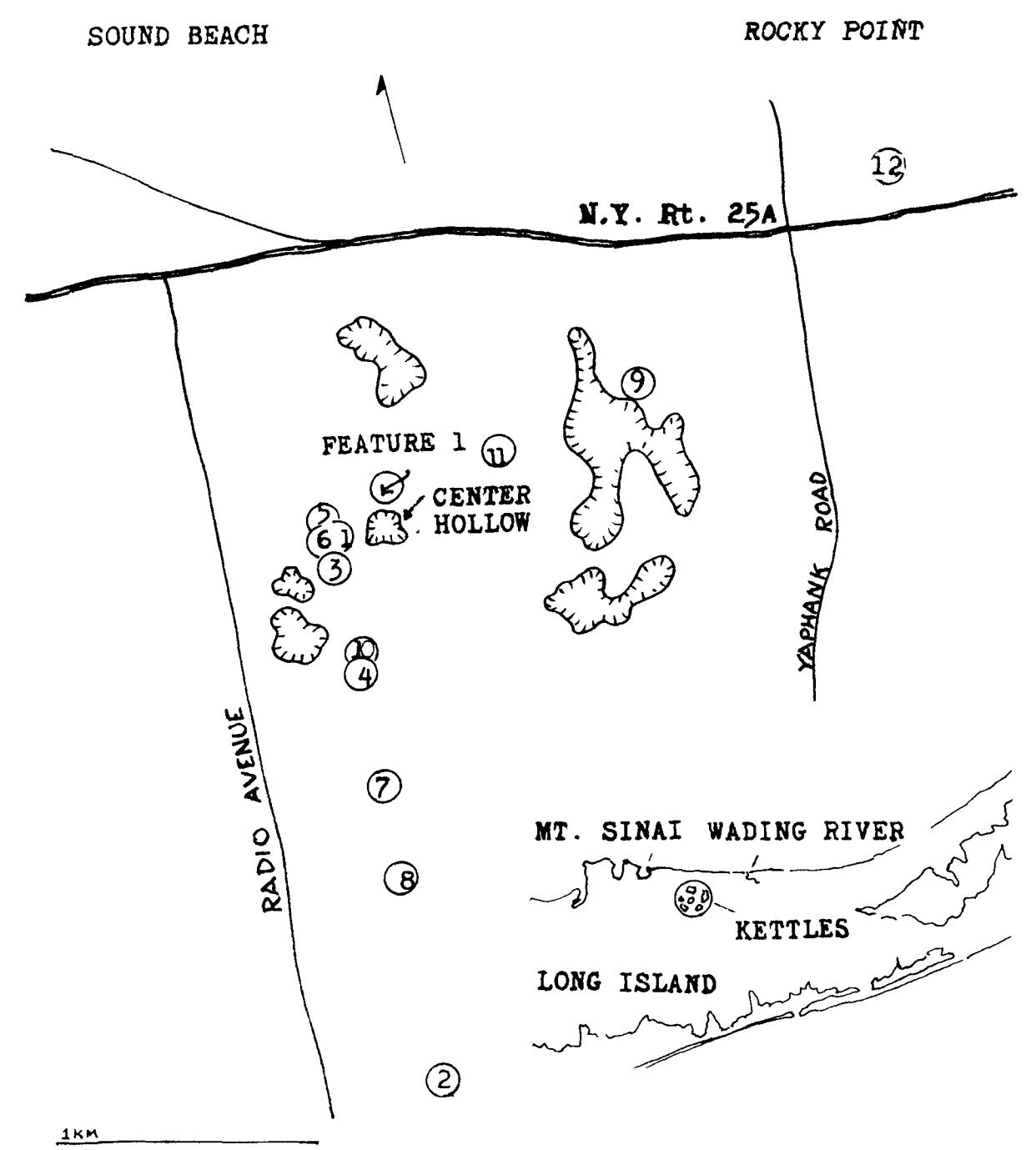
During the summer and fall of 1982, I had the occasion to study the natural history of a portion of the former RCA property in Rocky Point, Suffolk County, New York. This area, in excess of 5,000 acres, is just south of the Harbor Hill Moraine on an outwash plain that dips gently to the south. The northwestern portion of the tract is pockmarked with multiple, deep, glacial kettleholes, and on the eastern side it has several morainal gravelly hills, one more than 200 feet high. This region is just 2 km (1.25 miles) south of the north shore beaches on Long Island Sound and about 8.5 km (5.3 miles) west of Wading River and 6 km (3.8 miles) east of Mount Sinai Harbor, both of which communicate with Long Island Sound. The area is presently mostly wooded although there has been some clearing of woodland and cutting of firebreaks in decades past.

The area of archaeological interest in this report centers around the kettles of the northwestern portion of the described area: south of NYS Route 25A, west of Rocky Point- Yaphank Road and east of Radio Avenue. (See the Middle Island Quadrangle, 7.5 min. series, New York, Suffolk County [1967], U.S. Geological Survey).

There are six major dry kettles in the area, five of which form a general circular pattern around a smaller, nearly centrally located one. The deep western hole drops 85 feet below the surrounding land (elevation approximately 130 feet) to about 45 feet above sea level, and the central kettle descends 50 feet below the surroundings to a level of about 65 feet above sea level. A short bore hole in the bottom of central kettle (center hollow) showed a medium-brown, fine sand loam about 95 cm thick, at which point the sediment changed to a brown sand. The total bore depth was a little over one meter.

The water table in the vicinity of the southern portion of the Middle Island Quadrangle has fluctuated as much as seven feet over a period of 11 years (from 1956 to 1967) as indicated by the changes in lake margins noted in successive topographic maps. The present water table is approximately 84-90 feet below the surface in the vicinity of Radio Avenue (G. Geoghan, Geoghan and Sons, Well Drillers, Miller Place, New York; pers. comm., Nov. 1982). It would not be difficult to imagine water table fluctuations over much longer periods of time, than indicated above, that would have been sufficient to have made shallow ponds or marshes of the kettles described here. As ponds, lakes or marshes, the area would have been more productive as a game and food gathering area than it is at present and would have made semi-permanent human habitation possible in the otherwise waterless interior. These factors may help to explain the concentration of cultural remains found here.

Artifacts were collected from the surface by making traverses along the numerous unsurfaced tracks and trails that criss-cross this property. When a find was made its position was plotted on the local topographic map. Finds were common along the eroding sides of dirt roads and trails and on the gravelly high ground near the margins of kettles. When plotted on a map they clustered around the northwestern portion of the kettle hole area (see Figure 1). On closer inspection, a shallow basin or pit (Feature 1), about 65 cm wide and 30 cm deep, with fire-cracked and percussion tested cobbles and quartz debitage, was located on the north rim of center hollow, about 0.98 km south of Rt. 25 A and



**Figure 1.** Sketch map of the Kettles in north-central Suffolk County. The main Kettles are indicated by hachures. The hearth site (Feature 1) and collection sites are also indicated.

0.63 km east of Radio Ave. (See Plate 1 and Figure 1). It was exposed by extensive gullying in the coarse gravelly substrate on the rim of center hollow.

Artifacts, designated SB 46-O1 through 12, consist of: an ovoid biface or knife blade fragment of milky quartz; narrow, triangular stemmed quartz projectile points of the Wading River (Squibnocket) type of Late Archaic age (Ritchie, 1971: 131), which commonly have the pebble "rind" remaining on the



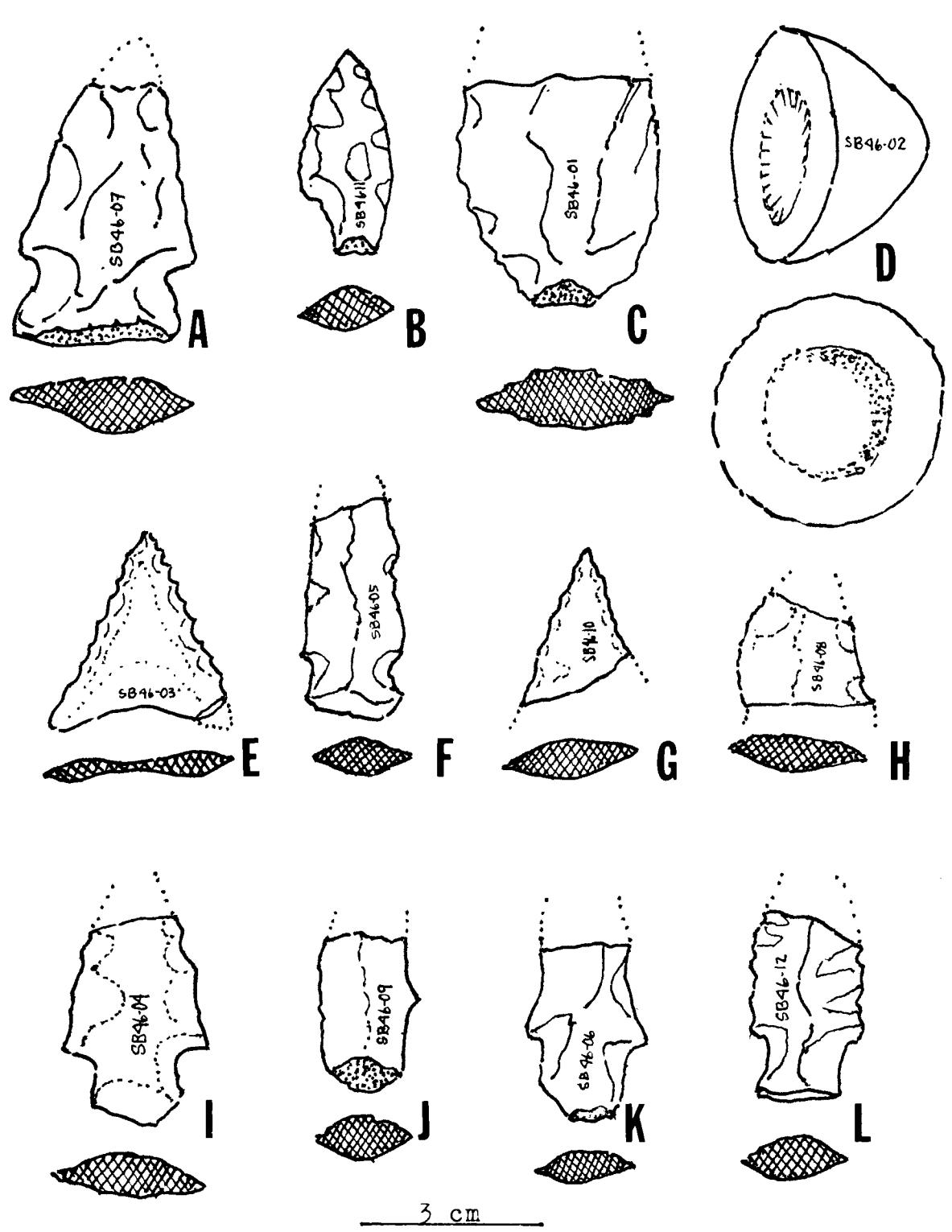
**Plate 1.** Exposed portion of Feature 1 on the side of a gully in the vicinity of center hollow.

base of the stem or shank; and Levanna triangle points which date from late Middle Woodland to Late Woodland times (op. cit.: 31). See Figure 2.

A cone-shaped object of an indeterminate metamorphic rock (SB 46-02) formed by grinding, gouging and polishing, having a base diameter of 3.7 cm and height of apex 2.7 cm, with a circular depression about 2 cm across and 2-3 mm deep at the center, was collected at point number 2 (See Figure 1 and 2). No similar artifact has been reported from eastern Long Island before (E. Johannemann, Archaeology Project, SUNY, Stony Brook; per. comm., Dec. 1982).

#### DISCUSSION

The surficial artifacts recovered from the kettlehole area and reported here closely resemble those found at sites along the coast. Gramly (1977) excavated a major locus of the Late Archaic Squibnocket Complex at Pipestave Hollow in Mt. Sinai, about 6 km (3.8 miles) northwest of the kettles, where he reported "stemmed, triangular and weakly side-notched points known for the Squibnocket Complex and allied manifestations" (op. cit.:23). In the southern sector of this site objects dating from Early and Middle Woodland age were found, including Levanna type projectile points. Ritchie (1959) and Wyatt (1977) investigated the Wading River site approximately 8.5 km (5.3 miles) to the northeast where Late Archaic and Woodland remains were reported. Wyatt (op. cit.: 401) recovered large numbers of projectile points mostly of the Wading River type. He reported the Woodland manifestation to be represented by substantial numbers of Levanna triangle points.



**Figure 2.** Lithic artifacts from the Kettle area. Artifacts E and G are Levanna triangle points; A, B, F, I, J, K, L are of the Wading River type; C is a biface or knife blade. All are of quartz except D which is composed of an indeterminate metamorphic rock.

Most archeological theorists have assumed that prehistoric coastal residents of Long Island practiced a seasonal round based on the hunting and gathering of wild foods and game that were available or abundant at different places and times of the year within well defined territorial limits (Ritchie, 1965:33; Snow, 1980:230).

Gramly (1977) and Gwynne (1982) have suggested, based on faunal remains, that the Pipestave Hollow site may have been occupied on an all year round basis by prehistoric Long Islanders. Gwynne found sufficient variety in the food resources available in the Harbor drainage for year round prehistoric residents but found it more difficult to establish the adequacy of the quantity of available food. In reference to the whitetail deer, which represented the largest category of remains in middens by weight, other than shellfish, she observed that it was not possible to determine the sufficiency of this important food supply (venison) without knowing the hunting area the aborigines may have exploited (Gwynne, 1982:263).

In view of the small size of the Harbor catchment (total area c. 9 km<sup>2</sup>) and the importance of deer for protein and hides in the prehistoric economy, it seems reasonable to expect that Late Archaic and Woodland hunters of the Pipestave Hollow site sought deer beyond the confines of the Harbor drainage.

In his discussion of the question of the seasonal or perennial occupation of the Wading River site, Wyatt (1977) takes a more traditional view in proposing a kind of central-based wandering pattern "with bayside sites being occupied periodically during several seasons of the year" (op. cit.: 406). He goes on to discuss the increasing awareness and importance of inland sites. "These sites occupy various environmental settings. Some on the banks of streams, inland ponds or kettle lakes and marshes. . . . The deposits are shallow, and food remains seem (perhaps because of soil acidity and exposure to cultivation) to be virtually absent. The cultural material consists primarily of projectile points and pieces of worked quartz. The points represented are the same as those found in the coastal shellfish middens. . . ." (*Ibid.*).

Wyatt suggests (op. cit.:407) that investigation of some of these less disturbed sites may reveal them to be the loci of food procuring and processing activities - "The effort is essential if an adequate knowledge of Archaic and later subsistence settlement patterns on Long Island is to be developed. At present the archeological data are highly skewed, emanating almost exclusively from coastal shellfish middens."

The similarity of artifact remains and the proximity of Pipestave Hollow, as well as suggestive pathways in the topography (the southeast trending contours of present-day Pipestave Hollow gully tend to lead a traveler along a path of low topographic resistance to the kettles only 6 km (3.8 miles) away) point to a cultural relationship with the kettles site during the Late Archaic and Woodland times. A more definitive answer, however, to the question of how this inland site may have functioned in the settlement and subsistence patterns of prehistoric natives that we know primarily through their coastal sites, such as Wading River and Mt. Sinai, must await more extensive study of the kettles area and other nearby inland sites.

## CONCLUSIONS

The type, condition and distribution of lithic artifacts indicate that the kettlehole area was used for the purpose of hunting and possibly gathering by Long Islanders of Late Archaic and Woodland times.

A partially exposed shallow basin or pit containing fire-cracked rock, percussion-tested cobbles and quartz debitage is interpreted as a probable hearthsitite.

Artifacts, when plotted on a topographic map of the area, tend to cluster around the center hollow (kettle) where the hearth site is located.

The kettles area may have been used preferentially as a hunting site because:

- a) of its relative remoteness from existing camps;
- b) its topographic variability in an otherwise near featureless outwash plain may have provided opportunity for intercepting game along game trails or for driving game animals to waiting hunters;
- c) at times in the past the kettles could have intercepted a higher water table and formed a series of shallow ponds and marshes that would have increased the potential for game and food gathering. The

position of the present water table as well as the position of the hearth site suggest that this was probable.

The question of how this site relates to existing coastal manifestations of similar age remains unresolved at this time and must await more extensive study of the kettle area and other similarly situated nearby inland sites.

Further study of inland sites, where little published work exists, is necessary to develop a more complete picture of the subsistence patterns of prehistoric residents of Long Island.

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