CULTURAL HISTORICAL BACKGROUND

Within the State of Delaware, the regional prehistory has been divided into four major time periods by Custer (1984, 1986, 1989) and Custer and DeSantis (1986): the Paleo Indian Period, circa 12,000 B.C. to 6500 B.C.; the Archaic Period, from 6500 B.C. to 3000 B.C.; the Woodland I Period, from 3000 B.C. to A.D. 1000; and the Woodland II Period, from A.D. 1000 to 1650. Following these prehistoric time periods is the Contact Period, from 1600 to 1750, which terminates with the aboriginal populations' shift to a more Euroamerican way of life. The Historic Period overlaps the contact period somewhat, with early Euroamerican settlement in the project area beginning in about the 1730s.

Paleo Indian Period - 12,000 - 6500 B.C.

This time period dates to the terminal Late Pleistocene and early Holocene eras, a time that marks the final retreat of the glaciers and the beginning of the gradual development of modern climatic conditions. The earlier part of this period falls within the Late Glacial Episode (up to 8000 B.C.), a time when the Middle Atlantic would have been affected by the northern ice sheets. A mosaic of different vegetation communities--grassland settings within a broader coniferous matrix dominated by spruce, with deciduous elements in the riverine zones--apparently supported an mixture of mammals, some now extinct (mastodon, mammoth, woodland musk ox, giant moose), and some modern (white-tailed deer, caribou, and elk); some of these mammals were browsers, while others were grazers. The latter part of the Period, falling within the Pre-Boreal/Boreal Episode (8000 B.C. to 6500 B.C.), marked the transition between the end of the Pleistocene and the beginning of the Holocene. This was characterized by a reduction in grasslands and a spread of mixed woodland settings dominated by boreal species, particularly pine. This environmental change resulted in the extinction of many of the Pleistocene megafauna dependent on open grassland habitats and a redistribution in habitat areas for those animals affected by the reduction in forest edge settings.

Within these settings, the Paleo-Indian lifestyle is assumed to have been one of both hunting and gathering, but with a marked emphasis on hunting. The tools in general appear to be for the acquisition of game animals and for the processing of these animals and their by-products. These tools include projectile points for killing, bifacial knives for butchering, and various flake tools for scraping, cutting, and piercing meat, bone or hide. Diagnostic artifacts include such spearpoint styles as the Clovis, Mid-Paleo, and Dalton-Hardaway points and, towards the latter part of the period, corner and side notched styles such as Palmer, Amos and Kirk points.

A preference for a high quality cryptocrystalline lithic material is one of the diagnostic features of the Paleo Indian tool kit, and the careful resharpening and maintenance of tools was common. This reliance on such high quality lithics had important implications for Paleo Indian settlement patterns. Base camps were located in the vicinity of quarries, with hunting camps and special resource procurement sites radiating out from the base camp/quarry locale (Gardner 1989). A fairly mobile lifestyle in which groups focused on the quarries and on game-attractive environments is hypothesized, with a society organized by the interaction of single and multiple family bands.

A number of Paleo Indian sites are known for northern Delaware, but because of the absence of quarries and favorable environmental settings within the project area, it was not expected that any Paleo Indian sites would be located.

Archaic Period - 6500 - 3000 B.C.

The continually changing climatic conditions resulted in the emergence of essentially modern environmental conditions by approximately 6500 B.C. A corresponding change in the adaptive strategies of aboriginal groups living in the Middle Atlantic region is also evident in the prehistoric record. Most important to these early settlers was the extinction of the large game species caused, at least in part, by the reduction in the grassland environments and their replacement by the closed mesic forests of oak and hemlock of the Atlantic Episode (6500 B.C. to 3100 B.C.). A general warming trend and an increase in precipitation favored the expansion of the dense mesic forests; swampy and boggy areas were probably widely distributed in areas of poor drainage. Faunal components were essentially modern, with deer and turkey figuring as major game animals. Thus the aboriginal hunting patterns adapted to the habits of these more solitary species, and the gathering of plant foods became increasingly important in their subsistence systems. This change in subsistence patterns is indicated in the archeological record by the increasing presence of various types of ground stone tools such as axes, gouges, and grinding stones, by plant processing tools such as mortars and pestles, and by a variety of new projectile point styles (bifurcated and stemmed) made from a wide variety of lithic materials.

Archaic sites are located in a wider variety of environmental settings and in different locations than are the earlier Paleo Indian sites (Gardner 1987). Many of the new site settings are related to emerging environmental zones associated with the spread of the mesic forests, variations in the water table, and sea level rise. This increase in the variety of environmental settings would have been reflected in a concomitant increase in the variety of seasonally available resources. Settlement patterns were now characterized by three types of sites: macro-band or multiple family base camps in areas of maximum habitat overlap; micro-band base camps, apparently occupied by fewer family units; and special resource procurement sites, exhibiting a more limited range of activities oriented towards the extraction of locally available resources. A fusion/fission social organization, based on seasonal activity, is apparently represented by these different site types in which micro-band and special resource procurement sites radiate out from the base camp. In the Piedmont a more complex system of functional site types is represented, perhaps an adaptation to the more varied resource settings resulting from the greater topographic relief than one finds in the Coastal Plain of Delaware (Custer and DeSantis 1986).

Areas of high probability for Archaic sites in the Piedmont would be low rises located around marshy or swampy areas away from major drainages and locations at sheltered locales along smaller streams which allowed the utilization of available resources such as plant or animal foods or lithic raw materials.

Woodland I Period - 3000 B.C. - A.D. 1000

This period is correlated with the Sub-Boreal Episode (3110 B.C. to 810 B.C.) and the Sub-Atlantic Episode (810 B.C. to A.D. 1000). The Sub-Boreal Episode begins with a pronounced warm and dry period characterized by an increase in the xeric oak/hickory forest cover and a waning of the mesic forests, at least in the northern portion of Delaware, an increase in grassland areas, and a decrease in the rate of sea level rise sufficient to allow the formation of estuarine resources. During the Sub-Atlantic Episode, a cooling trend accompanied by increasing precipitation led to the development of forest communities that approximate modern distributions. The northern Piedmont and the Fall Line Zones would have fallen within the oak/chestnut biome.

By 3000 B.C., then, the rising sea level and climatic/environmental changes led to a reorganization of the prehistoric way of life. This rise in the ocean's water level resulted in

the development of brackish water estuaries along the continent's coastal areas, creating a rich environmental zone that could support the occupants of large base camps on a seasonal schedule; these base camps most likely represent a population that was semi-sedentary for a large part of the year. An increase in the overall population for the region may be noted for this time period. Earlier groups seem to have had relatively mobile lifestyles associated with flexible social organizations and an easily transported tool technology. Now one may recognize, in addition to the more sedentary lifestyle and the large population aggregates, a less portable storage technology, elaborate exchange systems, and complex burial patterns (Custer and DeSantis 1986).

The 3000 B.C. to A.D. 1000 time range is based on similarities as delineated by Custer (1986:87; 1989:143, 144):

1. The development of estuarine and riverine adaptations that are stable and intensive enough to produce large macro-band base camps in the zone of freshwater/saltwater interface and along the major drainages;

2. Population growth (or more intensive site utilization) at single site locations much larger than Archaic macro-band base camps;

3. The appearance of foraging and collecting adaptations in areas less productive than the estuarine and riverine settings;

4. The participation in exchange networks that result in the movement of raw materials and finished artifacts across large areas;

5. The occasional participation in complex mortuary ceremonies including the creation of cemeteries with rich grave offerings.

The Woodland I tool kit is characterized by broad-bladed, bifacially chipped broadspears (the Savannah River point forms), as well as by the appearance of a solid container technology. This technology is first apparent in the appearance of soapstone, or steatite, bowls, which were later replaced by ceramic vessels. Ground stone tools continue to be a part of the tool kit, and there was an increase in the number and variety of such tools as adzes, gouges, celts and axes. Participation in regional trade networks also seems evident for this era, as indicated by the extensive use of nonlocal materials such as argillite, rhyolite and steatite, used both for tools as well as for non-utilitarian items. This is most evident at Delmarva Adena sites.

The settlement pattern exhibits an increase in the number and variety of procurement sites as well as an increase in the size of macro-band base camps that appear to represent sedentism, characterized by semi-subterranean pit houses and storage and/or trash features.

Woodland II Period - A.D. 1000 - 1650

The environmental setting of the Woodland II Period is essentially modern in character. It is at this time period that a stable agricultural adaptation appears to have developed throughout much of the Middle Atlantic region, accompanied by more sedentary lifestyles (Custer 1989:298). While a movement to the more arable lands in the floodplains of major drainages accompanied by the appearance of more permanent structures and large villages is typical for the Middle Atlantic at this time, the Delaware Piedmont continues to exhibit many of the characteristics of Woodland I settlements. Indeed, many Woodland I settlements were also occupied during the Woodland II Period, with few changes in overall lifestyle and artifact assemblages. A shift to large village sites has not been found in the

Piedmont Uplands (Stewart et al. 1986; Custer and Cunningham 1986:24). Settlement patterns continue to focus on areas of reliable water sources; the smaller campsites that are found for this time period probably represent short-term exploitative sites. There appears to be a breakdown in the trade and exchange systems that existed during the Woodland I Period, possibly caused by the disruption of social networks as a result of fissioning communities, resulting in fewer and less distinctive non-local materials to be found at sites. The lack of non-local lithics may also be related to the changing settlement system at the source areas (Custer 1984).

It is the various new ceramic types, with their complex decorations including incised lines and cord-wrapped stick impressions, that characterized the Woodland II Period in Delaware. These wares evolved out of the earlier Woodland I ceramics. Crushed shell Townsend Ware with fabric impressed exterior surfaces and Minguannon ceramics tempered with sand, grit and crushed quartz with smooth or cord marked surfaces are the primary types. Townsend ware is associated with the Slaughter Creek Complex in southern Delaware, while the Minguannon complex is found in New Castle County and surrounding areas. Small triangular projectile points that appeared in late in the Woodland I period become ubiquitous, and indicate the use of the bow and arrow. These are generally made from high quality cryptocrystalline stone (Custer 1984).

High probability areas in the Piedmont Uplands would include well-drained terraces near high order streams and stream confluences, sinkhole/spring complexes, upland slopes near ephemeral streams, low order stream floodplains, particularly swampy areas, and areas near lithic sources.

Contact Period - A.D. 1600 - 1750

It was during this time that the Delaware Indians developed an active interaction with the newly arrived European traders and settlers. Ethnohistorical accounts chronicle a rapid disruption of the Indian way of life brought about by deculturation resulting from a combination of factors: the expulsion of the Indians from their land; introduced European diseases, to which the indigenous populations had no immunity and which frequently struck down the people even before direct contact was made; a new dependence on European manufactured goods; and an increase in inter-group warfare due to competition for access to fur trading (Custer 1984).

It may be that, because the fur trade moved swiftly to the west and Native Americans in Delaware were blocked to the west by the Susquehannocks, there was less participation in the European trade spheres in this area. Large quantities of trade goods are not found in Delaware sites, making contact period sites difficult to recognize. The artifact assemblages are thought to otherwise resemble Woodland II sites. Only two contact period sites have been excavated in New Castle County (Custer and Silber 1995:16).

At this time in their history, the Indians in the northern part of Delaware were a part of the rather loosely defined Delaware Nation. All of the groups belonged to the larger linguistic grouping known as the Coastal Algonquian, of which Delaware is a subdivision. The Delaware Nation consisted of widely scattered, rather fluidly organized and relatively independent local groups that seemed to be organized at a band or tribal level, lacking large scale organization and large communities. During the later part of this period, Native American groups began to leave areas where Europeans had established relatively dense settlements, further disrupting Indian traditions and cultural institutions (Custer 1984). It was much later in time that the shattered remnants of these groups were able to form a cohesive Pan-Delaware polity.

Historical Period

The earliest colonial settlement in Delaware was by the Dutch in 1631, with the establishment of a whaling station near Lewes; this was soon destroyed by the Indians within a year. New Sweden was established in 1638 by Swedes and Finns, who settled primarily on the western shore of the Delaware River in a string of small settlements as far north as present day Philadelphia. Small communities grew up at Fort Christiana, in the vicinity of what is now Wilmington, and at Upland (now Chester), Pennsylvania. In 1651, the Dutch West India Company's Fort Casimir was set up, ostensibly for the purpose of trade with the Native Americans, at what is now New Castle. When the Swedes took this fort in 1654, a conflict began that resulted in Dutch control of the colony. In 1656, the Dutch West India Company sold its interest to the City of Amsterdam, and the town of New Amstel grew up around the former Fort Casimir (Munroe 1984:21-28).

In 1664, the English gained control of the colony and, for nearly two decades, the area was governed as a part of New York. Conflicting claims to the western shore of the Delaware River were made by the Duke of York and Lord Baltimore. The three counties of Delaware were part of the area for which proprietary rights were granted by the Duke of York to William Penn in 1682. During this time, the area north of New Castle still maintained a high population of Swedes and Finns who had settled there previously, while the Dutch population was more prevalent further south (Munroe 1984:29-33).

New Castle County was under the control of Philadelphia, both economically and politically. Philadelphia, established by Penn in 1682, had a population of 6,000 within a decade and, as planned, became a center for commerce, shipping, and government. Philadelphia so dominated the region that other urban centers were slow to develop. Wilmington and Lancaster did not receive borough status until 1739 and 1742 respectively. Philadelphia became the chief port for export port for grain and flour produced in the region, including New Castle County (Lemon 1967). Small commercial centers began to grow up as the population density increased, and shipping points, small towns such as Newport and Christiana, through which goods were channeled to Philadelphia, began to appear. Grain and flour were also shipped from various landings along the Delaware River. Settlement patterns at this time can be generally characterized as scattered family farmsteads along the major drainages (Weslager 1961).

Although subsistence farming was important, with farming oriented to the production of goods for household use, the production of goods for consumption for the growing international market was always a factor (Lemon 1972:2). Wheat and flour were the primary agricultural exports by 1700, and wheat continued as the primary market crop through the 18th century. In the 18th century an estimated 80 to 90% of the New Castle County population were participating in farming (Hoseth et al. 1990). Agricultural production for home consumption can be described as general mixed farming; most farms produced several types of small grains, corn, flax and hemp, and vegetables, and the majority also had substantial orchards. Cattle and pigs were generally kept, and horses were used more often than other animals for farming operations and hauling. A few sheep were kept. According to agricultural reformers around the turn of the 19th century, yields on the area farms were low and cattle were of small size (Lemon 1972:150-166). Many farmers were also craftspeople, making products for use by the local population (Lemon 1972:6). The 1850 census for Brandywine Hundred shows a relatively large population of Irish born weavers, spinners and seamstresses.

While milling along the Brandywine and other streams must have begun simultaneously with farming, it began to develop as an industry by the 1730s (Hoffecker 1973:8). Mills and other manufacturing operations were generally run by a single proprietor during the

1700s, and the business locations were dispersed throughout the countryside. Wheat was shipped to milling sites through an extensive coastal trade employing shallops or other small boats. Iron making began about 1725 at Iron Hill in Pencader Hundred (Coleman et al. 1990:9), and later in the century cotton milling developed (Lemon 1972:30).

Water was the primary mode of transportation in the late 17th century, and major land grants had access to a water course for transportation (Hoffecker 1977). Although overland transportation was not well developed, the project area lay along one of the early roads. A reference to a sixty foot wide road is found in a deed to the Blue Ball site property from 1708/9 (C3:395). Overland roads multiplied and existing road conditions improved through the eighteenth century with a 1752 and 1762 Act of the Legislature (Laws of the State of Delaware 1797). These acts called for the construction and maintenance of roads and bridges, with the highest priority to the maintenance and improvement of a system of King's Roads.

The success of the Lancaster and Philadelphia Turnpike in the 1790s spurred the development and expansion of other turnpike roads. Toll roads such as the Gap and Newport Turnpike (authorized in 1807 in Pennsylvania and 1808 in Delaware, the Wilmington and Lancaster Turnpike (authorized in 1808), and the Kennett Turnpike (1811), and the Wilmington and Great Valley Turnpike (1811) were developed in order to accommodate the burgeoning commercial trade among these new towns. These roads were generally built on existing public roads that were improved, although sometimes sections may have been built on new alignments. Toll intervals and rates were set by each company and were not standard from one road to another. A major railroad was completed in 1838 that linked Philadelphia, Wilmington and Baltimore, and quickly became the major transportation route across the Delmarva peninsula (Coleman et al. 1990:21)

The Wilmington and Great Valley Turnpike Company was formed by an Act of the General Assembly of Delaware On January 23, 1811. Various documents relating to the turnpike are available at the Delaware Historical Society Library in Wilmington. The company's charter directed it to make a road from Wilmington through West Chester to the turnpike road in the Great Valley of Pennsylvania. The road was to lie east of Brandywine Creek and to be at, near or upon the track of the Concord Road at the state line in order to connect with the public road through West Chester. The road was to include an artificial road at least 20 feet wide, meaning this part was bedded with wood, stone, gravel, clay or other materials that would create a solid foundation and then faced with hard substances to create a firm, even surface. This would be flanked with what were commonly called summer, or unpaved, roads. The maximum width was 100 feet. Toll rates for a five mile stretch of road were set for various wheel sizes, number of wheels and horse, mules, oxen and so on. These rates were not standard from one road to another. Concord Pike became a public road in 1911, and was paved in 1919 (Hoffecker 1973; KFS 1994).

In the first half of the 19th century, overland transportation improved in New Castle County with the construction of turnpikes road and railroads. These improvements were critical to the development of agriculture and industry. New Castle County remained largely agricultural in the 19th century, with its major industries located along the Brandywine. Farmers at the beginning of the century continued to use a four field system of cropping that had been followed during the late 1700s. The use of fertilizer was infrequent and yields were low, as repeated tillage had depleted the soil. In 1818, the New Castle County Agricultural Society was formed. Their influence in the use of machinery and fertilizers eventually turned the county into one of the most productive farming areas and, at the same time, improvements in transportation allowed successful marketing of the farm products (Coleman et al. 1990:20-22).

In general, tenant farming appears to have been more common in Delaware than in the rest of the United States. By 1900, over 50% of the population of Delaware were tenant farmers, a mode of farming that remained a dominant practice into the twentieth century (Hoseth et al. 1990). A farm rental contract in general use for most of the 19th and early 20th centuries divided the proceeds for crops equally between landlord and farmer. The proceeds from keeping livestock, including dairy cattle, went to the tenant, and usually all of the hay was his as well. The landlord provided the land and was responsible for repairs and improvements, insurance and taxes on his property. The tenant provided equipment and livestock and paid all other expenses, including insurance and personal property taxes. Seed and fertilizer were shared expenses. There may have been little difference between yields and receipts on tenant and owner operated farms and, since many farmhouses had originally been built for owners, the quality of housing may not have been very different for the two groups (Bausman 1933).

The land in the vicinity of Concord Pike and Rockland Road appears from an early will (G1:225) to be part of the Penn family holdings known as Rockland Manor. The property on which the Blue Ball Tavern is located became part of a plantation known for many years as Chestnut Hill. One later deed (F2:245), in recounting the history of what appears to be 100 acres at Chestnut Hill, states that the land was obtained by a 1678/9 warrant by Hans Peterson from the court of New Castle County. A deed dated May 5, 1681 shows the transaction between Peterson and the 'naturall owners & Indian proprietors', and is signed by Ephraim Herman as witness. A Land Survey map made in 1684/5 for Vanderveer's land along the Brandywine shows that Hans Peterson owned the adjacent land that appears to include the area where the Blue Ball Tavern and later the Blue Ball Dairy were built. The name "Blue Ball" comes from a blue ball that was reputedly pulled to the top of a pole to signal stagecoach drivers that passengers were to be picked up. The map also shows a King's Road along the east side of the Brandywine, but this does not appear to be in the location of Concord Pike, which would traverse Peterson's Chestnut Hill tract.

Peterson, who lived at Shellpot Creek and was a founding member of the 'Old Swedes' Trinity Church, sold the Chestnut Hill tract to Cornelius Empson. Two deeds record this transfer (A, Vol. 1:113 and Q, Vol. 1:598). Empson was a Quaker who came from Yorkshire, England and settled at east of the Brandywine at Brandywine Village in a Friends Community. His residence was listed at Goule Grange in New Castle County at the time he deeded the west half of the Chestnut Hill plantation (where the Blue Ball Tavern and, later, the Blue Ball Dairy would stand) to his second son Ebenezer in 1708/9 (C, Vol. 3:395).

A deed recorded in 1722/3 shows that Israel Peterson, son of Hans, bought the Chestnut Hill tract from Empson (G1:225). Israel Peterson died intestate, leaving eight children, who sold their shares of the tract to Joseph Mortonson in 1749 (F, Vol. 2:297). Joseph was married to Regina, one of Israel Peterson's daughters, so in essence, the property stayed within the family. Land Survey records from 1745 show draft maps of Joseph Mortonson's land and surrounding properties, with what would come to be the Concord Pike marked as the "Road to Brandywine Ferry."

In the 1771 will of Joseph Mortonson, the Chestnut Hill plantation and dwelling house were left to his only son Joshua (L1:140), and in 1772, his mother, Regina, transferred her interest in the property to him as well (F2:246). Five years later, Joshua, a yeoman, sold ten acres on the west side of the Concord Road (the Blue Ball site is located on this tract) to Andrew McKee, Jr., the son of a prosperous farmer, Andrew, Sr., who lived on Concord Road a mile or so to the south at Brandywine Village (F, Vol. 2:247; Scharf 1888:661). During the same year, Andrew Jr. sold Mortonson a nine acre tract just north of this, for the same amount of money. Andrew also owned an approximately 50 acre tract adjoining

the west side of his purchase. The McKees were part of a large influx of Scotch-Irish immigrants who came to the region in the period from 1725 to 1775 (Munroe 1954).

Mortonson sold Chestnut Hill plantation to John Dickinson, whose place of residence is listed as Wilmington, in 1785 (F2:294). In 1786, McKee and his wife Mary sold the ten acre tract (Blue Ball site) and 50 acres adjoining it, all on the west side of Concord Road, to John Dickinson (F2:510). Other property in the area was also purchased by Dickinson, and his tax assessment from the years 1802 through 1804 listed five parcels, four of which have buildings, and having a total worth of $3,748.00. His wife, Polly (Mary) Norris, died in 1803 and he died in 1808. His will bequeaths to his daughter Maria land in the project vicinity, including the 100+ acre Mortonson property, the 60 acres west of Concord Road acquired from Andrew McKee (land he got by patent from the state that adjoins the McKee property), and 100 acres purchased from William and Mary Clark. The amount of land Dickinson owned in Brandywine Hundred, according to tax assessments from 1803-4, totaled 897 acres.

Dickinson's daughter, Maria, married Albanus C. Logan in 1808, just prior to her father's death. Maria D. Logan, who resided in Philadelphia, left the Blue Ball Farm in trust for her daughter, Mary Morris Logan. Her will directed that the property be sold by the trustees for her estate, which was carried out in 1862, and the proceeds invested for her daughter and her issue. The Chestnut Hill property on the east side of Concord Road was willed to Maria's son, Dr. John D. Logan of Philadelphia. He and his wife Susan sold the farm to Jacob R. Weldin in 1862 (P, Vol. 7,:449), who, with his son, J. Atwood Weldin were dairy farmers; the family retained the farm until 1934 (Taylor et al. 1989:217). An 1849 Rea and Price map show a smithy on that same side of Concord Pike (Figure 5).

In her will, written in 1859, Maria D. Logan referred to the Blue Ball tract as being in the tenure of Joshua Hutton and Hiett Hutton. The 1860 Lake and Beers Map of the Vicinity of Philadelphia and Reading (Figure 6), shows the name of Dr. J. D. Logan, at three structures in the area, including Blue Ball, Chestnut Hill and a structure northwest of the Concord Pike and Rockland Road intersection. After Maria D. Logan's estate sold the Blue Ball property to Jonas N. Miller in 1862 (Q7:247), he sold it immediately to Henry, Eleauthere and Lammott DuPont of Christiana Hundred (Q, Vol. 7:247 & 250). A plat map of DuPont Powder Company holdings shows two tracts purchased from Miller; the larger 185 acre tract covers much of the project area.

Letters from 1908 show A. I. DuPont negotiating to purchase the Blue Ball Farm property from the E. I. DuPont de Nemours Powder Company (A. I. DuPont Papers, Box 59, Folder 3). The main part of the farm, Tract 48, is stated to be about 185 acres 55 perches and valued at $300 per acre, with two houses (#72 and #73) for a total value of $60,873.99. A plat map made by Robert Frazier in 1889 accompanies this correspondence and shows the name Jonas N.(?) Miller on Tracts 48 and 62. A 1903 map of the Brandywine Properties owned by the E.I. DuPont Nemours and Company (Frazer 1903) shows a Jonas Miller residing on the property (Figure 7). As this is forty-one years after his initial purchase, it is not certain weather it is the same Jonas Miller or his son. Negotiations also included Tract 65 (33 acres 47 perches), the northwest corner of the estate at Rockland and New Bridge Roads, and Tract 62 (58 acres) on the southwest side of Tract 48, both valued at $200 per acre. The purchase also included an 80 perch tract along Rockland Road. Part of Tract 62 was offered in exchange for Tract 38, and Tract 59 (the Hunter Tract) is also involved. The locations of these properties are not shown on the accompanying plat map. The final price for the properties was stated to be $84,571.25; the total acreage was not stated, but should have been about 278 acres. The Blue Ball Tract (#48) was actually transferred to A. I. DuPont in 1909 from E. I DuPont de Nemours Powder Co., registered in New Jersey (D22:155). Also in 1908, DuPont purchased the

Bird-Husbands property of approximately 14 acres (D22:160). There was reputedly a stone and frame bank barn on this property (Brizzolara 1989).

In 1909-1910, DuPont built the Nemours Estate. In 1914, he had the Dairy Barn constructed on the Blue Ball property. The milk house (sometimes referred to as the dairy) was also built at about that time, and appears on the Price and Price 1917 map of the Nemours estate. New Castle County was the largest dairy producer in the state from the 1850's until 1945 (Michael 1985). In 1900, New Castle County was referred to as a "dairy county" (Reed 1947); the peak years for dairying in the Delaware Piedmont were between 1914 and 1928 (Hoffecker 1982). Just prior to this, from 1900 to 1910, the value of farm property increased 55.2% statewide, the greatest gain since 1860. In the following decades, 1919-1940, the land in New Castle county farms decreased by 15%, but the number of farms showed a 5.7% increase (Michael 1985). During this time new and innovative farming techniques were being introduced throughout the county. For example, two articles that appeared in 1914 editions of the *Evening Journal*, one entitled "Concrete on the Farm" (January 8) and another entitled "To Pasteurize Milk" (January 10), present some of these new ideas and techniques. Given his wealth, it is likely that A. I. DuPont was one of the first in the county to employ such ideas.

During the first years of operation, the dairy was managed by DuPont's chief farmer, A. E. Whittington (KFS 1994). As of 1920, the farm, as well as some of DuPont's other properties, was under the management of E. M. Davis, whose office was located in Wilmington. A group of letters from 1920 indicates that the Blue Ball farm, in addition to owning the 21 cows listed for the dairy operation, had 11 horses, 45 sheep, 12 turkeys and 311 chickens and other poultry. Farming equipment such as plows, harrows, planters, machinery to harvest and process grain, wagons, tractors and smaller tools are also listed. It appears that a man by the name of Bishop supervised the farm in 1920. In 1921, Bishop was relieved of his responsibility for the dairy and poultry operations, which were turned over to a Mr. Thurber and an unnamed helper. The letter from DuPont to Davis in which this change was discussed indicates that much, but not all of the produce is used by the Nemours estate. Another letter concerning the price of eggs charged to Nemours and to other purchasers also suggests that some of the farm produce was sold to other parties. In the fall of that year, Bishop was replaced by a superintendent named Andrew Fullarton.

Subsequent records show that Maxey Bland was proprietor of Blue Ball Farm from 1926 until about 1935, when DuPont died. A letter to A. I. DuPont dated January 10, 1927 includes a financial report for the farm for the year 1926 and an inventory of equipment listed by building, including the furniture in the house and a list of crops in the ground. DuPont had moved to Florida in 1926, although he returned to Nemours frequently. Bland and DuPont shared the profit of $1,739.95 equally, and Bland paid $5.00 rent for the farm. Under the list of products sold, dairy products (milk, buttermilk, cream and butter) brought in $2,216.11, while wheat accounts for the second largest receipts at $1,787.24. Other farm products included poultry and eggs, corn, potatoes, hay, straw, calves and hogs. The inventory for the house is as follows: four single cots with mattresses, five single beds complete, one single bed without covers, three mirrors, three bureaus, five bedroom chairs, four bedroom tables, six dining room chairs and a dining room table. The kitchen had a table, three chairs, a stove, two rockers, an ice box and a lard press. In the cellar were one ton of coal and two ash cans. This inventory can be found in Appendix I. The number of single beds and cots suggests that several people were occupying the house simultaneously, and that these inhabitants may have been the farm workers. A 1920 correspondence (AID papers, Washington and Lee University) from DuPont's manager for the Blue Ball Farm, E. M. Davis, mentions the "expense of the keeping of a boarding-house" as having been eliminated. However, two 1921 correspondences (AID papers, Washington and Lee University) between DuPont and Davis refer to "Bishop's house" and

"Bishop's stay in the present house". Copies of these correspondences are included in Appendix II.

A similar financial report and inventory was prepared for 1928, and the farm figures and profit are similar. The report for the year 1931 showed a much lower profit of $297.99, and the need to replace a milking machine and a horse were discussed. The 1934 farm inventory (Appendix III) indicates that the farm was still operating at a similar level, although no report or letter exists, and the 1935 record has no numbers for the categories in the inventory. A 1937 land classification map (University of Delaware special collections, #02116) indicates this property as "Somewhat less intensively used". After Alfred I. DuPont's death in 1935 the property went to Almours Securities, Incorporated, a Florida-based corporation, and a year later it was transferred to the Florida National Building Company. This latter company merged with the St. Joe Paper company in 1942.

In an interview with Jim Meany (personal communication, Anderson 1997) at the High Point Dairy near Talleyville, it was learned that the subsequent dairy operator was named Jones. No dates for his tenure at the dairy are known. From 1943 until 1977, the farm was run by Harvey Gooden (who died in 1974) and his son Ruthford. The Goodens paid rent to the St. Joe Paper Company, and were not connected with the Nemours Estate. The crops they raised were used for cattle feed, the livestock belonged to them, and the dairy products were sold by them to independent businesses. After Ruthford Gooden was asked to cease operations by the paper company in 1977, he moved to another location, and the house and all the farm buildings except the Dairy Barn were torn down (KFS 1994).

Included with the HABS documentation are aerial photographs spanning the years 1932 to 1992 that show the Nemours estate and the Blue Ball Dairy. In the photo dating from 1926 (Dallin collection, Hagley Museum), a view from the west, the building layout appears to be very similar to that shown on the 1917 map except that the northern extension of the barn is gone and the lane had been extended along that side of the barn. The area thought to be the orchard appears to be a grove of mature trees instead. Photos taken from similar positions from 1932 and 1935 (Dallin Collection) appear to be the same. By 1944, in a photo taken almost directly overhead (Aero Service Corporation), the building marked as a sheep shed on the Price and Price map has been demolished, but the others still appear to be standing. A small square, possibly a foundation, appears near the center of the lane and to its east. Photographs from DelDOT taken in 1992 show the land in a similar condition to that of the present day (Figure 8).