
HISTORIC CONTEXT ON FAUQUIER COUNTY'S DAIRY FARMS



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Project Introduction and Objective

The focus of this study is the common dairy farm resource type, which is located throughout Fauquier County. These farms are often operated by a single family and include several distinctive building types and forms. The majority of Fauquier's dairies are located in the southern part of the county, although a few dairies also operate in the northern part. This context provides an overview of the historical development of dairying in Virginia with a focus on Fauquier County. In addition to the historical background information, this context discusses the planning and layout of dairy farms and the buildings and landscape features typically seen on Fauquier dairy farms. The last chapter focuses on the potential of a farm to qualify for listing in the National Register of Historic Places (National Register) and presents the likely Areas of Significance, as well as eligibility and integrity requirements for such properties. The Virginia Department of Historic Resources (DHR) in Richmond, following guidance from the National Park Service (NPS), governs such determinations of eligibility.

Although some Fauquier dairy farms have been documented through environmental reports, cultural resource studies, and other means, no study has focused primarily on the dairy farm cultural resource type and the dairy farm landscape. This context draws on primary and secondary sources for information on dairy farms and resources associated with these farms. This document is not an exhaustive study of dairy farming in the county; rather, the goal is to provide a background against which dairy farms in the county can be evaluated for their historical significance and their potential to qualify for listing in the National Register. The study is also intended as a tool to provide guidance on identification of these resources and to assist planners and local historians as they seek to preserve these resources.

Background Research and Methodology

This study primarily focused on research and analysis with a limited amount of field survey. Previously recorded resource information was gathered from the archives of the DHR. Field survey included visits to several farms, interviews with owners, and taking photographs of dairy farm resources. Site visits also assisted in developing and refining narrative descriptions of associated dairy farm resources, layout, and in the development of evaluation criteria. Published materials and industry-related periodicals provided information on the general history of dairy farming in Virginia and Fauquier County, and government-issued bulletins and reports, as well as periodicals, provided information on construction methods and guidance for the development of dairy barns.

The authors conducted research at several repositories, including the Library of Virginia and the Virginia Historical Society in Richmond, and the Main Branch of the Fauquier County Public Library and the Fauquier County Historical Society in Warrenton. In addition, interviews were conducted with Fauquier County dairy farmers and landowners (Kenneth Smith, Patty Leonard, Ronald Leonard). The Fauquier County Agricultural Development Office and the Virginia Polytechnic Institute Cooperative Extension Agent were also contacted for information. Statistics on farming, both historical and modern, were obtained through the records of the Virginia Dairymen's Association, the Virginia Department of Agriculture, and the Fauquier County Agricultural Development Office.

PART I: HISTORY

Introduction to Fauquier County

Location and Physical Description

Fauquier County is located in the Upper Piedmont cultural region of Northern Virginia at the transition between the Piedmont region and the Blue Ridge Mountains, with the Shenandoah Valley lying to the west (Figure 1). The county is bound by Rappahannock and Culpeper counties on the southwest, Stafford County on the southeast, Prince William County on the east, Loudoun County on the north, and Clarke and Warren counties on the northwest. The Rappahannock River runs along the southwestern edge of the county, and the Blue Ridge Mountains are located to the west. Major roadways in the county include Interstate 66 and U.S. Routes 15, 17, 29, 50, and 55. Secondary roadways often follow the routes of historical roadbeds and paths; many narrow, unpaved roads lead into the valleys and foothills and serve as an interior transportation network within the sparse rural development, although in recent decades modern residential development has occurred throughout the county.

The current physical characteristics of the county range from open pasture fields with rolling hills to open valleys and woodlands. Much of the county's rural land is well watered by deep springs and creeks. Small unincorporated villages and crossroads settlements are located at the intersection of secondary roadways or near other transportation routes.

The Town of Warrenton, incorporated in 1810, serves as the centrally located county seat and is the largest urban center in the county. The Town of The Plains in northern Fauquier reflects the equestrian traditions of that region, and the Town of Remington at Rappahannock Station, located in the southern part of the county, reflects the nineteenth-century urbanization that occurred in that area when a section of the Chesapeake & Ohio Canal and the Orange and Alexandria Railroad traversed the county. The county is also steeped in Civil War history, which is reflected in the many historic sites and battlefields throughout the area. The Journey Through Hallowed Ground National Heritage Area—a 180-mile-long corridor stretching from Gettysburg to Monticello—extends north-south through Fauquier, encompassing part of the John S. Mosby Heritage Area, as well as the historic town of Warrenton and the Rappahannock Station I and II battlefields.

The county contains a diverse collection of historic resources, including eighteenth-century homesteads, estates, farms, industrial sites (mills, mines), springs resorts, battlefields, churches, schools, and villages. Many of these resources are vernacular structures, but some of the larger residences reflect architectural styles of the period in which they were built. Outstanding stone buildings, both modest and grand in scale, are seen throughout the county. Limestone is an abundantly available material in the region and was used both as a foundation material and as a finished exterior material (Figure 2).

Fauquier County remains a predominantly rural area that is distinguished by large and small complexes of agricultural buildings, including hay barns, dairy barns, stables, corncribs, silos, meat houses, smokehouses, livestock shelters, and other ancillary farm buildings. The contiguous nature of these farms and the network of historical roadways contribute to the area's visual cohesion and highly intact, picturesque landscape. Because of the unbroken rural landscape, foxhunting groups and equestrians historically have favored the area for their pursuits. Fauquier is often referred to as "the heart of Virginia horse country." Large-scale dairy farms are most prominent in the southern part of the county, and beef and horse farms and wineries occupy the northern part of the county (Figure 3).

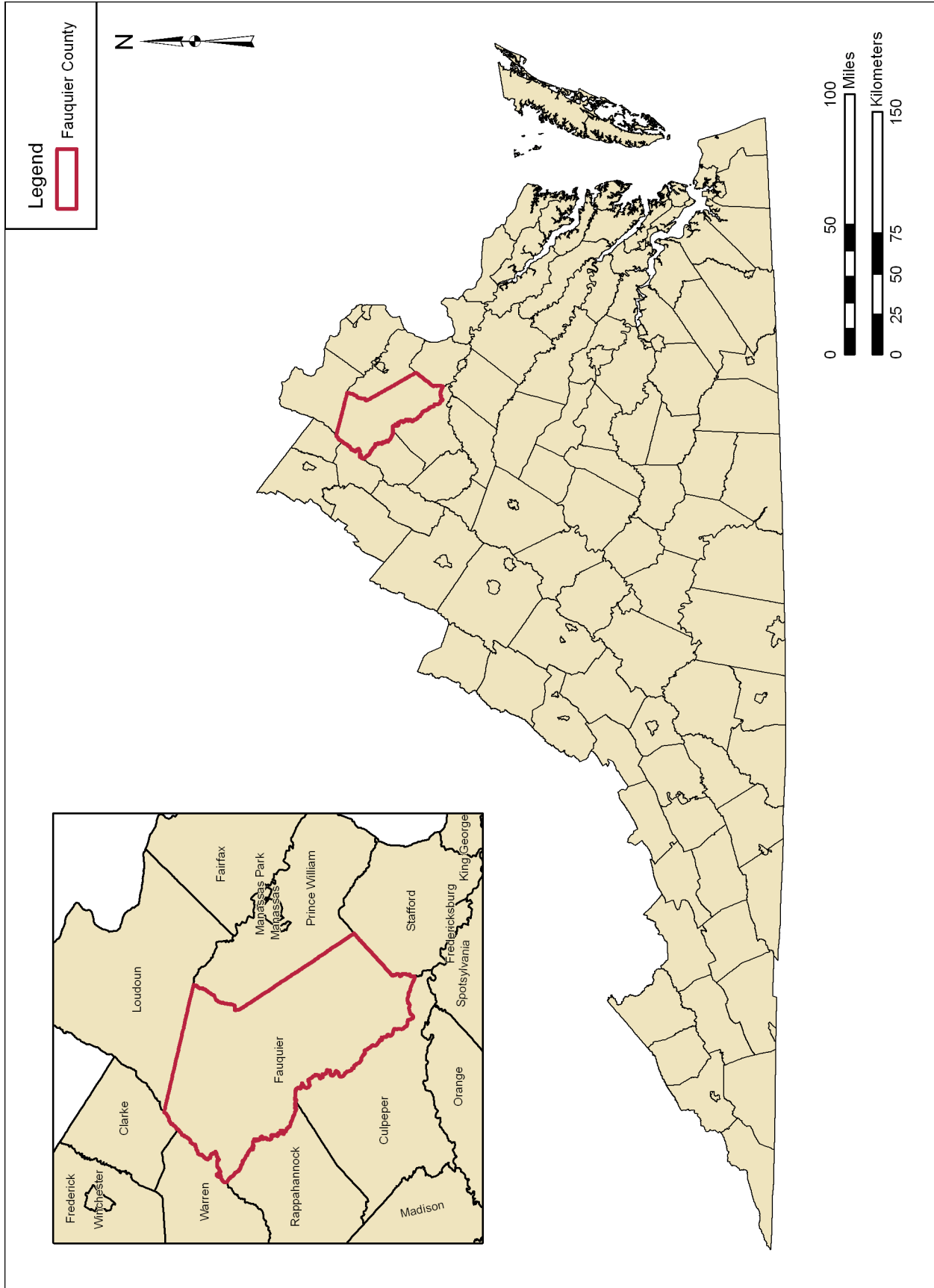


FIGURE 1: Location of Fauquier County in Virginia (National Atlas 2005)



FIGURE 2: Detail of Stonework on a Fauquier County Building

Brief History of Fauquier County

In the late seventeenth century Fauquier County was part of the land grant known as the “Northern Neck Proprietary,” which was entirely under the ownership of Lord Culpeper. In 1690, upon Culpeper’s death, the large land grant passed to his son-in-law, Thomas, fifth Lord Fairfax. Lord Fairfax granted patents from this proprietary, and through his local Virginia agents collected rents from the occupants. The area, however, remained relatively unsettled by Euro-Americans until after 1722, when the Treaty of Albany, negotiated between Virginia Governor Alexander Spotswood and the Iroquois tribe, secured the area for settlement. Settlers were drawn to the frontier land for its fertile soils, bountiful timber, numerous streams, the potential for valuable minerals, and new land for tobacco cultivation (Carr 1987).



FIGURE 3: General View of Fauquier Farmland

In 1759 Fauquier County was separated from Prince William County and was named after Francis Fauquier, the Lieutenant Governor of Virginia at the time. During the mid-eighteenth century some of the large estates that had developed through the land grant system were divided and small farmsteads were established. Tobacco was the main crop, but most farms operated on a subsistence basis and included production of various crops. By the late eighteenth century wheat had replaced tobacco as the main export crop (Poland 1976:27-28).

During the nineteenth century improvements in farming methods, soil enhancement techniques, and diversification created a prosperous environment for Fauquier farmers. By the mid-nineteenth century corn, livestock, and dairy products superseded wheat as the preeminent market commodities (Poland 1976:307-08). Small industries, such as gristmills and tanneries, began to emerge in the area during the period as part of the agricultural economy. New and improved transportation routes and methods provided links to distant markets through the economic centers of Alexandria and Georgetown (Poland 1976:116). Gainesville served as a changing point for stagecoach horses on the Fauquier & Alexandria Turnpike, and in the 1820s the Chesapeake & Ohio Canal was built along the Potomac. A section of a canal was built along Goose Creek in 1852, but it was quickly abandoned with the arrival of the railroad.

In the early 1850s two railroads were constructed through the area (Fauquier County Board of Trade 1914:17). The Orange and Alexandria Railroad crossed the southern portion of the Fauquier County on its route from Culpeper Court House to Manassas, with depots in Remington, Bealeton, Calverton, and Catlett, and a trunk line serving Warrenton. The Manassas Gap Railroad extended from Strasburg, crossed the Blue Ridge Mountains at Manassas Gap, and wound its way east through Thoroughfare Gap toward Manassas Station, where it joined the line of the Orange and Alexandria (Leland 1924). The railroads were fought over fiercely during the Civil War as a means to transport both materiel and troops.

Following the end of the Civil War, Fauquier farmers faced a devastated economy, a collapse in their labor system, and a depletion of livestock and crops caused by disease (Sharrer 2000:75). Agriculture played a large role in the economic recovery of the area, however, as urban populations and their demand for products increased. Farming also gave rise to associated industries, such as milling; in addition, agricultural implement stores began business in Warrenton, and throughout the county fertilizer agents, cattle dealers, and coach and wagon makers opened shop (Chataigne 1888).

Milking was one of the meanest jobs—twice a day no matter what the weather was or what else had to be done.

--Robert Beverley Herbert,
Life on a Virginia Farm: Stories and Recollections of Fauquier County

The railroads again played a significant role in the transporting county products, including dairy products. Both of Fauquier's railroads became part of the Southern Railway system in the late nineteenth century. The railroads facilitated swifter transportation of larger crops to more distant market centers for a greater profit to local farmers, and it soon became the primary transporter of goods. The railroad was a significant factor in the physical and economic development of the area.

Throughout the first part of the twentieth century, Fauquier County remained largely rural with small crossroads communities serving as commercial centers. Improvements in transportation at that time once again radically altered the dairy industry (Figure 4). Just as the railroad had replaced the horse and wagon, the automobile replaced the railroad between 1930 and 1950. During the 1950s Fauquier's railroads stopped providing passenger service, and freight service terminated soon after. Roadways were improved, paved, and widened and allowed transport of the county's milk and dairy products to large markets via truck. Fauquier dairies thrived through the mid-twentieth century before experiencing a collapse in the 1980s caused in part by a surplus supply that resulted in low milk prices. Today, dairying is once again a thriving industry making a significant contribution to the local economy.

The Dairying Industry in Fauquier County

The dairying industry in Fauquier County has largely followed the pattern of the industry in the rest of Virginia. Beginning as part of every subsistence farm, dairying expanded during the nineteenth century and reached its commercial zenith in the twentieth century. In 1610 cattle were brought to the Jamestown settlement in Virginia as draft animals and for dairy and meat production. In the following years the number of cattle in the colony increased from 200 in 1612 to nearly 5,000 in 1627 and to 100,000 by 1665 (Brown and Sorrells 2004:20-22). During the late eighteenth century historical household inventories indicate that middling farmers owned the majority of dairy equipment, suggesting that these farms supplied both poor and wealthy households with milk, butter, and some cheese, although the latter continued to be imported from England and Europe (Brown and Sorrells

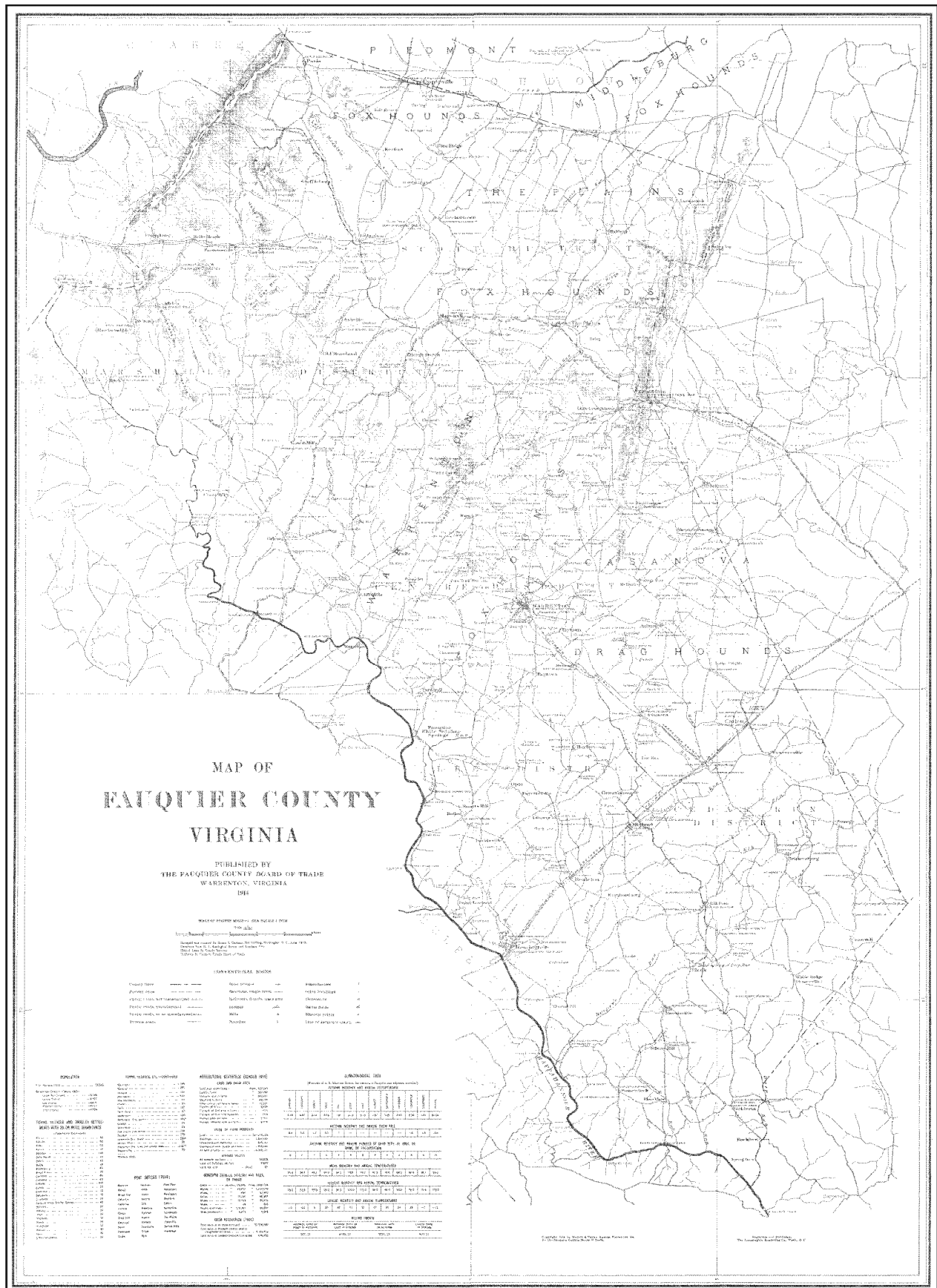


FIGURE 4: Map of Fauquier County 1914 (Fauquier County)

2004:39-40, 74). Milk was stored in small buildings called milk houses or dairies, which often had a sunken floor or a spring running through them to aid in keeping the milk cool and to help separate the cream from the milk.

As noted in the county history, permanent settlement began in Fauquier County in the early eighteenth century. Throughout that period the region remained rural with both large and small farms, nearly all of which possessed cows that produced milk for farm consumption. Butter and cheese produced on farms were primarily consumed at the farm or locally (Selitzer 1976). Even families in small towns and villages kept cows in their yards or on public lands.

Nineteenth Century

Although home dairies operated in Virginia throughout the colonial period, it was not until the last half of the nineteenth century that commercial dairy production became successful on a regional level. Although Virginia did not compete with other states in fluid milk production, between 1850 and 1860 Virginia outranked all other Southern states in butter production. Surplus butter was salted and either sold in a local market or shipped to Richmond and exported to Caribbean sugar plantations (Brown and Sorrells 2004:73, 189). In 1847 *The Southern Planter* reported that several of Fauquier's farmers were engaged in cheese making and produced three to four pounds a day from each cow (Brown and Sorrells 2004:74).

After the Civil War the dairy industry became more important to the local Fauquier economy as nearby urban populations grew. By the end of the nineteenth century, with the general movement of population from the farms to the cities, it became necessary to mass produce and improve the quality of milk, and the industrial vision of perfected dairying involved large dairies with high-producing cows (DuPuis 2002). Improved transportation routes and increased modes of transportation assisted in marketing farm surpluses to urban areas (Brown and Sorrells 2004:73). In Fauquier County dairies were located along the many major roadways that historically had linked the county to larger cities to the east and the Shenandoah Valley to the west. In addition, the railway, which was resurrected after the Civil War, provided a more efficient mode of transporting milk and dairy products to the city. Fauquier County dairy farms were well positioned to respond to the population increase occurring in the Washington, D.C. area. At the outset of the Civil War, there were 5,489 milk cows in Fauquier; most fluid milk was consumed on the farm or locally, but 284,005 pounds of butter and 4,315 pounds of cheese were sold from the farm (United States Census 1860). By 1880 these numbers had rebounded and surpassed prewar levels: 5,646 milk cows in the county produced 291,422 pounds of butter. Fauquier farms also sold 125 gallons of milk to factories making cheese or butter that year (United States Census 1880).

At that time it also became more difficult for residents of Virginia's growing cities and towns to provide their own milk supply because many localities passed ordinances prohibiting the keeping of livestock within city limits owing to the odor and risk of disease. As a result farmers located on the outskirts of cities had another reason to increase the number of cows on their farms to supply customers in town (Bottom 1926). But it was impossible for milk to be shipped any great distance because effective cooling facilities were lacking, and this allowed only those farmers living close to cities and towns to become commercial dairymen.

Role of the Railroad

The railroad was a major contributor to the growth of Fauquier County's dairy farms. The route of the Southern Railway, which incorporated several pre-Civil War lines into one, traverses the county west to east and a preponderance of the county's dairy farms are located within 2 to 3 miles of railroad depots such as Remington, Midland, and Catlett (Figure 5). The rail line also closely parallels the path of Route 28, which later became important as a vehicular route to markets. Milk cans of 5 to 10 gallons each were loaded onto wagons and carried to the train depot, where they were loaded into rail cars and taken to market. Some farms that abutted the train route developed private wooden platforms for loading their milk onto the cars.

In a letter to *The Southern Planter*, a Richmond-based agricultural journal, Southern Railway president Fairfax Harrison touted the many ways in which the railroad was advancing agriculture in the South. Harrison reported on the work of the railroad's agricultural agents, who advised farmers in the company's territory. These agents, forerunners of the state extension agents, assisted farmers with crop production, livestock breeding, and best construction methods for dairy barns and silos. He noted that profitable production depended largely

on successful marketing and that the company's market agents assisted local farmers by bringing producers into touch with buyers and vice versa. "It is [the agents'] business to bring Southern producers into touch with buyers and to advise buyers where the products which they want may be obtained along the lines of the Southern Railway system...the Company is able to be helpful to farmers along its lines in all stages of their operations to the final sale of their products" (Harrison 1915:432).

The Babcock Test

Throughout the late nineteenth and early twentieth centuries, significant inventions such as commercial milk bottles, milking machines, tuberculin tests for cattle, pasteurization equipment, refrigerated milk tank cars, and automatic bottling machines contributed to making milk a more healthful and commercially viable product.

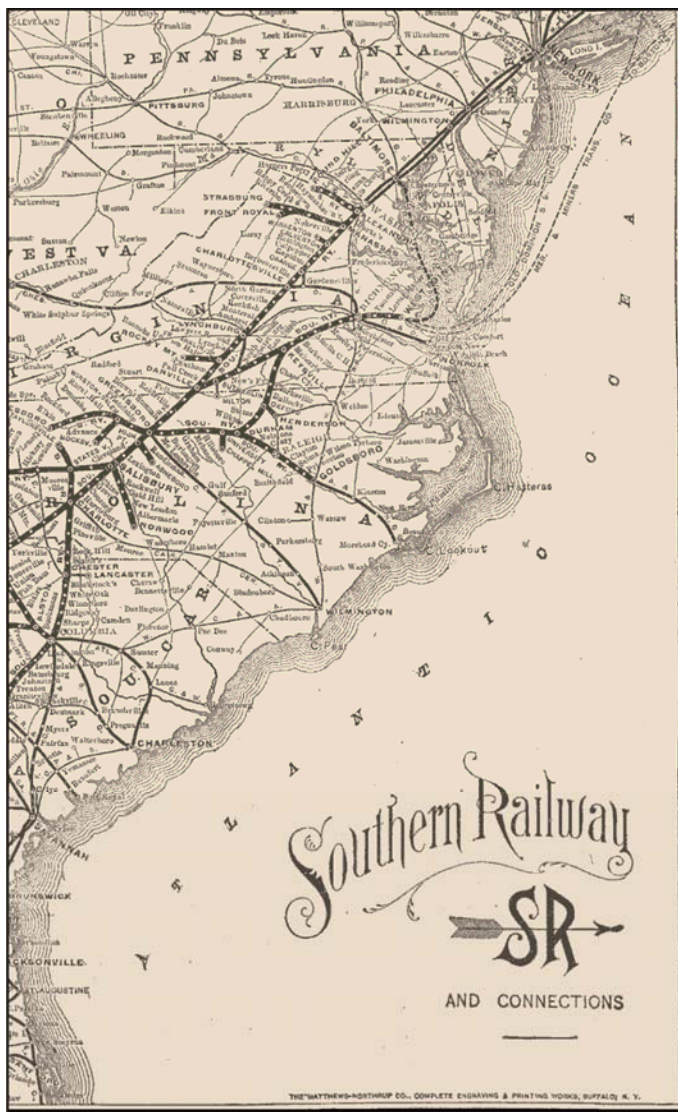


FIGURE 5: Detail of the Southern Railway Route Through Virginia (Georgia Railway History and Heritage 2011)

In 1890 S.M. Babcock, a professor of agriculture at the University of Wisconsin, invented an inexpensive method by which to test the percentage of butterfat in milk. Babcock asserted that when mixed with sulfuric acid, all milk solids except butterfat dissolved. A small amount of milk was placed in a test tube with sulfuric acid that was then placed into a centrifuge. The butterfat floated to the top of the emulsion. The test was a simple way to test the butterfat content of milk and cream and aided inspectors in their efforts to identify watered down milk or milk from which the cream had been removed. The test also ensured fair compensation to those farmers who produced milk with a higher butterfat content. Dairy herd improvement groups also used the test to identify cows that consistently produced milk with high butterfat contents so that those cows could be retained for breeding.

Regulation

At the end of the nineteenth century, consumers, farmers, and government agencies became more aware of the need for regulation and sanitation in the production and distribution of food products, including milk and milk products. In 1895 the Bureau of Animal Industry of the United States Department of Agriculture (USDA) established the Division of Agrostology and the Dairy Division in an effort to improve the quality of dairy products (National Agricultural Library [NAL] 2002). In response to interest expressed by dairymen, the division issued bulletins and circulars on various subjects concerning the dairy industry. In the 1890s the bureau was successful in eradicating pleuropneumonia and introduced a subcutaneous tuberculin test, advancements that greatly improved herd health and milk purity.

Legislation and regulations, such as the Meat Inspection Act of 1890 and its amendment of 1906, authorized USDA inspectors to enforce standards of sanitation and hygiene in the meat and dairy industries (NAL 2002). Scorecards were developed for use by USDA Dairy Division inspectors when visiting dairy facilities. Items reviewed by the inspectors included the health of the herd; the cleanliness of the cows, the milking utensils, and the dairy employees; and the handling of the milk (NAL 2002). In 1919 the milk specialists of the Dairy Division also began to organize educational milk campaigns in cities and in rural communities to deal with surpluses generated by the increased production of milk and dairy products during World War I. The campaigns, which touted the nutritional value of milk, resulted in substantial increases in consumption of milk (NAL 2002).

Twentieth Century

Milking Machines

Although mechanized milking machines were available in the 1880s, milk machines were not common on farms until 1918, when the DeLaval Company (which also invented the first continuous discharge centrifugal cream separator in 1878) introduced a practical machine that imitated hand-milking and used pneumatic pressure. The machines were estimated to do the work of 10 men (Gimpel 2008:165). Although some farmers, such as Loudoun County's Westmoreland Davis, used milking machines earlier, the cost for such machines was prohibitive for most farmers. The arrival of rural electrification in the 1930s and 1940s played a large role in the acceptance of the machines. In addition to reducing the amount of labor needed to milk the herd, Virginia farmers also improved the sanitation of their milk since the milk was delivered directly from the cow through tubing to a sterilized tank (Brown and Sorrells 2004:194-195).

Establishment of the Virginia State Dairymen's Association and the Promotion of Dairy

At the beginning of the twentieth century, the commercial dairy industry was under little regulation. In Virginia dairy products held no guarantee as to their purity, and little or no protection existed for the dairyman against the trafficking of tuberculosis and disease-infected cattle, which could devastate a herd. At that time 85 percent of milk products sold in Virginia came from outside the state (VSDA 2007:15).

Milk and the Jamestown Exposition

In 1907 the Jamestown Exposition, which commemorated the 300th anniversary of the founding of Jamestown in the Virginia Colony, was held in Hampton Roads. Part of the exposition focused on dairy production in the state and was chaired by W.D. Saunders, head of the dairy department at Virginia Tech. As part of his enthusiastic support of the dairy industry, Saunders arranged for a dramatic display of the potential for dairy products. Whole milk from the Virginia Tech dairy herd was stored in 10-gallon cans that were placed inside insulated bags, covered in ice, loaded onto railroad cars, and shipped every day to the meeting site 250 miles to the east. The success of this experiment encouraged dairy producers and marketers and was an impetus to the formation of the Virginia State Dairymen's Association.

Source: Brown and Sorrells 2004:187

In September 1907 farmers and others interested in the creation of a sound dairy industry in Virginia established the Virginia State Dairymen's Association (VSDA), Virginia's first dairy organization. The establishment of the VSDA grew out of the enthusiasm generated by dairying meetings held at the 1907 Jamestown Exposition in Hampton Roads (VSDA 2007:14). The VSDA, which was one of the earliest organizations of its kind in the United States, was aided by Professor W.D. Saunders of the dairy department at the Virginia Polytechnic Institute (VPI), a land-grant college, and Dr. Walter J. Quick, dean of agriculture at VPI (Brown and Sorrells 2004:188). The organization addressed distribution topics, such as the viability of shipping fresh milk long distances by rail, the hygienic methods of milk handling, and the importance of refrigeration, as well as the role of rapid transportation and direct delivery. The VSDA also addressed farm topics, such as disease control, herd quality, hygiene, cow feed, and production costs (VSDA 2007:14-17). Fauquier dairy farmers participated in the programs and conferences of the VSDA. In 1930 Bud Beane of Catlett and C.H. Smith of The Plains were the county delegates to the VSDA dairy improvement program (VSDA 1930).

One of the first topics addressed by the VSDA was the enactment of legislation to provide for the testing and eradication of tuberculosis in cows. Rockingham County led the state in offering free tuberculosis testing in 1909. By 1917 the incidence of bovine tuberculosis

among the cows that supplied milk to Washington, D.C., which included Fauquier herds, had fallen to less than 1 percent—by far the healthiest rate in the nation (Sharrer 2000:163-164).

The VSDA was instrumental in urging the establishment of a state regulatory agency. In 1908 the Dairy and Food Division of the Virginia Department of Agriculture was established with the legal authority to supervise the merchandising of stock feeds as well as the purity of dairy products and the sanitary conditions under which they were manufactured or produced (Virginia Department of Agriculture and Immigration 1908; VSDA 2007:14-15). The VSDA served as a source of scientific and technical information for farmers through publications, including a newsletter called *The Virginia Dairyman*.

About that time farm demonstration work also began in the state. Through this program agents provided education to farmers on recommended farm practices and demonstrated advancements in technology. In 1914 VPI became the headquarters for the state cooperative extension agency, which took on the role of farm demonstration. Community- and school-based educational programs, first known as corn clubs and later as 4-H clubs, reached out to farming youth and encouraged various agricultural projects, such as raising livestock, as well as domestic activities, such as gardening and canning. Such clubs were active in Fauquier by 1910 (*The Southern Planter* 1910) (Figure 6).

During the 1910s Virginia's Dairy and Food Division began promoting dairy farming in the state. The Division's bulletin, *10 Reasons Why a Dairy Farm in Virginia Pays Better Than in Any Other State*, listed the numerous desirable attributes and benefits found in Virginia, such as an ideal climate, low-priced land, cheap silage, and an ideal transportation network into "unlimited and unexcelled markets," in an effort to bring additional suppliers to the state (Purcell 1915). The bulletin also highlighted the legislative environment that fostered and encouraged the industry as well as the numerous aid organizations, such as the Dairy and Food Division of the Virginia Department of Agriculture. A similar bulletin was published in 1926 by the VPI Agricultural Experiment Station in partnership with the USDA.



FIGURE 6: Fauquier County 4-H Club Delegation at Annual Convention in Blacksburg, 1951 (AGR 1743, Digital Library and Archives, University Libraries, Virginia Tech)

In 1927 *The Fauquier Democrat* published an article highlighting the natural advantages of the county for dairy farms. Echoing the Dairy and Food Division's pamphlet, the *Democrat* cited the county's "good soils, seasons and locations" as paramount in its advantages. Among the many forage crops that prospered in Fauquier were corn, grains, clovers, grasses, alfalfa, and soybeans. Furthermore, the presence of the Southern Railway line furnished direct transportation to Washington, D.C., "which is one of the best wholesale milk markets in the east" (*Fauquier Democrat* 1927:6).

Production costs of dairy farming increased as dairymen made improvements to the quality of their cows and dairy buildings. Around 1916, with the rapid rise in the cost of producing milk, Virginia dairymen began taking an interest in milk marketing (VSDA 2007:17). Mirroring conditions at the national level, Virginia dairymen were interested in promoting the health benefits of milk consumption to the general public and fostering a greater appreciation of milk and the dairy industry.

Dairy Production

Although dairying was a capital-intensive endeavor, the number of commercial dairy farms in Virginia soared between 1910 and 1920 from 4,300 farms to 13,700 farms (VSDA 2007:20). In 1920 approximately 44 percent of Virginia's farms were selling dairy products (milk, cream, butter) (VSDA

2007:20) (Figure 7). In Fauquier County the number of cows milked rose from 7,909 in 1910 to 9,125 in 1929 (U.S. Census 1910, 1930). In 1910 a total of about 1.8 million gallons of milk was produced and sold by Fauquier farms, with approximately one-tenth fluid milk, 5,610 gallons of cream, and 154,522 pounds of butter (U.S. Bureau of the Census 1910). Of the over four million gallons of milk produced in the county in 1929, only 1.7 million gallons were sold as whole milk, the rest was either consumed on the farm or sold as cream or butter (U.S. Bureau of the Census 1930).

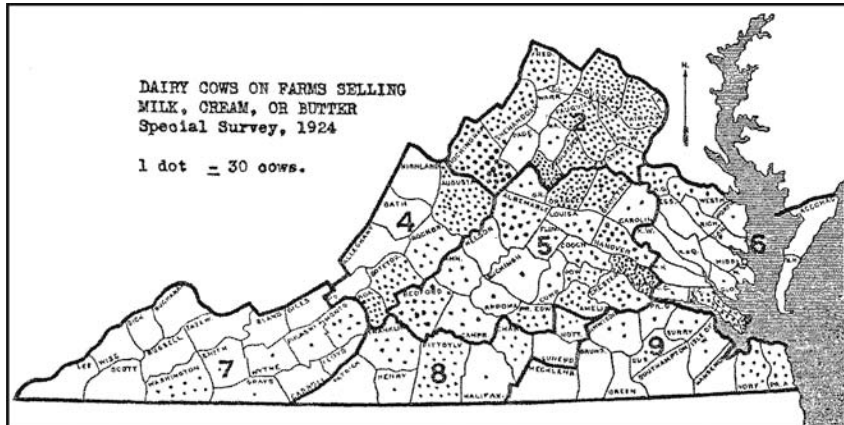


FIGURE 7: Map Indicating the Number of Dairy Cows on Farm Selling Milk, Cream, or Butter (Bottom 1926)

As the statistics indicate, even as the number of dairy farms increased in the state between 1910 and 1920, half of the milk produced was still consumed on the farm. Herds remained small with fewer than 200 farms having 50 cows and only about 35 farms with more than 100 (Drinker 1937:7). This number was likely based on the cost of production, including labor and feed, and the limited ability to get milk to markets.

Roberta Lee Randolph's farm, Redlands in Casanova, provides a view of the diversified activities on a typical dairy farm of the early twentieth century. Randolph (1873-1978) and her mother, Mary, operated the southern Fauquier farm after her father, Buckner Magill Randolph, died in 1903. Randolph's farm ledgers (1916 through 1941) indicate the amounts of milk, cream, and butter produced on the farm as well as the amounts and prices of farm products sold. In addition to butter and cream, Randolph recorded sales of hops, cornpeas, corn, wheat, and rye, as well as eggs and chickens and overages from the farm garden, including onions, corn, and asparagus. Randolph also recorded the sale and purchase of various livestock, including her prize thoroughbred Jersey cow, Geraldine, which was purchased in 1915 from a Mr. Hotchkiss in Warrenton. The Redlands herd also included Holstein cows. Around 1940 Randolph began to rent some of the farmland to other farmers; she was also an early participant in "cowsharing," that is, she boarded other farmers' cattle at Redlands. The Redlands ledgers also recorded the amount of butterfat in the milk produced on the farm, indicating that Randolph was likely involved in the local dairy herd improvement association, which tracked milk production of individual cows. The latter records show that Randolph also diversified her crops to include lespedeza and hay (Randolph 1916-1941).

In 1926 several of Fauquier's farms were listed on the "Honor Roll of Dairy Herds," which was published in the VSDA annual report. Among those farms that produced an average of 300 pounds of butterfat per cow during the year were:

- R.A. Goode of Delaplane (14.6 cows, avg. 359.8 lbs. butterfat);
- J.H. McCabe of Warrenton (40.8 cows, avg. 305.5 lbs. butterfat);
- W.R. Rowland of Warrenton (11 cows, avg. 303.4 lbs. butterfat); and
- J.W. Russell of Warrenton (29.4 cows, avg. 303 lbs. butterfat) (VSDA 1927).

Role of Creameries/Formation of a Regional Milk Cooperative

During the early twentieth century local creameries purchased milk from county dairy farms and separated the cream from the milk and produced butter, cheese, and other products. In Fauquier two creameries were located in the northern part of the county at Marshall (Marshall Creamery) and The Plains (Piedmont Creamery) (Bottom 1926:41-42). Milk arrived at the creamery in metal milk cans, which were washed and sterilized and sent back to the farmer. The farmer often returned home from the creamery with skim milk, which was sometimes mixed with cornmeal before being fed to calves, chickens, or pigs (Harrison et al. [2006]:3-4). Once separators were available to individual farmers, only cream was hauled to the creamery.

These early twentieth-century commercial endeavors thrived for nearly 50 years. As roads were improved, refrigerated trucks travelled to the farms and became the choice of many dairy farmers, who had formed a regional cooperative milk marketing system to ensure fair prices for their fluid milk.

In 1920 the Maryland & Virginia Milk Producers Association was formed for the purpose of collectively marketing milk. Each member paid a fee per gallon of milk sold and the association took on the role of selling fluid milk to distributors. This helped to stabilize the price of milk and farmers were relieved of dealing with individual distributors. In the late 1920s the association built its own processing plant in Frederick, Maryland, where milk was made into cheese, butter, ice cream, and powdered milk. By 1927 the Maryland & Virginia Milk Producers Association was the largest farmer's organization in Virginia and included 85 percent of the Washington-area producers. In the 1920s and 1930s, the efficiency of this organization's operations drew many dairy farmers to the Northern Virginia region. In 1923 the association became a cooperative. Between the 1920s and late 1930s, milk production in the region tripled (Harrison et al. [2006]:20). By the late 1930s Virginia's dairy industry was a booming business: in 1936 Virginia dairy farmers sold \$32 million of products from 420,000 cows (Drinker 1937:7).

The Price of Milk

Year	Cents/quart
1939	14
1950	21
2009	32

Sources: Connelly 1950, VSDA 2011

The Maryland & Virginia cooperative, headquartered in Reston, Virginia, currently operates three fluid milk processing plants, two manufacturing plants that produce butter, condensed milk, and powdered milk, and a farm supply equipment division. The cooperative sells branded fluid milk (e.g., Giant supermarket brand) as well as commercial ingredients such as cream and powdered milk. At present, the cooperative markets milk for 1,500 dairy farmers in the Middle Atlantic and Southeast regions of the country, who annually produce 3 billion pounds of milk (Maryland & Virginia Milk Producers Cooperative Association 2011).

In addition to the Maryland & Virginia Milk Producers Cooperative Association, three other milk sales groups currently operate in the state. Piedmont Milk Sales, which is a brokering group, operates primarily in the southwestern part of the state. In 1998 the Dairy Farmers of America was formed and the former Valley of Virginia Milk Producers Association joined that national cooperative, which also has members throughout the state. The Cooperative Milk Producers Association is headquartered in Blackstone and operates primarily in the Southside (Kenneth Smith, personal communication 2011).

Cow Testing

Testing herds became a primary concern of farmers in the early and mid-twentieth century. In 1906 the first cow testing agency was established in Michigan. Early cow testing associations in Virginia included

one established in the Blacksburg area in 1908 and the Loudoun-Fairfax Cow-testing Association, established in 1911 (VSDA 2007:15). By 1927 the Fauquier County Cow Testing Association had over 500 cows in its records, which indicated that the county's cows produced an annual average of 6,000 pounds of milk containing 250 pounds of butterfat (*Fauquier Democrat* 1927:6). At that time there were 18 cow testing (dairy herd improvement) associations in the state. By 1928 there were 21 such organizations with more than 11,000 cow registered—more than all other Southern states combined (VSDA 2007:26).

A desire for a statewide program grew, and in 1925 the Cow Testing Association was formed. In 1929 the association was renamed the Dairy Herd Improvement Association (DHIA). Benefits of testing included a record of parentage of each cow, which also aided in controlling diseases, and monthly records of each cow's production and butterfat percentage. The information generated from testing was used for selecting profitable cows, selective breeding, culling, and in formulating appropriate nutrition for each cow according to her production (Harrison et al. 14-15). By 1950 there were 63 DHIA's in 90 of Virginia's counties (Connelly 1950:31). In the late twentieth century the use of computers greatly improved the efficiency of herd testing and assisted the tester as herd sizes increased. Cattle are now fitted with computer chips that are read as each cow enters the milking parlor. This information is kept in the cow's permanent record and is combined with the monthly sampling information provided by the DHIA tester (Kenneth Smith, personal communication 2011).

Inspections and Sanitary Barns

In the early twentieth century Fauquier County was part of the Washington, D.C. milk shed, which consisted of the dairy farms that were close enough to provide milk to the city and that were inspected by the city's health officials (VSDA 1946). As transportation and cooling methods improved, and as sufficient funds were provided to allow health officials to conduct inspections, a city's milk shed increased in size. The District of Columbia established regulations meant to ensure the purity and quality of the city's dairy supply. The District generally followed Congress's 1895 act on milk regulation, but in 1925 the city passed additional regulations: "Act to regulate within the District of Columbia the sale of milk, cream, and ice cream, and for other purposes" (also known as the Milk Act) and "Regulations for the Government of Dairies, Dairy Farms, and for the Manufacturing, Handling, and Storing of Ice Cream." The latter provided the procedures for a detailed scoring of farms, which was later explicated by "The Interpretation of Dairy Farm Score Card" that set forth the stringent guidelines for the dairy farms (VSDA 2007:23-24; Dahlberg et al. 1953:28) (Figure 8).

If Fauquier County dairy farms wished to sell milk for distribution within the Washington market, their farms had to meet the sanitation requirements stipulated by the District of Columbia's Health Department, which included at least 50 criteria. The 1914 annual report of the District's Health Officer, Dr. William C. Woodward, indicated that the city's milk supply came from approximately 20,000 cows on 1,236 farms—303 of which were in Virginia (District of Columbia 1915:22). The inspector's scorecard included points for the farm under stable and yard, milk house, utensils, water supply, method of milking and care of milk, attendants, and privy, and deductions for disease or unclean conditions of the cattle (Harrison et al. [2006]:32). A farm's score directly affected the premium paid to the farm for its milk (Dahlberg et al. 1953:98). The District's scoring method has been termed "exacting" with numerical scores carried to the 0.5 percentage. During the period when metal milk cans were used to store and transport milk, the cans and milking equipment were often sterilized by steam. If a farm used boiling water rather than steam, its score for that item decreased fivefold (from 15 points to 3) (Dahlberg et al. 1953:28).

SCORE CARD FOR DAIRY FARMS AND CATTLE

NAME: *Waterland Dairy* Location: *Lynchburg* D.C. Md., Va.
 Application or Permit Number: *7231* Consignor: *Waterland*
 Date inspected: *9-16-42* Time: _____ Signature of person interviewed: _____

This score card shows conditions only at the time of this inspection. To learn of conditions generally prevailing reference should be made to a series of consecutive score cards. This may be done at the Health Office.

SCORE		SCORE		SCORE	
Perf.	Allow.	Perf.	Allow.	Perf.	Allow.
(A) STABLE AND YARD		(B) MILK HOUSE		(C) UTENSILS	
1	3	1	1	1	1
2	3	2	1	2	1
3	2	3	1	3	1
4	2	4	1	4	1
5	1	5	1	5	1
6	1	6	1	6	1
7	1	7	1	7	1
8	1	8	1	8	1
9	1	9	1	9	1
10	1	10	1	10	1
11	1	11	1	11	1
12	1	12	1	12	1
13	1	13	1	13	1
14	1	14	1	14	1
15	1	15	1	15	1
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93	1	93	1	93	1
94	1	94	1	94	1
95	1	95	1	95	1
96	1	96	1	96	1
97	1	97	1	97	1
98	1	98	1	98	1
99	1	99	1	99	1
100	1	100	1	100	1

HEALTH DEPARTMENT OF THE DISTRICT OF COLUMBIA

FIGURE 8: District of Columbia Scorecard for Dairy Farm Inspections (Harrison et al. 2006)

By 1914 pasteurization of milk was required by all Virginia cities and most small towns in an effort to further protect the milk supply (Sharrer 2000:164). In his 1914 report the District's Health Officer stated that "the occurrence of foot-and-mouth disease in the District gave impetus to the pasteurization of milk" (District of Columbia 1915:23). The officer also noted that approximately 85 percent of the city's milk supply was regularly pasteurized, although he also noted that there was "strenuous opposition" to this requirement by milk dealers and he urged legislation that required the practice.

Foremost among sanitary conditions was a light and well-ventilated barn. Agricultural experimental stations and cooperatives dispensed standardized plans for these barns, which included significant ventilation systems, numerous windows, high ceilings, and specific building materials believed to promote a sanitary, healthful environment (Figure 9). In 1909 the Virginia Division of Dairy and Food published a bulletin that gave recommendations regarding the location and construction of dairy barns (Virginia Department of Agriculture and Immigration 1909). In 1928 a meeting of milk producers, VPI and University of Maryland agricultural engineers, and staff from the District's Health Department resulted in establishment of standard barn and milk house plans that would be acceptable to District and state inspectors. Similar standardized plans were developed in other metropolitan areas for specific milk sheds, such as Richmond (Rupnik 2003).

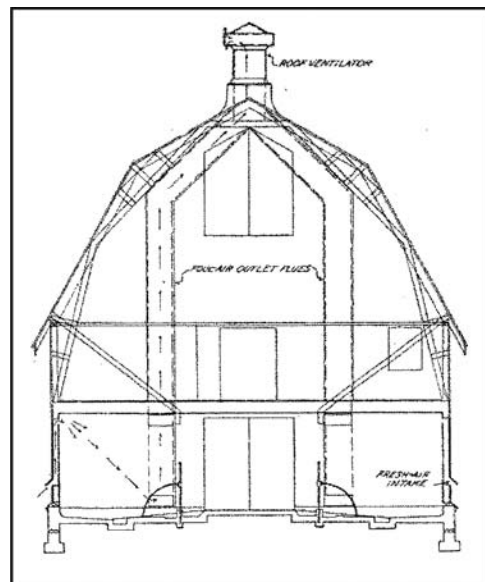


FIGURE 9: Recommended Dairy Barn Ventilation System (USDA 1923)

Pasteurization

Pasteurization is a simple, effective method to kill the harmful pathogens found in raw milk. Since its introduction more than a century ago, pasteurization has been recognized around the world as an essential tool for ensuring that milk and dairy products are safe.

Pasteurization involves heating raw milk to a certain temperature for a specific period of time. In the U.S. pasteurized milk must be heated to a minimum of 145°F for 30 minutes or to 161°F or more for 15 seconds.

Ultra-pasteurization requires heating the milk to 280°F for at least 2 seconds. This milk has an extended shelf-life under refrigeration. If heated at these temperatures and then aseptically packaged, the milk may be stored at room temperature for up to six months.

Raw milk, which cannot be sold in Virginia, is milk that has not been pasteurized before consumption.

Homogenization, which was patented in 1899 by Frenchman Auguste Gaulin, is a mixing treatment that prevents the cream layer from separating out of the milk.

*Source: National Dairy Council
<http://www.nationaldairycouncil.org>*

The concept of a sanitary dairy barn first originated at the New York Agricultural Experiment Station around the beginning of the twentieth century (Sharrer 2000:166). Prior to the standardized plans, dairy barns were tightly constructed with low ceilings to keep the stock warm in the winter, which resulted in condensation in the building that led to the transfer of diseases through water droplets. Ventilation systems became the key to limiting herd exposure to tuberculosis and other diseases. In addition to a standard dairy barn, milk houses and feed silos became intrinsic to the daily operations of a dairy farm. Many of Fauquier County's early twentieth-century dairy barns reflect the form and materials of the standardized plan, although interior equipment may have been modernized over the years. The James Way Manufacturing Company of Fort Atkinson, Wisconsin, was an influential nationwide dealer in milking equipment and dairy barn designs. Stanchions, metal ventilators, and other James Way equipment are often found on Virginia dairy farms.

During the mid-twentieth century farmers also began using a separate building for milking. Rather than milking on the ground floor of a barn using metal stanchions, many farmers built a separate milking parlor with milk storage facilities attached. In the stanchion barn the cow's head was harnessed by a metal frame with her rear aligned with the manure gutter. In the milking parlor the cows entered herringbone style (diagonally) or sideways on either side of a sunken alley, from which the farmer attached the milking apparatus.

The Great Depression

During the Great Depression of the 1930s, an increase in feed prices as well as overall low market prices for dairy products resulted in lower milk production on Virginia farms. Dairying was one of the last industries to feel the brunt of the Depression, and as the nation's economy improved, it was one of the last to regain a major degree of its former prosperity (VSDA 2007:31).

Increased demand in the late 1930s attracted new producers to the industry. During that period many modern dairy plants, the installation of efficient dairy equipment, the expansion of city milk sheds, and the development of consumer education programs were part of the industry's aggressive pursuit of new business (VSDA 2007:35). By 1935 Fauquier, along with Loudoun, Fairfax, Rockingham, and Augusta counties, produced more than four million gallons of milk, with Fauquier also among the counties with the most cows milked (Drinker 1937:8). World War II created a high demand for milk and milk products, and unprecedented production was attained despite significant farm labor shortages (VSDA 2007:39). In

1950 the Virginia Dairy Products Association reported that following the end of the war, U.S. milk consumption increased by 16 percent, which kept production at a high rate (McLain 1950:17).

Virginia's Milk and Cream Act and the State Milk Commissions

In 1934 the Virginia legislature passed the Milk and Cream Act, which provided for the regulation, supervision, and control of the production, processing, transportation, storage, distribution, and sale of milk and cream in the state. It also created the State Milk Commission to ensure a constant, available supply of reasonably priced milk for consumers, although it was not involved in controlling retail and wholesale prices (*Virginia and the Virginia County* 1950:16). In 2003 the commission, which is funded solely by dairy producers and distributors, merged into the Virginia Department of Agricultural and Consumer Services. The commission also licenses all milk processors and distributors who sell fluid milk in Virginia (Brown and Sorrells 2004:218-219).

In 1957 the Virginia Commission of Agriculture proposed a single, uniform milk and dairy inspection process that superseded the 53 separate city milk ordinances then in effect in the state. Under this process inspection of dairy farms and milk (until it reached the plant) was handled by the Virginia Department of Agriculture; dairy plants and milk supplies from the plant on were handled by the Virginia Department of Health (VSDA 2007:55, 59). About the same time, the State Milk Commission also worked to create uniform market classifications for milk (Virginia State Dairymen's Association [VSDA] 2007:56).

Changes in Transportation and Processing

As the train had replaced the wagon in the late nineteenth century, the truck replaced the train in the early twentieth century as the preferred mode of efficiently transporting milk. Some farms converted to use of trucks in the 1930s, and all county farms had switched by 1950 (Brown and Sorrells 2004:211; Ronald Leonard, personal communication 2011). The switch to refrigerated tank trucks also resulted in farmers abandoning the use of five- and 10-gallon metal milk cans in favor of storing their milk in larger bulk refrigerated tanks on the farm. In 1950 stainless steel bulk tanks were first used on Loudoun and Orange county dairy farms. The quality of milk shipments

Milk Grades

Class I (also known as Grade A):
used as fluid milk, including whole milk, low-fat milk, skim milk, buttermilk, flavored milk and milk drinks, and creams.

Class II (also known as Grade B):
used to manufacture indirect consumption items such as cheese, butter, and powdered (dry) milk.

Year	Population	Number of Milk Cows
1880	1,512,565	235,000
1890	1,655,980	258,000
1900	1,854,184	270,000
1910	2,061,612	340,000
1920	2,309,187	377,000
1930	2,421,851	375,000
1940	2,677,773	402,000
1950	3,270,322	465,000

was greatly improved since the tanks provided prompter cooling of the milk at the farm and maintained low temperatures until the milk reached the plant. The importance of refrigeration in transporting milk is critical: at 32°F milk stays good for 24 days, at 60°F it lasts only one day. By 1957 Washington, D.C., became the first large city to have its entire milk supply handled this way (VSDA 2007:49). When the tank truck arrived at the farm, the cooled milk was pumped from the holding tank into the insulated and refrigerated truck tank. Most bulk milk tanks on farms were large enough to hold milk for two days, but in general the truck arrived at the farm every day (Harrison et al. [2006]:12).

In 1950 there were more than 69 milk processing plants, two condenseries, 34 creameries, 64 cream receiving stations, 47 ice cream plants, one cheese factory, and 84 multiple process dairy plants in the state. In 1949 those plants purchased nearly one billion pounds of milk for fluid consumption and dairy products (Connelly 1950:28). In addition, over two million pounds of butterfat were purchased from Virginia's herds by out-of-state creameries. The milk and milk products for that year had an estimated wholesale value of more than \$100 million (Connelly 1950:31).

Late Twentieth Century

The 1980s were a particularly difficult time for dairy farmers in Fauquier and in Virginia in general. For dairy farmers, a surplus in supply reduced the price of milk, and production costs increased at the same time. In the mid-1980s the federal government offered a buyout program to dairy farmers in an attempt to lower supply and increase product prices. A large number of farmers participated in the program, which reduced the number of operating dairies in Virginia as well as the nation. In 1970 there were 127



FIGURE 10: Sign at Al-Mara Farm, Midland

dairies in Fauquier County, which was the third largest production area in the state. But between 1965 and 2007, the number of dairy farms in Virginia declined by 97 percent—from 37,000 farms to 1,200 (Gimpel 2008:165). By 1980 southern Fauquier County had 59 Grade-A dairy farms with herds totaling 6,150 cows; by March 1988 there were 48 dairies with 5,500 cows—a decline of 20 percent (Hutchison 1988:13). There has been a resurgence of dairying in the county during the first part of the twenty-first century, however, and in 2011 Fauquier's dairy industry ranked fifth in the state (Fauquier County Agricultural Development Department 2011). In 2010 there were 95,000 milk cows on dairy farms

in Virginia with each cow producing on average 2,104 gallons of milk (5.76 gallons a day). The same year, the average Virginia dairy herd had 135 milking cows (VSDA 2011). At present, Fauquier's milking herds tend to be around 95 head; although herd size has decreased over the past 50 years, milk production per cow has increased because of improvements in breeding and diet maintenance.

Agritourism is one method that local farms have used to promote their products as well as provide an opportunity for local school groups to learn about agriculture. Since 2000 Al-Mara Farms in Midland has operated Cows-N-Corn, which is a 9-acre corn maze on the eastern end of the dairy farm (Figure 10). Operated by Jeff and Patty Leonard, who are third generation dairy farmers, the maze attracts visitors to the farm where they see all of the elements that make up the dairy farm operations. The farm also has hosted barn dances for the community. Agritourism provides "an opportunity for farmers to add another profit center to what they already have established, another cash-flow center that they might not have had" (Walsh 2008:A9).

In 2010 Kenneth Smith, a fourth generation dairy farmer and owner of Cool Lawn Farm in Remington, expanded the market for his dairy products by establishing the Moo-Thru ice cream shop at the intersection of U.S. Route 29 and State Route 28 (Figure 11). Although Smith is a member of the Maryland & Virginia Milk Producers Cooperative Association and sends his milk to the association's processing plant, he also uses about 10,000 pounds (equivalent to one milking at his farm) from his

grazing dairy each month for the ice cream shop. Fluid milk and cream bottled in glass containers and ice cream are available at the store. Smith states that “Moo Thru allowed us to get our feet in the door to [direct] milk sales and I think we have just touched on it” (Showalter 2011). In its first month the shop had 20,000 visitors (Freehling 2010) (Figure 12).



FIGURE 11: Sign at Cool Lawn Farms, Remington

Since 1995 the Fauquier County Agricultural Development Department has organized an annual Fall Farm Tour in an effort to promote agriculture, which is still the county’s leading industry. The self-guided tour showcases several of the county’s premier farms that demonstrate the diversity of agriculture in the county and include beef and dairy cattle farms, alpaca and llama farms, wineries, orchards, apiaries, herb farms, and horse and hound farms (Figure 13).

At present, Fauquier County farmers are developing and following best management practices that will promote herd health and the conservation of their farmland. Some farms keep part of their herds as grazing herds, which graze in open pastures for the majority of their nutrition. Conservation practices include fencing off waterways, using cover crops during winter months, and nutrient management. As a method of preserving viable farmland, Fauquier County also has promoted a development of transfer rights program. This voluntary program allows farm owners to sell the development potential of a qualifying property to the county while maintaining the right to continue to own and use the property (Fauquier County Agricultural Development Department 2011).



FIGURE 12: Moo-Thru Restaurant, Remington



FIGURE 13: Brochure Promoting the 2011 Fauquier County Annual Farm Tour (Fauquier County Agricultural Development Department)

Livestock

In the seventeenth century, when the first cattle were brought to Virginia, no standard breeds of livestock existed, although there were small, isolated populations of bovines that had interbred and had developed distinct regional characteristics. The cattle that were brought to Virginia most closely resembled the dark red Devon breed from the south of England (Brown and Sorrells 2004:22, 24).

In the nineteenth century new breeds were gradually developed for specific purposes (beef, dairy), and older “all purpose” breeds fell into disfavor. By 1900 dairymen recognized the benefits of selective breeding, and improvement in breeding practices were developed in the early twentieth century by applying Mendelian genetic principles to selecting cows that had a distinctive figure—bony frame, narrowing toward the rump, with a big belly and udder. Ayrshires, Guernseys, Jerseys, and Holsteins, which exhibited these desirable characteristics, became the leading dairy breeds (Sharrer 2000:164-165).

Local and regional farmers’ groups, such as herd and breeders associations, formed in the 1910s and 1920s. These organizations focused on the dissemination of information on best farming practices, disease control and herd health, and the latest scientific information on herd diet and breeding.

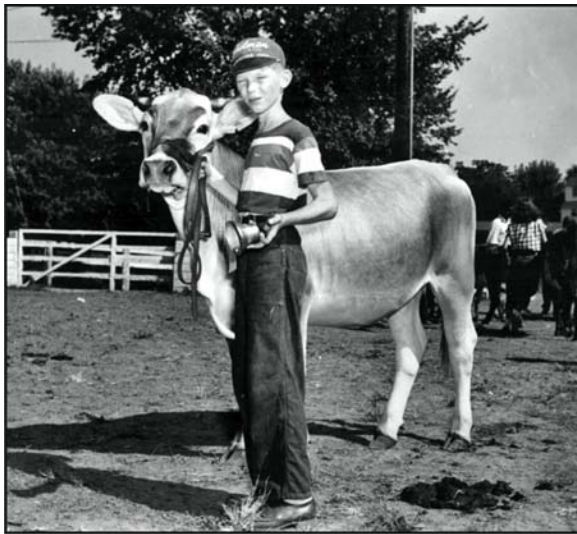


FIGURE 14: Gerald White of Fauquier County Exhibits His Brown Swiss Cow, n.d. (AGR 0651, Digital Library and Archives, University Libraries, Virginia Tech)

In 1926 the USDA conducted a special dairy survey that found that 51 percent of the reporting dairies had herds of registered Holsteins, 30 percent had Jersey cows, 22 percent had Guernsey cows, and 8 percent had other breeds, including milking Shorthorn cows (Bottom 1926:17). The survey, which identified the northern district as “the most important dairying section” in Virginia, included Fauquier County in the leading counties in the percentage of dairies reporting Holsteins. Jersey cattle and milking Shorthorns were popular in Shenandoah Valley farms, and Guernseys were popular in Loudoun and Stafford counties (Bottom 1926:17) (Figure 14).

In 1934 the VSDA assisted the VPI Dairy Extension Service in establishing the Virginia Dairy Bull Registry and in founding an organized dairy cattle breeding program using proved dairy sires (VSDA 2007:32). The first calf in Virginia conceived from artificial insemination was born in 1939, but the practice did not gain widespread acceptance until the 1940s (VSDA 2007:7, 47).

Historically, dairy farms have tended to be self-sufficient with regard to feeding their herds. Because the county has rich soils, Fauquier farmers are able to grow a variety of high-quality corn, hay, grains, and grasses. Cool Lawn Farms in Remington produces 1,200 acres of corn, 300 acres of soybeans, and 300 to 400 acres of hay crops every year for its 500-cow herd and sells its overage to other farmers (Kenneth Smith, personal communication 2011; Showalter 2011).

Dairy Cow Breeds

Dairy cows begin producing milk at around age two when they have their first calf. In general, cows calve every 12 to 14 months. Milking cows weigh between 800 and 1,500 pounds, depending on the breed. Cows are milked two to three times daily. With modern mechanized equipment, it takes about four to six minutes to milk a cow, and three to five gallons are produced during each session.

In 2007 Fauquier County had 43 dairy farms with a total of 4,086 cows (average herd size 95) (USDA 2011). Holsteins made up the majority of these herds; however, Brown Swiss and Jersey cows are also milked on Fauquier farms.

The following information on predominant dairy breeds found on Fauquier dairy farms is taken from the Virginia Tech Extension Service web site (4-H Virtual Farm 2011).

Ayrshire

This breed's color varies from light to deep cherry red, mahogany, brown, or a combination of these colors with white, or all white. It was first brought to America in 1822. This hardy breed produces milk with a moderate percentage of butterfat. In 1952 the Virginia Ayrshire Breeders Association was formed.



Brown Swiss

This very old breed is light to dark mouse brown/gray in coloring. It was first brought to America in 1869 and to Virginia in 1906. Its milk is often used in cheese making. In 1952 the Virginia Brown Swiss Breeders Association was formed.



Guernsey

This breed's color is fawn, lemon, or orange with white markings. It was brought to America in 1831 and to Virginia in 1884. Guernsey milk is high in protein and butterfat and because of that has a distinctive golden color. This breed is an ideal grazer. In 1916 the Virginia Guernsey Breeders Association was organized.



Holstein, Holstein-Friesian

This familiar black and white dairy breed, which originated in Holland, was brought to America in 1621. In 1870 the first registered Holstein was brought to Virginia. This breed on average produces the most milk per cow but with a lower percentage of butterfat than other breeds. The Virginia Holstein Breeders Association was formed in 1916.



Jersey

This breed is fawn in color, sometimes with white markings. It is the smallest dairy breed, but produces milk with the highest protein and butterfat content. The breed was brought to Virginia in 1871.



Shorthorn Milking

This breed's coloring is red or white or a combination of the two. It was brought to Virginia in 1783 and is one of the oldest recognized breeds in the world. The breed is known for large volume production and ease of calving.



PART II: THE FARM BUILDINGS

Planning and Layout of Fauquier County Dairy Farms

A conveniently located and a well laid out dairy farm were important cost- and time-saving factors for the farmer. Easy access to transportation was crucial. Early dairy farms were ideally located adjacent to or near a railroad stop, enabling quick transport of milk into the Washington, D.C., and Northern Virginia markets. Many farms in Fauquier County were situated near the Southern Railway (Figure 15). When the trucking of milk began in the 1930s, easy access to milk houses from main roads was most desirable.



FIGURE 15: Dairy Farm Located Adjacent to the Railroad in Midland

The arrangement of buildings, as well as the type of buildings, on Fauquier County dairy farms evolved over time with the development of new farming practices and new technologies; however, several factors in building arrangement on the dairy farms remained constant. Since a farmer would typically go back and forth two or more times a day between the farmhouse and farm buildings, dairy-related buildings were located close to the farmhouse (Figure 16). To reduce odors, however, it was ideal to have the barn and outbuildings situated downwind from the house—to the southeast, or west or southwest at a

slighter great distance (Granger 2005:6.83). The ancillary buildings and structures also needed to be close enough to the dairy barn for efficient operation but far enough to reduce the risk of spreading fire. A barn aligned north-south to allow maximum light through the side wall windows and on a well-drained



FIGURE 16: Overview of Dairy Farm near Remington

site was preferable. The layout also needed to provide stockyards, pastures, and holding areas for the dairy cows, calves, and bulls.

Designers and Buildings

As the construction of farm buildings was a costly endeavor, farm building design was initially slow to progress and improve, with little experimentation in design and materials. Farmers would avoid a potentially costly risk by attempting a new design and continued to build structures with which they were familiar. For a farmer to get his money out of a building, he would have to use it for many years. But construction costs went down once farm buildings began to be standardized. The factory production of doors, windows, and stanchions, for example, lowered costs by simplifying construction. Although the standardization of dairy barns began in the early twentieth century, the practice of standardization did not wholly take place until after World War II (Granger 2005:5.1).

Remodeling and enlarging existing farmhouses, barns, and other agricultural outbuildings was very common in Fauquier County, and the practice continues today. Farmers often started with modest buildings, knowing they could expand as production grew (Granger 2005:5.2). Others adapted their buildings to reflect new farming practices and technology, sometimes even moving buildings around the farm to be used for a new purpose (Figure 17). Farmers would often use supplies found on their lands, such as logs, fieldstones, and sometimes even sand and gravel, and they would also frequently re-use salvaged materials to reduce costs.



FIGURE 17: Stall Barn Modified to a Loose-Housing Plan, Cool Lawn Farm, Remington

The intentions of farm building design were not only to increase production by offering functional and efficient buildings but also to provide hygienic and disease-free spaces. As discussed in Part I, incidences of cattle diseases peaked between 1890 and 1915, and literature focusing on promoting hygienic farming practices increased at that time, with state and city agencies and private associations undertaking efforts to educate farmers (Lanier 1997:220). As a result technical bulletins, newspapers, agricultural journals, and advertising circulars were published to provide the dairy farm with advice on implementing hygienic farm practices.

By the turn of the twentieth century, agricultural literature at the national level promoted a standard dairy barn designed to replace the odorous, poorly ventilated, poorly lit, windowless barns of the nineteenth century. As early as 1905, the Dairy Division of the Bureau of Animal Industry (USDA) began investigating dairy barn construction and requested that those dairymen with “exemplary barns” contact them with specifications for materials and construction techniques (USDA 1905). Responding to a great demand for information on the construction of dairy barns, the Dairy Division, under the leadership of Ed H. Webster, published a brief circular of recommendations for dairy barn design in 1908. Webster wrote that the Dairy Division had begun developing basic principles of hygienic dairy building construction but that the designs were still in the formative stages (Webster 1908). Although the location, treatment for exposure, size, form, and building materials would vary from dairy to dairy, the USDA felt that problems of ventilation, cubic air space per cow, light, floors, and ceilings—those issues most directly relevant to disease prevention—would be universal.

In its circular the USDA provided detailed plans for a modern dairy barn and other dairy buildings (Figure 18). The location and precise layout of buildings on a dairy farm was left to the individual dairyman, but Webster stipulated that the amount of space allotted to various specific functions should meet standard requirements. The circular also included recommendations and designs for silos, dairy houses, creameries, and ice houses. In 1923 the USDA’s Dairy Division published a comprehensive circular specifically geared to dairy barn construction. The circular established the essential features in dairy barn construction and defined two common types of dairy barns: a one-story cow stable with feed stored in a separate building, and a two-story barn in which the feed was stored on the floor above the cows. That circular suggested that the two-story model was commonly found in colder regions, and dairymen in Southern states usually constructed a one-story barn. Virginia’s barns, both before and after 1923, most often had stories. Virginia’s cold winters most likely made the one-story “Southern” model inefficient. The two-story barn, prevalent in much of the Middle Atlantic region, was also more practical, as it provided extra storage space. The Dairy Division publication, like those issued previously, focused on light, recommending 6 square feet of glass per cow; air movement, stipulating no less than 500 and no more than 1,000 cubic feet per animal; and proper ventilation. For ventilation the King System was recommended, which provides for small intakes and one or more large outtakes. Additionally, a barn was to be dry, well drained, and, when possible, run north-south to maximize available light. In 1945 the USDA recommendations remained substantially the same (USDA 1945).

Building plans were also made available to prospective dairymen by private industries that were financially interested in the continued activities of the farmers. These private enterprises included railroad companies, flour mills, food processors, farm equipment manufacturers, building materials makers, lumberyards, hardware distributors, seed companies, and fertilizer and chemical firms (Granger 2005:5.8-5.9). In 1911 Kent Manufacturing Company, which sold dairy barn blueprints and specifications, published a promotional pamphlet titled “Helpful Hints For Him Who Builds a Dairy Barn.” The pamphlet provided suggestions on such topics as site, size, and appearance of dairy barns. Plank frame barns, called the “newest thing in barn framing,” were considered to be a more economical option than barns constructed of heavy timber (James 1911). The importance of an appropriate ventilation system was emphasized, along with the King System of Ventilation. Unlike Webster’s plans, which recommended 6 square feet of glass per cow, these plans only called for 4 square feet of glass per cow, reducing costs.

Dairy farm buildings were typically built by the farmers themselves, often with the help of relatives, neighbors, and other farmers, and the farmers would often find themselves having to build at least one new building on their dairy farms per year (Smith 2011). As the dairy buildings became more complex,

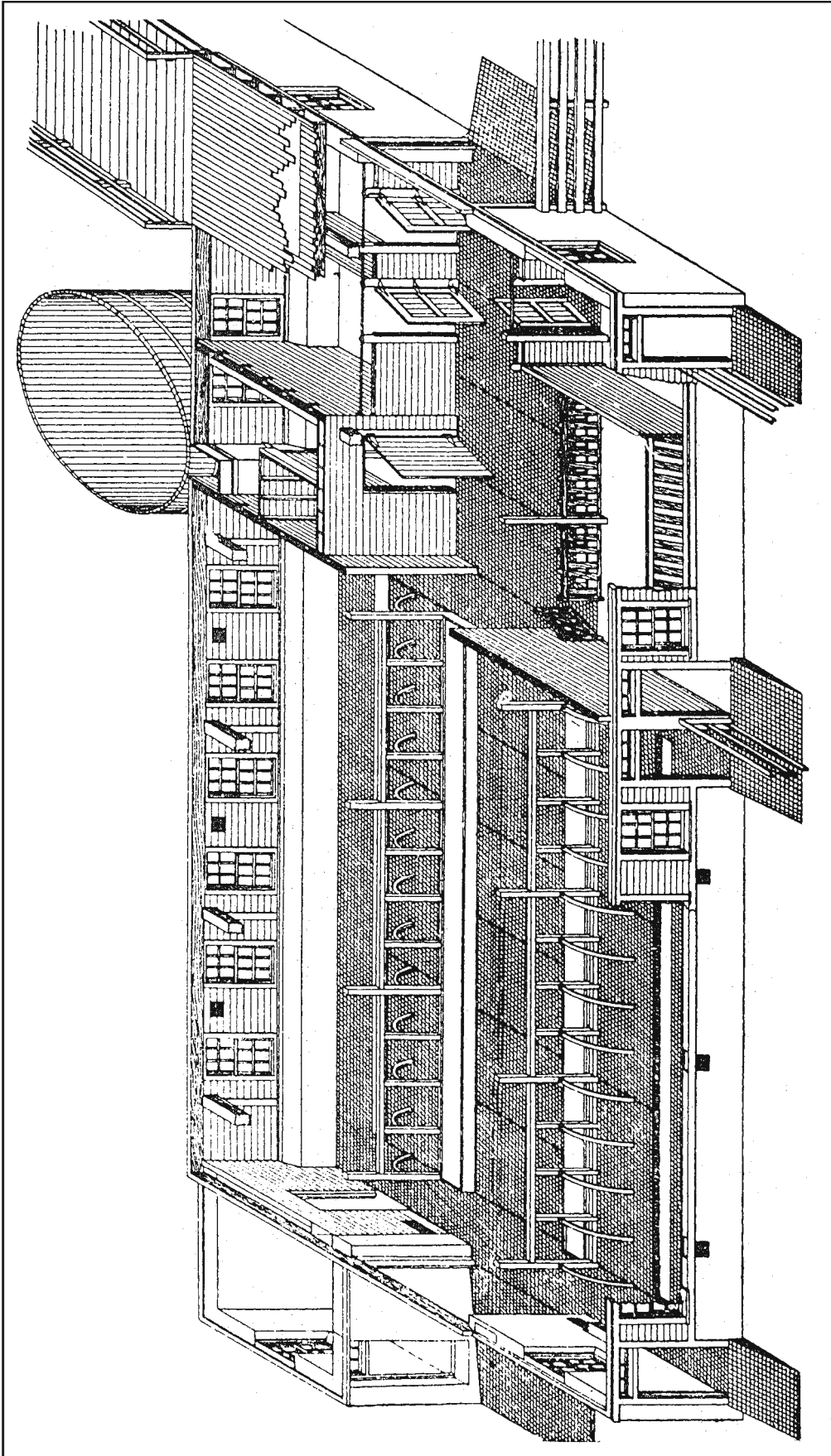


FIGURE 18: An Interior Illustration of a Government-Recommended Dairy Barn Design (Webster 1908)

because of the sanitary regulations and the introduction of new technologies after the turn of the twentieth century, professional carpenters and building contractors were increasingly used for building construction. These builders would also provide plans (Granger 2005:5.17). Specialized structures, like cement staves, or patented products were often constructed by the companies that produced the products.

Building Materials

Wood was the most commonly used building material on dairy farms for many years. Yet efforts to improve the durability and function of farm buildings and to lower costs led farmers to search out new materials. Wood used on dwellings, barns, and outbuildings had to be repainted frequently to prevent deterioration, and wood also posed a great fire risk. Some dairy farmers therefore began using lower maintenance materials like brick, hollow clay tile, and concrete block. Dairymen, as well as building and equipment manufacturers and industry trade groups, evaluated and critiqued the new materials. During World War I and World War II, the development of alternative materials increased significantly because of wartime shortages of traditional materials. A shortage of farm construction labor brought about by the postwar housing construction boom further stimulated an interest in low-cost, labor-saving materials and methods, such as the use of corrugated sheet metal (Granger 2005:5.35). The building materials most often used on dairy farms in Fauquier County are discussed below.

Aluminum. The use of aluminum on farm building was minimal until after World War II, when wartime aluminum factories sought out new markets and steel was still in short supply (Granger 2005:5.35). Aluminum was used for both siding and residing of dairy farm buildings as well as for roofing. A long-lasting material, aluminum was also low maintenance and easy to build with. It was not as durable as steel.

Asbestos-Cement Board. Made of 85 percent Portland cement and 15 percent asbestos fiber, asbestos-cement board was used on farms beginning in the early twentieth century and was widely used by mid-century (Granger 2005:5.39). Asbestos-cement board was durable and fire- and waterproof, but because of its durability it could be difficult to drill and shape. During the 1930s and 1940s, the material was recommended for interior walls for dairy barns and milk houses because of its acid resistance.

Asphalt Composition Siding. First available in the 1880s as a rolled roofing material, it was not long before it also was used for siding. It was used in both rolled and shingle form.

Brick. If a brickyard was nearby, brick could be an economical long-lasting building material. Brick was first used on farms beginning in the nineteenth century and most commonly used in the construction of houses and fireproof structures like silos and smokehouses. Brick was used on some dairy farms for both barns and milk houses.

Concrete. Reinforced concrete and concrete blocks were widely used after 1900. Concrete was durable and easy to manipulate. Farms used concrete for foundations, basement walls, footings, walkways, pavements, and floors. Concrete was particularly useful in dairy barns for floors, stalls, and gutters and in cement staves (Figure 19). Since concrete was easier to clean than wood, in some areas sanitary regulations prohibited wood floors in dairy stables (Visser 1997:98).

Fiber Products. Both fiberboard and fiberglass were broadly used after World War II. Fiberboard was first used on farms in the 1920s and remained popular until the widespread use of plywood and particle



FIGURE 19: Interior of Dairy Barn Depicting Concrete Floors and Gutters

in the 1960s (Granger 2005:5.39). It was easy to build with but not particularly durable. Farmers used the material in flooring, siding, roofing, wall partitions, and other interior surfaces. Fiberglass was strong and waterproof but did not have a long life span. It was mainly used for roofing and windows.

Metal Sheets. Although available during the second half of the nineteenth century, galvanized sheets of iron and steel were widely used by farmers during the first half of the twentieth century to cover farm buildings, both for roofing and siding (Granger 2005:5.41). The panels could be corrugated, joined with standing seams, V-crimped, and decoratively patterned to resemble other building materials. Metal sheet was fire-resistant, durable, and low maintenance. There major disadvantage was the material's conductivity, which could lead to high temperatures.

Plywood. First developed in the nineteenth century, plywood was used by farmers primarily after World War II for beams, columns, subflooring, flooring, and wall and roof sheathing (Granger 2005:5.43-5.44). Plywood was easy to work with but not as durable as other building materials.

Structural Clay Tile. Structural clay tile was used in the first decade of the twentieth century and on into the 1940s. Buildings and structures built of clay tile could be sited closer together because clay tile is fire-resistant. Used for silos, barns, milk houses, smokehouses, and dwellings, clay tile was long-lasting but difficult to work with (Figure 20).

Wood. Wood was used for framing and siding in dairy barns and other outbuildings. Framing techniques included post-and-beam, post frame or "pole barn," laminated trusses used in some Gothic arch-roof barns, and plank framing (balloon frame) (Figure 21). Siding was either vertical or horizontal wood plank on barns. Board-and-batten was also used on barns and outbuildings.



FIGURE 20: View of Dairy Barn and Milk House Featuring Structural Clay-Tile Construction, near Midland



FIGURE 21: Interior of Dairy Barn Framing

Individual Buildings and Structures Associated with a Fauquier County Dairy Farm

Dairy Barns

Bank barns were sometimes used as dairy barns beginning in the 1870s and up to around the 1900s (Figure 22). Cow stables were located on the lower level and hay was stored above. Stall barns (also called ground-level stable barns) began to be constructed in the early twentieth century with the availability of mechanized power and concrete as well as the increased interest in sanitation brought about by the fears of spreading tuberculosis (Visser 1997:97). The stall barns feature a main level with stables at grade with no manure basement below, greatly reducing odors and the spread of disease.

Floors are poured concrete, and manure is collected in a gutter and removed by a trolley system. Stall barns usually had two rows of stanchions with cows either facing in or out. The space above the stables served as a hayloft. Some farmers converted their older barns by converting manure basement levels into stables with concrete floors, while others lifted their barns onto new, taller first stories (Visser 1997:98).

As mentioned previously, the USDA published detailed plans for dairy barns and its related buildings in 1908 (Figure 23). In the USDA circular the exterior width of a dairy barn was 36 feet, 4 inches, allowing ample space for stalls and passages. The length was variable based on the number of cows to be housed. The side walls were to be built of stone or concrete as far up as the window sills, with the remainder of frame construction. The end walls were constructed entirely of stone or concrete (Webster 1908). Approximately 6 square feet of window space was recommended for each cow. The stalls had a width of 3 feet, 6 inches and a depth of 4 feet, 6 inches, and the alleys located behind the cows were 4 feet wide.



FIGURE 22: View of a Bank Barn near Hume

Concrete flooring was recommended as the only sanitary option; additionally, concrete was durable, and therefore economical, and comfortable for animals when enough bedding material was used (Webster 1908). Regional variable factors in the dairy barn design included the ceiling height and the ventilation system.

The 1911 Kent Manufacturing Company pamphlet for dairy barn construction elaborated further on window openings, recommending a single sash window hung at the bottom. Opening the window from the top pushed the air towards the ceiling, enhancing circulation and protecting cows from drafts (James 1911). Like the USDA, the pamphlet encouraged a barn width of 36 feet and the use of concrete floors. Kent also advocated the use of iron columns, writing that “dairymen and farmers are finding iron columns far better supports for a barn than wood, as they occupy less space, interfere less with light and air, are neater, more up-to-date in appearance, and are more durable, costing less in the long run than wood” (James 1911). Walls were designed to be modified for different climatic conditions: one layer of siding was sufficient for the South, and dead air spaces between the façade and interior walls were needed in the North.

A few early stall barns were built with post-and-beam construction, but by the 1920s lightweight plank framing was widely used. The barns were fully sided in weatherboard/asbestos shingles, while others had poured concrete or concrete block at the first-story level. Some dairy barn examples were built entirely of concrete block and structural clay tile. The gambrel roof line was the most popular choice in stall barn design as it contained a greater volume of space than a gable roof. A less used roof shape was the Gothic arch roof, which used prefabricated curved rafters to maximize the volume in hay lofts (Figure 24). Although the gambrel roof is the most popular, both roof types are commonly found on dairy farms throughout Fauquier County. Hay tracks would run beneath the roof ridge and could lift hay from wagons into the loft, or mechanical conveyer belts were used to transport bales of hay into the loft (Visser 1997:100). A hood at the gable peak would shelter the hay as it entered the barn (Figure 25).

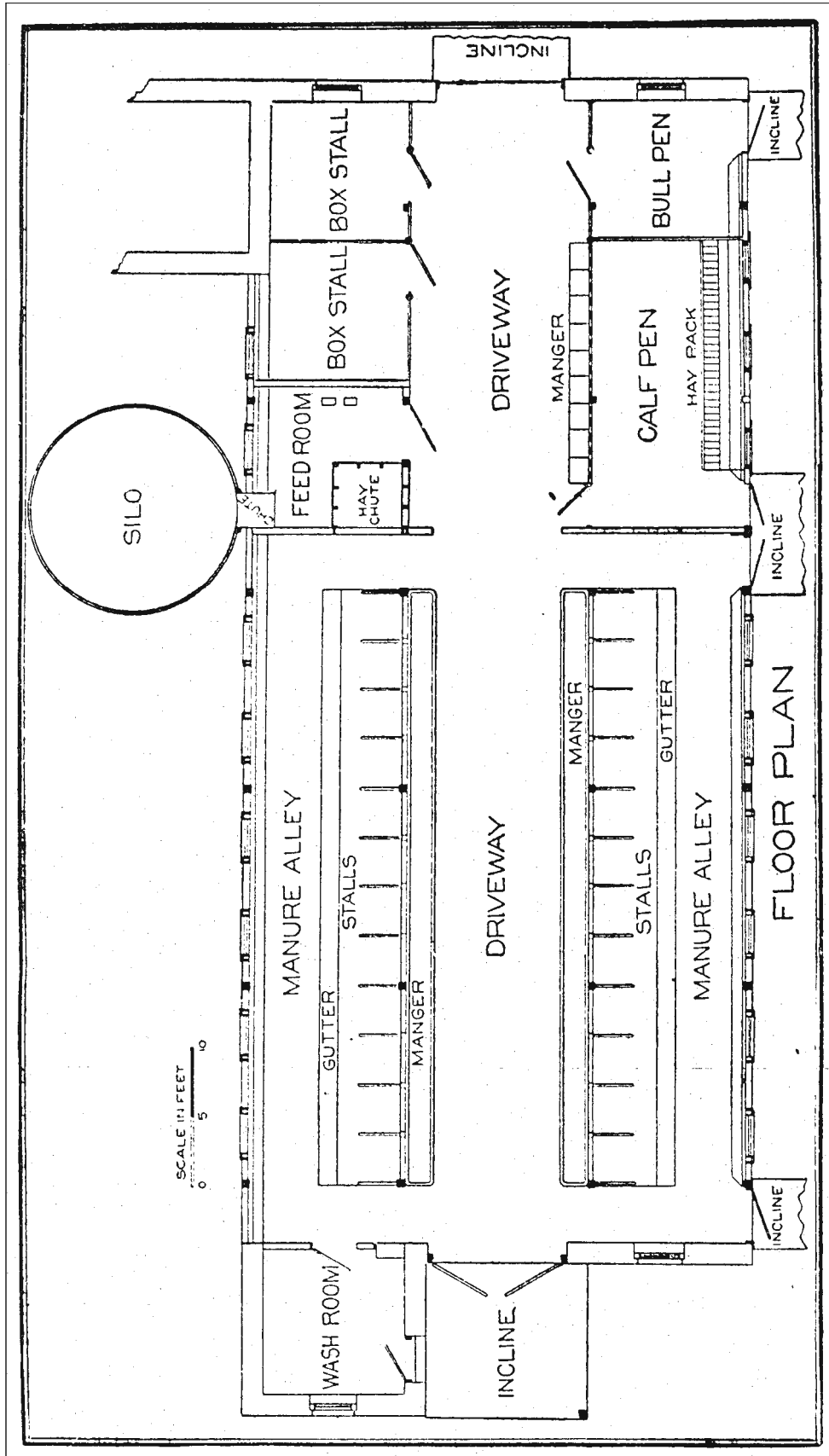


FIGURE 23: Floor Plan of Government-Recommended Dairy Barn Design (Webster 1908)



FIGURE 24: Gothic Arch Barn and Milk House, Atoka Forge Farm, near Atoka



FIGURE 25: View of Dairy Barn with Hay Conveyor Belt, Cabin Hill Farm, near Elk Run

Pen barns (also called loose housing and loafing barns) were initially less popular because they required a separate milking barn or milking parlor. Pen barns were built with either one or two stories. Cows spent most of the time in a loafing or resting area but also had access to a feeding area, an exercise area, and a holding area where they waited to enter the milking barn. First introduced in the 1940s, pen barns are either built with concrete foundations and stud-framed walls or as pole barns with open sides. Pole barn construction was developed in the 1930s and grew in popularity following World War II (Visser 1997:102). Poles were set into the ground, and the barn either had no floor or a concrete slab. Metal sheathing, which could expand the widely spaced poles, was used for siding and roofing.

By the 1970s most stall and pen barns built no longer included a hay loft. By the mid-twentieth century farmers had begun storing feed in silos or leaving hay bales outside, eliminating the need for two-story barns. Today most dairy farmers in Fauquier County use pen barns with separate milking parlors, and some farmers have converted old stall barns into loose housing by removing the stanchions inside or by constructing free-stall additions and milking parlors (Leonard 2011; Visser 1997:102-103) (Figure 26).



FIGURE 26: Pen Barn and Milking Parlor, Cool Lawn Farm, Remington

Ancillary Dairy Buildings

In addition to dairy barns, the dairy farms need a number of buildings and structures to perform dairy operations. These included milk houses, milking barns, silos, manure pits, stockyards, bull barns, hay barns, and equipment sheds.

Creameries. Creameries were first built by farmers beginning in the 1850s, when they began producing butter with their growing dairy cow herds. Some locales had cooperative creameries during the late nineteenth century that were often located at a railroad stop. Farmers shipped their processed milk to the creamery by wagon in metal milk cans (Visser 1997:112).

Since keeping a mild temperature was important, the creameries were preferably built into a bank or behind shade trees and had thick walls and rooftop ventilators. Interiors were either whitewashed with lime, plastered, or tiled for easy clean-up and contained a sink for washing equipment (Visser 1997:111). A cool storage room was often included in the creamery (Figure 27). The time required to separate the cream was greatly reduced when farmers began using centrifugal cream separators in the 1880s (Visser 1997: 112). Creameries are not as prevalent as other dairy building types found in Fauquier County.

Milk Houses. Milk was initially stored in spring houses on farms in the nineteenth century, although some examples of milk house building types were present. Beginning in the early twentieth century, state regulations mandated that milk storage on dairy farms be in a sanitary building separate from where cows were milked or stabled (Figure 28). Farmers met these regulations by adding attached milk houses onto their barns or by building free-standing milk houses close to the barns. Both types are prevalent on Fauquier County dairy farms. The buildings were typically small and one-story with a shed or a gable roof and were about 10 to 12 feet on a side, either square or nearly square in plan. Exterior

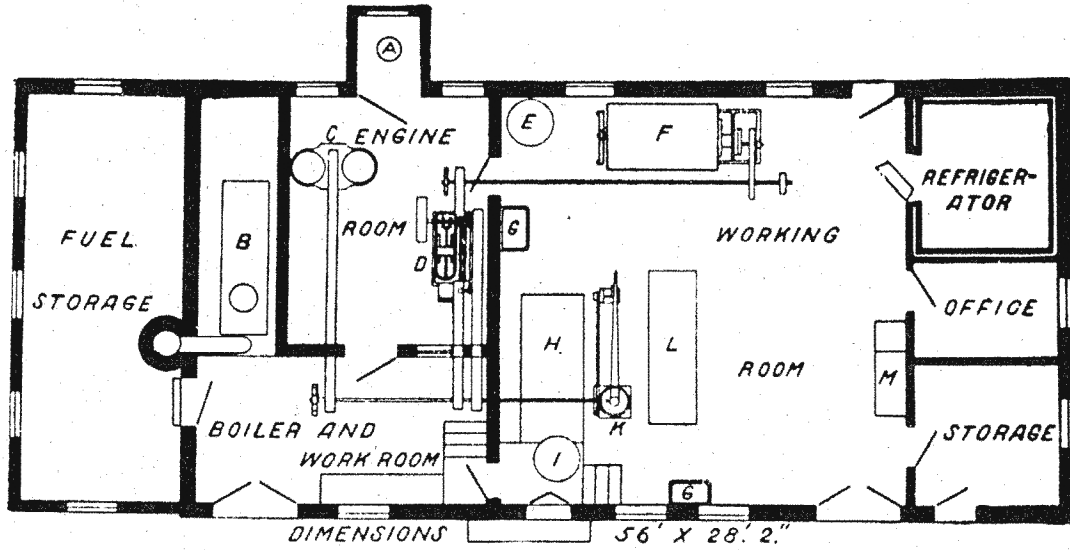


FIG. 33.—Floor plan of creamery for whole milk.

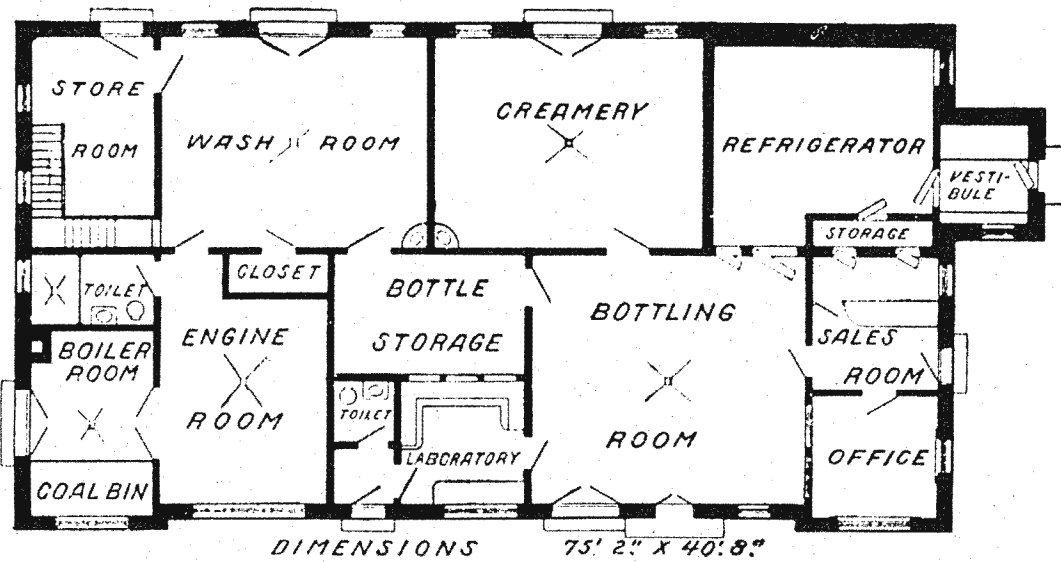


FIG. 34.—Floor plan of creamery and city milk plant.

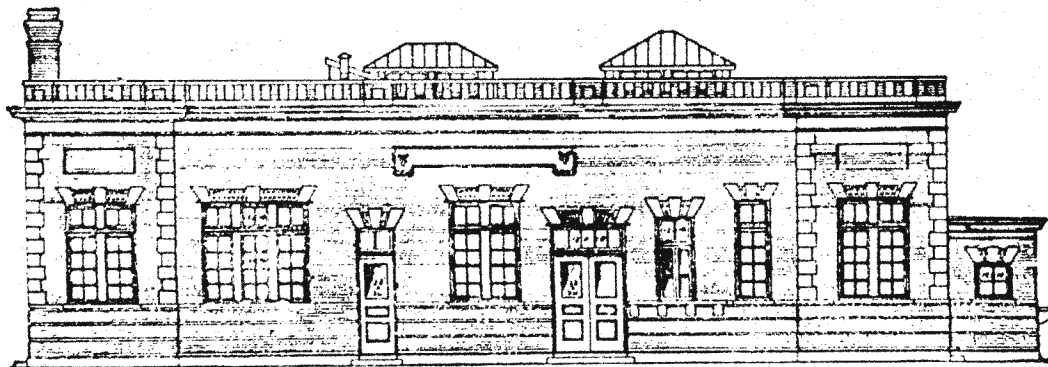


FIGURE 27: Floor Plan of Creamery (Webster 1908)

walls were either clad in weatherboard siding or built of concrete block or clay tile. The interiors of milk houses were designed to keep milk cold and clean and housed washable equipment and surfaces. Concrete and ceramic tile, because both are so easily cleaned, were most often used inside a milk house. Milk was either carried or piped in to the milk house, where it was placed in metal cans that were placed in cooling tubs or trenches until ready to transport (Vogel 2007:E:38). Today the milk is stored in stainless steel refrigerated bulk tanks, which were introduced on dairy farms in the 1960s (Visser 1997:117). Milk is pumped directly from the tanks into tank trucks that transport it to the milk co-operative processing plants.

Milking Parlors, also called Milking Barns. Milking parlors were generally built on dairy farms using pen barns or loose housing for dairy cows. Although a few pre-date the 1940s, milking barns became more popular after World War II. Milking parlors in Fauquier County most often feature wood-plank construction, wood or metal siding, and poured concrete and concrete-block lower walls (Figure 29). A few were built with structural clay tile.



FIGURE 28: Milk House near Hume

Silos. Silos first appeared after 1875 and were not widely used until around the turn of the twentieth century (Lanier 1997:211). By the mid-twentieth century they were common feature associated with an agricultural landscape, and their acceptance by farmers resulted in a permanent change in agricultural practices and buildings used by farmers. Used for grain and feed storage, silos are a necessity on a dairy farm for the airtight storing of green fodder crops that can be used throughout the year. Silos enable farmers to keep much larger number of cattle more economically and with less intensive labor.

The earliest silos were excavated masonry-lined pits often built under barns; however, these silos were too labor-intensive and were soon replaced with upright, tower silos. Tower silos were built in several forms, including rectangular, gable-roofed towers attached to existing barns, and cylindrical towers constructed of wooden staves, masonry, poured concrete, tile blocks, or brick (Lanier 1997:212). As early as the 1890s, vertical wood silos that were either square or rectangular in plan were built inside dairy barns as well as outside dairy barns (Visser 1997:131). The wooden silos were typically built in two ways—either with horizontal framing members sheathed on both the inside and outside in vertical boards, or with balloon framing with long vertical studs clad in horizontal siding.

The design of round and polygonal silos was a product of farmers attempting to eliminate spoilage in the corners during the early 1900s. Wooden polygonal silos and wooden stave silos were built and used during the late nineteenth and early twentieth centuries. Wooden stave silos were relatively affordable but required interior linings to be airtight and the iron bands and turnbuckles that held them together needed periodic tightening (Lanier 1997:212). The silos were covered with conical roofs clad in composition sheeting and topped with metal ventilators. Beginning in the 1920s, wooden silos were gradually replaced by masonry silos and the wooden ones are now nearly extinct in Fauquier County.

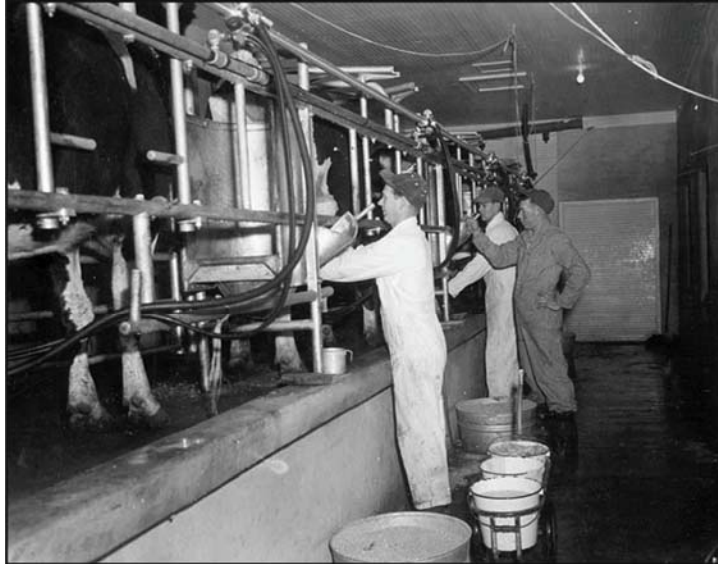


FIGURE 29: Interior View of Milking Parlor, 1954 (AGR 4674, Digital Library and Archives, University Libraries, Virginia Tech)

Concrete stave silos were first developed in the early 1900s, using the design behind their wooden counterparts but also offering greater durability. The factory production of patented concrete stave silos began in the 1920s, and they continue to be one of the most popularly used types of silos throughout the country. Concrete stave silos are the most popular type of extant silo found on Fauquier dairy farms today. Unlike the wooden stave silos, the concrete versions only need their steel hoops to be tightened once after construction. Interiors were typically coated with a cement wash (Visser 1997:138).

Tile silos were primarily built during the 1920s and 1930s and were effective for storing silage because they were airtight (Figure 30). The Depression, coupled with the fragility of the tiles, led to a decrease in the popularity of tile silos (Visser 1997:139). On dairy farms tile silos can often be seen paired with a tile-constructed milk house or dairy barn. Although not as popular as concrete stave silos, extant tile silos can be found throughout Fauquier County today.



FIGURE 30: View of Dairy Farm with Concrete Stave Silos and Harvestone Silos near Elk Run

Since the 1960s and 1970s, steel silos have become very common on active dairy farms throughout Fauquier County. They were initially slow to become popular because of fears that the silage would freeze, but they offered farmers airtight storage. The A.O. Smith Company developed the Harvestone silos in 1945, which feature fiberglass bonded to the blue steel to resist corrosion and provide insulation. Although nearly twice the cost of a concrete-stave silo, the Harvestone silos come equipped with mechanical unloaders that remove silage from the bottom with an auger (Visser 1997:140).

Bull Barns. Bulls were kept by dairy farmers to breed dairy cows, with a single bull kept in a separate small building beginning in about 1900. For sanitary reasons it was not recommended to keep a bull in a barn with other animals. A typical bull barn was a wood-frame building with a concrete-block foundation, shed roof, a window or two, and a door for both the bull and the farmer. The interior included a manger and a stanchion for when the bull needed to be restrained. A stockyard with a reinforced pen and views of the herd was ideal for exercise (Granger 2005:6.42).

Calf Shelters. In the past calves were often kept in separate stables within the dairy barns. Today most are housed in individual calf hutches, made of molded, heavy-gauge plastic, to limit the spread of illness. Other examples of calf housing include wood-frame shelters with shed roofs (Figures 31 and 32). Both the calf hutches and calf shelters are widely used on active dairy farms in Fauquier.



FIGURE 31: View of Calf Hutches, Cool Lawn Farm, Remington



FIGURE 32: View of Calf Shelters, Cool Lawn Farm, Remington

Manure Handling. By the 1910s dairy farmers were storing manure in a manure pit or bunker after its removal from the barn and before it was spread on fields. A manure pit was a covered, three-wall, poured concrete structure designed to accommodate a manure spreader (Granger 2005:6.325). The pits would collect manure as it liquefied, which then would be spread on the fields periodically. A more recent method for storing manure is the manure lagoon, which first appeared in the 1970s and is ideal for farms with large numbers of livestock.

Offices. A dairy farmer would often have an office on the farm to meet with state and federal agricultural agents. Sometimes the office would be incorporated into another building, such as a milking parlor, or would be free-standing but close to the other dairy-related buildings.

Landscape Features. The various components of the farm's landscape are important to understanding the historic development, operation, and significance of the dairy farm. All farms have a system of routes, or circulation networks, for the movement of people, vehicles, and animals, and these include roads, driveways, field lanes, and animal paths. The circulation network connects buildings, barnyards,

stockyards, fields, gardens, woodlots, and pastures, which are often defined by fences, trees, and plantings. See the NPS *Guidelines for Evaluating and Documenting Rural Historic Landscapes* (1999, revised) for additional information on landscape features.

Ancillary Buildings. Other ancillary buildings that may be included on the farm but are not directly associated with dairy operations include:

- equipment/implement sheds (Figure 33);
- vehicle sheds;
- general sheds;
- granaries (Figure 34);
- chicken houses;
- hay barns (Figure 35).



FIGURE 33: View of Wood-Frame Equipment Shed, 1953,
Fauquier County (AGR 3051, Digital Library and Archives,
University Libraries, Virginia Tech)



FIGURE 34: View of Large Corncrib near Midland



FIGURE 35: View of Pole Barn near Markham Used as a Hay Barn

National Register Evaluation of Dairy Farms

To be eligible for the National Register, a dairy farm must generally be at least 50 years old, retain sufficient integrity to convey its historic character, associations, and significance, and meet at least one of the four National Register Criteria for Evaluation (see *How to Apply the National Register Criteria for Evaluation* [1997]). Fauquier County dairy farms would most likely be eligible for listing in the National Register in the Areas of Significance of Agriculture, Architecture, and/or Engineering.

National Register Criteria

Criterion A: properties associated with events that have made a significant contribution to the broad patterns of history. To meet Criterion A, a dairy farm must have an important association with a broad pattern of history or be associated with a significant event.

Fauquier County dairy farms may be eligible for listing in the National Register under Criterion A for their association with the development of the dairy industry at a local, state, or national level. The dairy farms, including the dairy barns, milk houses, and silos, are important physical manifestations of the history and evolution of Fauquier County's dairy industry and may be associated with a broad pattern of history, such as representing a long history of production, or with a specific event that influenced the future of dairy farming.

Criterion B: properties associated with the lives of persons significant in our past. Dairy farms may be eligible under Criterion B if they are associated with a person who made a significant contribution to the development of dairy farming on a local, state, or national level. The property must be linked with the person during the time period that the contributions were made.

Dairy farms that were directly and significantly associated with individuals who played an important role in the development of the dairy industry in Fauquier County may be eligible for the National Register under Criterion B.

Criterion C: properties that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction. A dairy farm may be eligible under Criterion C as representative of a significant construction method, engineering concept, or use of materials. A dairy farm may also qualify under Criterion C as a significant and distinguishable entity whose elements may lack individual distinction.

Dairy farms represent potentially significant architectural resources and should be carefully evaluated under National Register Criterion C. The architectural and engineering significance of a particular farm will most often be related to its design and the construction characteristics of the individual buildings that together make it an outstanding example of a dairy farm complex. Dairy barns and associated buildings that may be otherwise undistinguished by their design, form, and materials but which retain good historical integrity may also be considered eligible for the National Register when they represent sole or rare survivors of a farm (see previous discussion of individual dairy farm elements for the distinguishing characteristics of building types and landscape features).

Criterion D: properties that have yielded, or may be likely to yield, information important in prehistory or history. This Criterion would apply to archaeological resources and would be governed by the intact nature of the deposits.

Period of Significance

The period during which the dairy farm attained significance can also be defined as the time during which the property was associated with important events, patterns, activities, or persons, or the time during which the farm attained important physical characteristics. Determining the period of significance helps identify the broad patterns, trends, or events with which a property may be associated and helps in the analysis of a property's physical integrity. The period of significance for a dairy farm, in most cases, would be when it was a producing dairy farm, although the continuing agricultural nature of the property would contribute to the intact nature of the physical context.

Contributing and Noncontributing Elements

Elements are identified as contributing or noncontributing to the significance of a dairy farm based on their age, function, level of historical integrity, and historic associations. Generally, those resources that were built during the period of significance and relate to the operations of the farm would be considered contributing. Modern resources (i.e., less than 50 years old), even if associated with the dairy operations, are generally considered noncontributing. If an element has been substantially altered since the period of significance or does not share the farm's historical associations, it would be noncontributing. Making these distinctions can be useful in assessing the integrity of the dairy farm and determining National Register eligibility.

With the active dairy farm it is important to consider that change is often a characteristic of these farms. Often historical barns and sheds have been converted to other uses. The surveyor must consider whether a resource retains sufficient integrity (see below) to convey its historical appearance and function.

Integrity

When assessing historic integrity of a dairy farm, particularly a working dairy farm, it is important to consider that farms were built with the expectation that they could be altered to meet the changing needs of the farmer. Modifications in form and materials during the farm's period of significance may have gained historical value in their own right as a reflection of the property's agricultural use or as a reflection of a technological advancement. For working farms, the evaluation of historic integrity must accommodate the changes that are normal, or at least necessary, for continued operation.

A Fauquier County dairy farm should retain its original **location** to be eligible for the National Register. A rural **setting** is also significant to the integrity of the farm. In addition to being part of a rural landscape, the dairy farm should include its integral outbuildings, including a barn, milk house, equipment and storage sheds, and other associated structures.

The **design** of the dairy barn, milk house, and other associated buildings, including their siting, plan, massing, and fenestration, should remain intact. The design of a dairy farm also includes the physical relationship of buildings to each other and the overall layout of the farm complex. Dairy farm operations are often tight, compact building complexes that have specific functional relationships.

The presence of original exterior **materials** is an important component to dairy farm building's integrity of design. Materials can show how Fauquier dairy farms developed, operated, and evolved. To retain acceptable integrity of materials, changes made to the property's materials after the period of significance should not prevent the farm from conveying its historical and architectural significance.

Workmanship can convey information about the design and construction of dairy farm elements, how farms have changed through time, technological developments, the influence of broad patterns and trends, and the imprint of individual craftsman and builders. To retain integrity of workmanship, physical changes made after the period of significance should not obscure or detract from historical workmanship to the degree that the property is no longer able to convey its historical character, associations, and significance.

Feeling is the farm's expression of the aesthetic or historical sense of a particular period of time. To retain sufficient integrity of feeling, the farm should retain enough physical characteristics from its period of significance to convey its historical character and associations. Integrity of **association** means a dairy farm is still able to convey its links to broad patterns and trends, historical events, and important people.

CONCLUSION

Dairying has been a mainstay of Virginia agriculture throughout the state's history. In the late nineteenth century technological advancements and government regulations ensuring quality production laid the foundation for the commercial success of Virginia dairy farms in the early twentieth century. The 1940s and 1950s were a high point for Northern Virginia dairies, which stretched from Fairfax and Prince William counties, through Loudoun, and into Fauquier County. Dairying remained one of the chief industries of the region into the 1960s but suffered a decline in the 1980s. Late twentieth-century residential and commercial development along with soaring production and land costs doomed many of the small, family-operated enterprises.

At present, although agriculture continues to be an important part of the local economy, exurban residential development has proceeded at a steady pace over the past 15 to 20 years. Numerous housing developments have sprung up on former farmland. Yet in recent years dairying has returned as an important economic factor; in 2010 the total amount of milk produced in the state amounted to 199.88 million gallons (or 1,719,000,000 pounds), and cash receipts for the sale of milk amounted to \$331,900,000,000 (VSDA 2011).

Both historic and operating dairy farms dot Fauquier County's landscape. Some of Fauquier's historic dairy barns have been converted to house other livestock, such as pigs, beef cattle, sheep, and horses. Some barns are now used as foxhound kennels. As feeding processes have changed over the years, there also is less need for hay storage, which has resulted in disuse of some barns and silos. Modernized mechanization has also rendered some spaces obsolete, and many farmers have opted to move milking into a separate building.

The historic dairy farms in Fauquier County reflect the advancements in technology, sanitation, production levels, and herd management that keep the industry competitive in the state. The development and growth of the dairy industry in Fauquier County in the early twentieth century can be attributed to an increased population in the Washington, D.C., metropolitan area, improved transportation routes and modes, an increase in mechanization of farm tasks, and improvements in temperature-controlled storage and shipment. Attention to livestock health and breeding methods also improved herd production. Diversification on dairy farms and involvement in agribusiness and agritourism endeavors have provided additional revenue streams for Fauquier's farmers and for the future of dairying in the county.

For the near future, the outlook for dairy farming Fauquier County is as good as anywhere in the United States. We have a viable market here for our milk if we don't get pushed out by development.

*--Wilbur Burton
Calverton Dairy Farmer
(Hutchison 1988:13)*

Preparers

This historic context was completed by The Louis Berger Group, Inc. (LBG), for Dominion Virginia Power (DVP). LBG architectural historians Debra A. McClane and Megan Rupnik researched and wrote the report, and Eric Voigt served as project manager. This report and an associated online brochure were produced as part of DVP's obligations for mitigation agreed upon with the Virginia Department of Historic Resources relative to the Meadow Brook to Loudoun 500kV Transmission Line Project, which traverses part of Fauquier County.

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