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Agricultural Resources of Pennsylvania, c. 1700-1960

**Northwestern Woodland, Grassland, and Specialized  
Farming Region, c. 1830-1960**

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This document is a parallel to the official National Register MPDF narrative. The two versions are not identical, but they contain the same information differently organized. National Register policy prohibits embedded images in official documentation. These PDF versions re-integrate the images for the reader's convenience. The National Register documentation was completed and submitted piecemeal. This PDF document reflects the updates made during the process of making statewide coverage together, again for the reader's convenience.

### **Conceptualization: Historical Farming Systems and Historic Agricultural Regions**

Pennsylvania presents interesting intellectual challenges for the agricultural historian and archaeologist. The watchword for Pennsylvania's agricultural history is "diversity." The widespread transition to a relatively specialized monocrop or single-product system did not really take hold until after the Second World War in Pennsylvania. Beginning in the settlement era and stretching well into the 20th century, diversity of products was a hallmark of nearly every farming region as a whole, and of individual farms too. As late as 1930, the state Agricultural Experiment Station Bulletin proclaimed "the largest number of farms in Pennsylvania are the farms with some diversity of crops and livestock production."<sup>1</sup> According to the 1930 Federal census, nearly 53 percent of the state's farms were either "General," "Self-Sufficing," or "Abnormal" (mainly part-time) farms. "Specialized" farms were defined as those where at least 40 percent of farm income derived from a single source. These included types labeled variously as "dairy," "cash grain," "fruit," "poultry," and "truck farms."

Over time, regionalism declined in significance within Pennsylvania, yet farming across the state remained surprisingly diverse. Along with other eastern states, Pennsylvania agriculture shared in the general shift more towards specialization, commercialism, state oversight, industrialization, decline in farming population, and the like. This trend is recognized in the context narrative. However, it is

important always to keep in mind that existing literature on Pennsylvania agriculture exaggerates the degree of change before 1950. In 1946, Penn State agricultural economist Paul Wrigley identified “Types of Farming” areas in Pennsylvania. Only the Northeast and Northwest were given descriptors that implied specialization; these were dairying areas. The rest were given names like “General Farming and Local Market section.” Equally significant was the fact that statewide, the top source of farming income – dairying -- only accounted for a third of farm income. To be sure, there were pockets where individual farms specialized to a greater degree (in terms of the percentage of income derived from a single product), but these were the exception rather than the rule; overall even in the mid-20th century, Pennsylvania agriculture was remarkably diversified both in the aggregate and on individual farms.<sup>2</sup>

Even many farms defined as “specialized” by the agricultural extension system were still highly diversified in their products and processes. This was because so many farm families still engaged in a plethora of small scale activities, from managing an orchard, to raising feed and bedding for farm animals, to making maple sugar or home cured hams. Many of the resulting products would not necessarily show up on farm ledger books because they were bartered, consumed by the family, or used by animals, or sold in informal markets. In other words, they fell outside strictly monetary calculations of “farm income.” Yet they were important aspects of a farm family’s life and took up a good deal of family members’ time. Indeed, we can’t understand the historic agricultural landscape without acknowledging these activities, because they so often took place in the smokehouses, poultry houses, potato cellars, summer kitchens, springhouses, and workshops that appear so frequently in the rural Pennsylvania landscape. These spaces might not be well accounted for (if at all) in a conceptualization that emphasizes commodity production, but they become more readily comprehensible when we take into account the broader diversity of farm productions. Another important benefit of this perspective is that it preserves—indeed reclaims—contributions that a preoccupation with specialized market commodities tends to obscure, for example those of women and children.

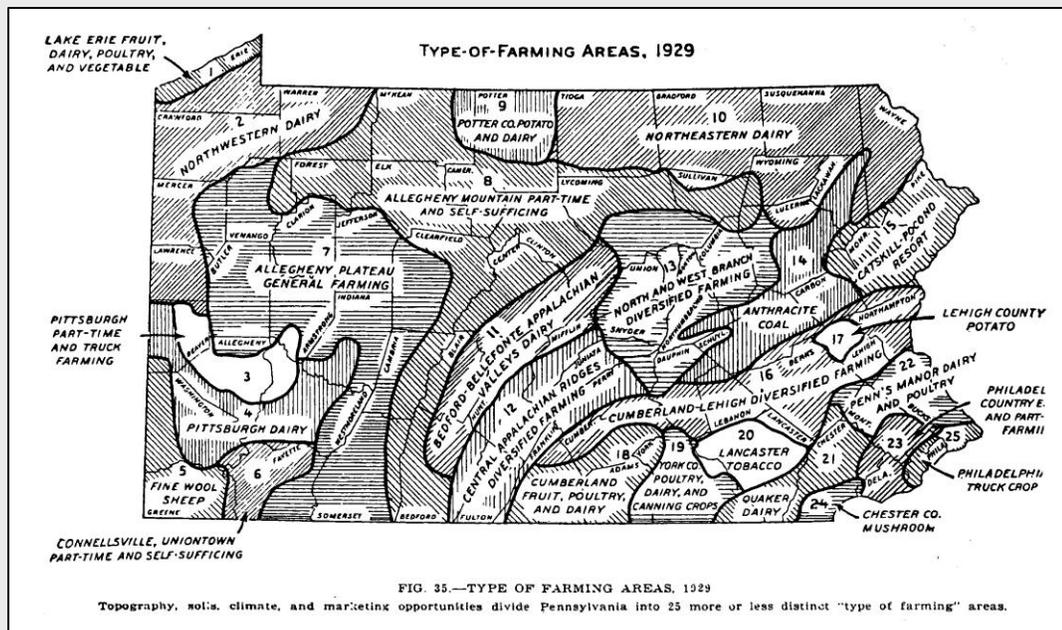
Acknowledging the historic diversity of Pennsylvania farm productions helps to clarify much, but it also raises a fundamental challenge for conceptualizing an approach that will faithfully convey Pennsylvania’s agricultural history, and make

it possible to understand the landscape that was created as people farmed in the past. How can we make sense of this sometimes bewildering variety? Added to diversity of products we must consider a diversity of cultural repertoires; a diversity of labor systems; diversity of land tenure arrangements; varied levels of farm mechanization; 93 major soil series; ten different topographic regions; and growing seasons ranging from about 117 to over 200 days. The concept of a “farming system” was found to be particularly helpful as a framework for understanding how agriculture in Pennsylvania evolved. A “farming system” approach gathers physical, social, economic, and cultural factors together under the assumption that all these factors interact to create the agricultural landscape of a given historical era. Physical factors like topography, waterways, soils, and climate set basic conditions for agriculture. Markets and transportation shape production too. Other components, equally important but sometimes less tangible, form part of a “farming system.” For example, cultural values (including those grounded in ethnicity) influence the choices farm families make and the processes they follow. So do ideas, especially ideas about the land. Social relationships, especially those revolving around gender, land tenure, labor systems, and household structure, are crucial dimensions of a farming system. Political environments, too, affect agriculture.

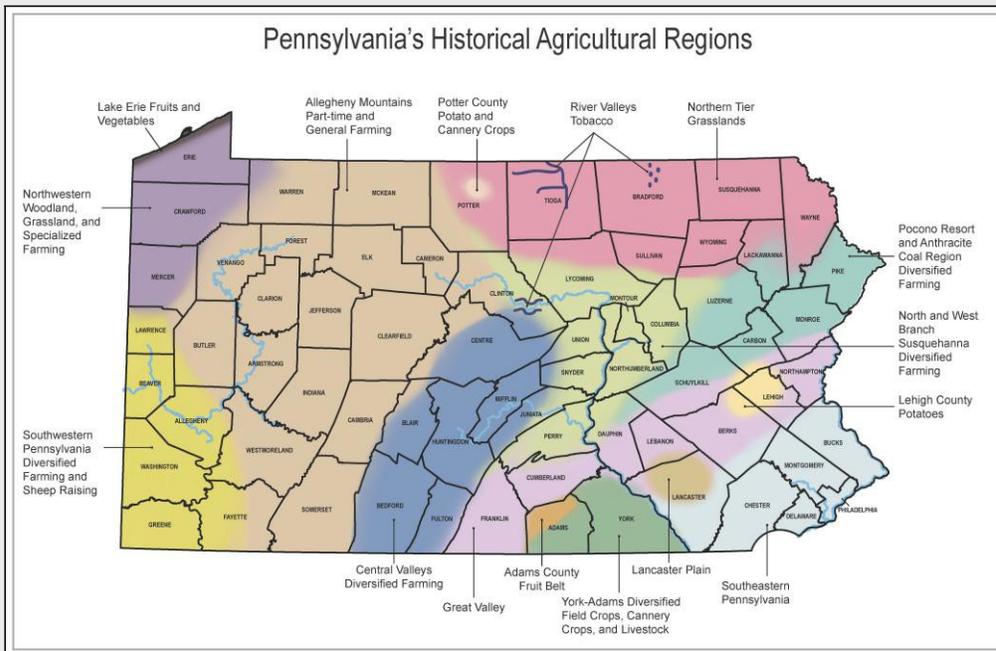
The idea of a “farming system” opens the way to a more comprehensive and accurate interpretation of the historic rural Pennsylvania landscape. For example, because the notion of a “farming system” includes land tenure and mechanization levels, we can identify a distinctive region in the heart of the state where sharecropping and high mechanization levels supported a cash-grain and livestock feeding system. This allows us to interpret the tenant houses, “mansion” houses, multiple barn granaries, large machine sheds, and crop rotation patterns that typify this region. Or, by including cultural forces as part of a system, we can differentiate a three-bay “English” barn from a three-bay German “ground” barn. By attending to labor systems, we can appropriately interpret the Adams and Erie fruit-belt areas that relied on migrant workers. And so on. So whether we seek to interpret German Pennsylvania, the “Yorker” northern tier, home dairying areas where women dominated, or tobacco farming in Lancaster County, the “farming system” approach is key to understanding all aspects of the rural Pennsylvania farm landscape—not only the house and barn.

### Identification of Historic Agricultural Regions

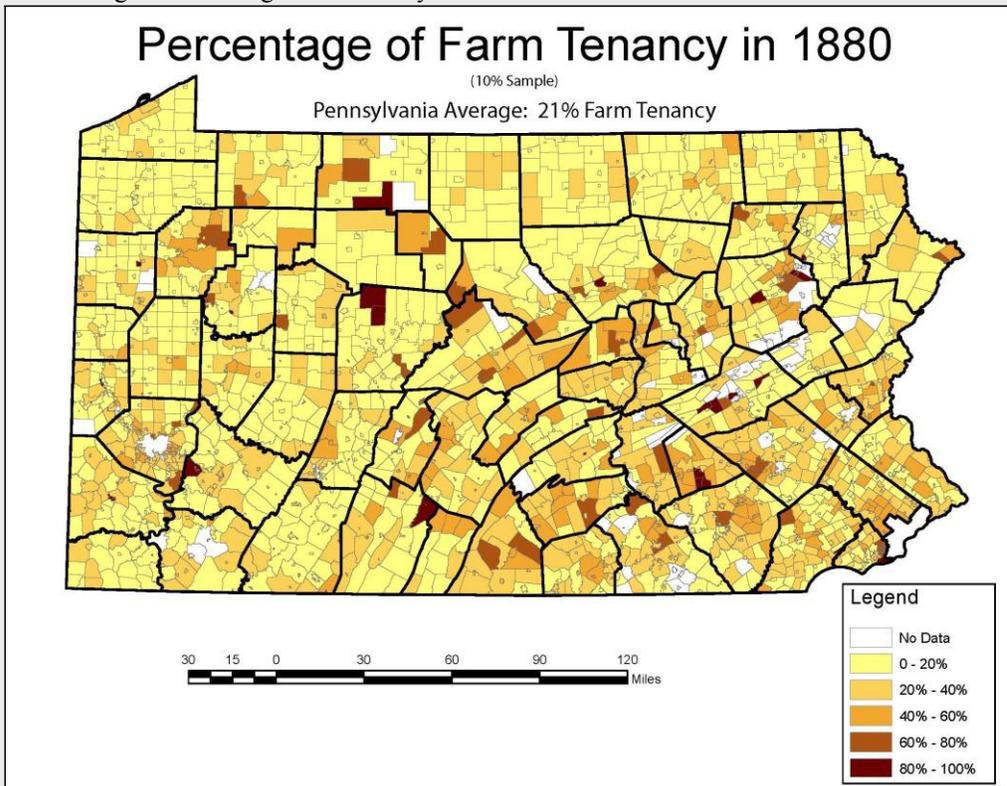
Mapping done by agricultural economists in the early 20th century identified “Types of Farming” areas based on soil types, topography, markets, climate, and production. These helped to establish clear regional boundaries to the extent that topography, climate, and soil types set basic conditions for agriculture, and they also aided in identifying 20<sup>th</sup> century production patterns. However, the agricultural economists were mainly interested in production and markets; they did not take into account other important factors which shaped the landscape, especially ethnicity, labor patterns, and land tenure. For this cultural and social data, cultural geographers’ work has proven valuable, because it maps information on settlement patterns, building types, ethnic groups, and even speech patterns. And finally, new maps of farm tenancy were generated for this report. Examples of these maps are reproduced below. Together, these resources were used to outline regions that allow us to avoid a “one size fits all” approach on the one hand, and the over-detailed focus on a single farm on the other.



From Penn State College Agricultural Experiment Station Bulletin 305: “Types of Farming in Pennsylvania,” April 1934.



Historic Agricultural Regions of Pennsylvania.



Share Tenants as a percentage of all farmers, 1880.

1 Emil Rauchenstein and F. P. Weaver, "Types of Farming in Pennsylvania." Pennsylvania Agricultural Experiment Station Bulletin # 305, April 1934, 39.

2 Paul I. Wrigley, "Types of Farming in Pennsylvania." Pennsylvania Agricultural Experiment Station Bulletin # 479, May 1946.

## Location

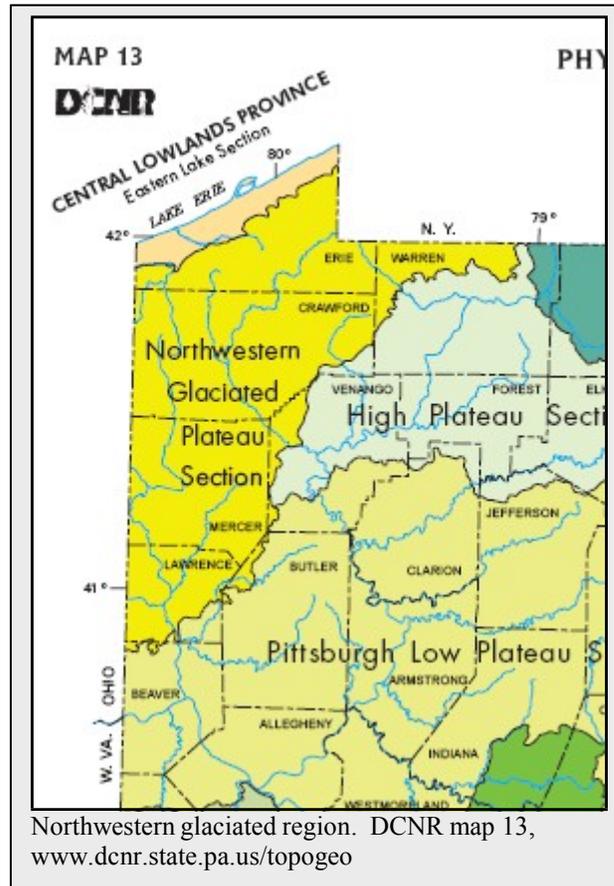
The Northwestern Pennsylvania Historic Agricultural Region consists of the major part of four counties: Erie, Crawford, Mercer, and Lawrence. Roughly the northwestern half of Mercer and Lawrence is included; the southeastern portions belong to the Southwestern Pennsylvania Diversified Farming and Sheep Raising region. There is considerable overlap in Mercer and Lawrence Counties between the Northwestern and Southwestern regions. The Northwestern region also includes the extreme western portion of Warren County. It excludes the Lake Erie shoreline, to about four-five miles inland, which makes up the Lake Erie Fruit Belt Historic Agricultural Region.

For the sake of brevity, references made to "Mercer County" or "Lawrence County" should be understood to refer to the portions of those counties which are included in the region.

## Climate, Soils, and Topography

This area is characterized by cool summers and moderately cold winters (mean temperature ranging from 47-50 degrees Fahrenheit).<sup>1</sup> The growing season ranges from 127-146 days.<sup>2</sup> Normal rainfall is between 40 and 45 inches. The soils are predominantly Volusia inceptisols of glacial origin, heavy, poorly drained, and of only average natural productive capacity.<sup>3</sup> Prof. J. P. Lesley, State Geologist, described these soils in laymen's language in 1885: "The soils of this region have nothing to do with the mother rocks of those counties, but are made out of the upper surface of a thick overcoat of clay, sand, gravel, and boulders, brought by ice from the North. This overcoat or loose surface deposit is a confused mixture of all sorts of rocks, some of them brought South only a few miles, some of them from the state of New York, and some of them from Canada."<sup>4</sup> Most soils in the region are capability classes II and III, meaning they are moderately suitable for crops. In these glaciated areas, limitations include "seasonal wetness in low spots, erosion on exposed hillsides, and occasional stoniness from past glacial deposits."<sup>5</sup> Topography is rolling to flat; elevation stays between about 1000 and 1400 feet above sea level. An important difference from the northeastern glaciated area is that there are far

more swampy areas in the Northwest. The Allegheny River and French Creek are the



major waterways. They drain to the Ohio Basin.

## Historical Farming Systems

Overview: Four historic farming systems can be identified in the region from settlement to 1960. The first is the period from settlement to about 1830, the period of farm making. For a treatment of the early agriculture during the period of settlement, see the separate narrative, in another document, which treats early agriculture. Because the processes of occupying the land and farm making were similar throughout central, northern and northwestern Pennsylvania, and because they took place during roughly the same years, the entire area is treated as a whole for this early period.

By the middle third of the nineteenth century, the state was beginning to evolve into a collection of agricultural regions, each with its own specific and characteristic features. While virtually the same crops and livestock were produced all across the state, the proportions varied significantly, as did cultural practices, labor organization, and material culture, thus giving rise to regionally characteristic agricultural landscapes. In northwestern Pennsylvania, a regionally distinct agricultural system took shape between about 1830 and the end of the Civil War. This system consisted of a diversified woodland, grassland, and livestock economy. Regionally pronounced features in this phase included home dairying (especially cheesemaking), sheep grazing, exploitation of woodlands, and raising livestock for finishing further east. This system gave way to a new one in the post-Civil War era, as transportation innovations and the development of Midwestern agriculture forced adjustments. Between about 1865 and 1900, northwestern farm families shifted cheese production entirely to a factory system. They continued home buttermaking and augmented dairying with woodland products. Sheep grazing declined, and other enterprises replaced it, such as breeding purebred livestock or selling hay. The third period begins around the turn of the twentieth century; in the first few decades of the twentieth century, fluid milk dairying was increasingly emphasized, and ancillary enterprises included ventures like truck farming. From 1945-1960 (the terminus of our investigation, at least for now), capitalistic, mechanized, specialized farming (principally dairying) took hold, diversification all but disappeared, and agricultural practices became more "nationalized," ie following the agricultural establishment's lead rather than local custom. This last period is treated within the larger discussion of the twentieth century, mainly because secondary scholarship on the period is thin.

Throughout the entire time span, the characteristic form of land tenure in this region was owner occupancy. Land use patterns tended towards a large percentage of land in hay and pasture, relatively large farm wood lots, and relatively less land in crops than in the state more generally. Family and neighborhood labor predominated until at least the twentieth century; the distinctive aspect of the labor system was the prominent role of women in pre-Civil War home dairying. Culturally, the New England inheritance proved strongest in Erie and Crawford Counties, while in Lawrence and Mercer Counties, Yankee ways mixed in with cultural practices from many other origins.

It should be noted that today, Plain Sect communities have a significant presence in this area. Their cultural practices deviate notably from mainstream practices, as is well known. However, at this time, Plain Sect agriculture has yet to be treated from a historic preservation perspective.

The Lake Erie shore fruit belt is being treated in a separate document.

## **A Woodland, Grassland, and Diversified Livestock Economy, c. 1830 to about 1865**

### **Introduction**

By the early part of this period, northwestern Pennsylvania was linked to Pittsburgh, Ohio, and the Great Lakes by turnpike roads. By mid-century, canals supplemented the turnpikes; all four counties were connected to distant areas by canal. An 1887 history of Lawrence County noted that "The Erie Canal was completed through New Castle in 1833 and opened for business. The Ohio division, running south of New Castle, was completed in 1838."<sup>6</sup> By 1855 Pittsburgh was linked by rail eastward to Philadelphia and also to the west. Also by 1852, the Erie Railroad linked Erie County to New York City and Chicago. By 1864, the Erie and Pittsburgh (or Beaver Valley R.R.) was completed through Lawrence County.<sup>7</sup> These transport revolutions offered new markets for Pennsylvania products, but also opened up Pennsylvania agriculture to competition that eventually would transform farming in the Commonwealth. The "Answers to Interrogatories" to the state revenue commissioners from the mid 19<sup>th</sup> century reveal a great deal of ambivalence about the impact of transportation improvements; indeed, Erie and Crawford County respondents consistently claimed that canals had a negative impact on local land values.<sup>8</sup> This period in the history of northwestern Pennsylvania agriculture frames a time from when a diversified, regionally distinctive farming system first emerged, to the point at which it was clearly evolving into a new and different system.

By the middle third of the nineteenth century, northwestern Pennsylvania was developing a highly diversified farming system which emphasized products that made use of

woodland and grassland resources. Woodlands were exploited for lumber, maple sugar, and potash. Grassland was worked for pasture and hay meadow; cattle, sheep, and horses grazed on these lands and consumed the hay. Cattle in turn were either milked or driven out to farms further east for fattening. Cropland yielded a diverse range, but small total volume, of grains; cropland was comparatively less important than in other parts of the state, owing mainly to the naturally less fertile soils. Nonetheless, it formed a critical component of the overall diversified farming system. There was comparatively little need for expensive farm implements, partly because of the topography, but also because so much land was in pasture and crops were relatively less important than in other areas of the state. Production relied heavily on family labor, and farming was conducted mainly by owner-operators. The product mix also had diverse destinations: cash trade, barter, on-farm use. A variety of cultural traditions shaped the landscape. In Crawford and Erie Counties, New England influence was very evident, perhaps predominant, reflecting the predominant migrant stream. In Mercer and Lawrence Counties, New England was also important, but the area's cultural mix was more varied. Scots Irish, German, Irish, English, and Pennsylvania German immigration was more heavily represented than was the New England influence in this part of the region.

In many respects, northwestern Pennsylvania agriculture during this period resembled the Northern Tier system that was emerging in the north central and northeastern portions of the state. Both systems relied heavily on grassland, as opposed to cropland; both used primarily family labor; neither was heavily mechanized; and tenancy rates were low in both regions, as were farm values. Both systems' crop mixes consisted of wheat, corn, oats, barley, buckwheat, rye, and potatoes, with relatively more oats and potatoes than in other regions, and relatively less of the other crops. Both areas were heavily influenced culturally by New York and New England. The northwestern Pennsylvania region differed from the Northern Tier in several respects. Grazing and droving – especially sheep and cattle-- formed a more significant component of the farm economy in the northwest than in the north central and northeast counties. Maple sugar and other woodland products were more prominent in the northwest. And, while home dairying was important in both regions, cheese making was a factor in the northwest and negligible in the rest of the Northern Tier.

## Products, c. 1830 to 1865

Farm woodlands supplied some of the first marketable products during the settlement period: potash, pearlash, logs. Although a few decades later population had reached a critical mass and more land had been cleared, the farm woodlot still occupied a significant place in the farm economy, both in spatial and monetary terms. Farm families continued to turn trees into marketable products throughout the nineteenth century. During the winter months, felling trees and preparing logs for rafting frequently occupied the farm family's time. Lumber from oak, maple, chestnut, black walnut, hickory, pine, and other species was floated down the Allegheny River to the Ohio and sometimes all the way to New Orleans. In the 1830s, rafts were "freighted with hay, oats, potatoes and various other kinds of produce" as well as wood products, not only logs but staves, shingles, and bark.<sup>9</sup>

In very early spring, maple sugaring commenced. This important product was usually manufactured from the sap of the sugar maple, *acer saccharum*. Euro-Americans had learned the process from indigenous peoples. Early in the spring when the sap began to run, trees were tapped and the liquid then boiled down carefully in a long, slow process. The crumbly, soft sugar that resulted was valuable in itself as a sweetener and preservative in the days when cane sugar was still relatively expensive, but maple sugar also functioned almost as cash, since it travelled easily and possessed high value relative to its volume. Already in 1843, geographers, travelers and local boosters agreed that northwestern Pennsylvania's maple sugar production was notable; in Crawford County alone it amounted to over 200,000 pounds. Together, the northwestern counties were second only to Somerset County in Pennsylvania maple sugar production by 1850. The 1850 Census of Agriculture showed that in Erie County, farms in Union, Venango, Amity, and Greenfield Townships especially produced a high volume of maple sugar.<sup>10</sup>

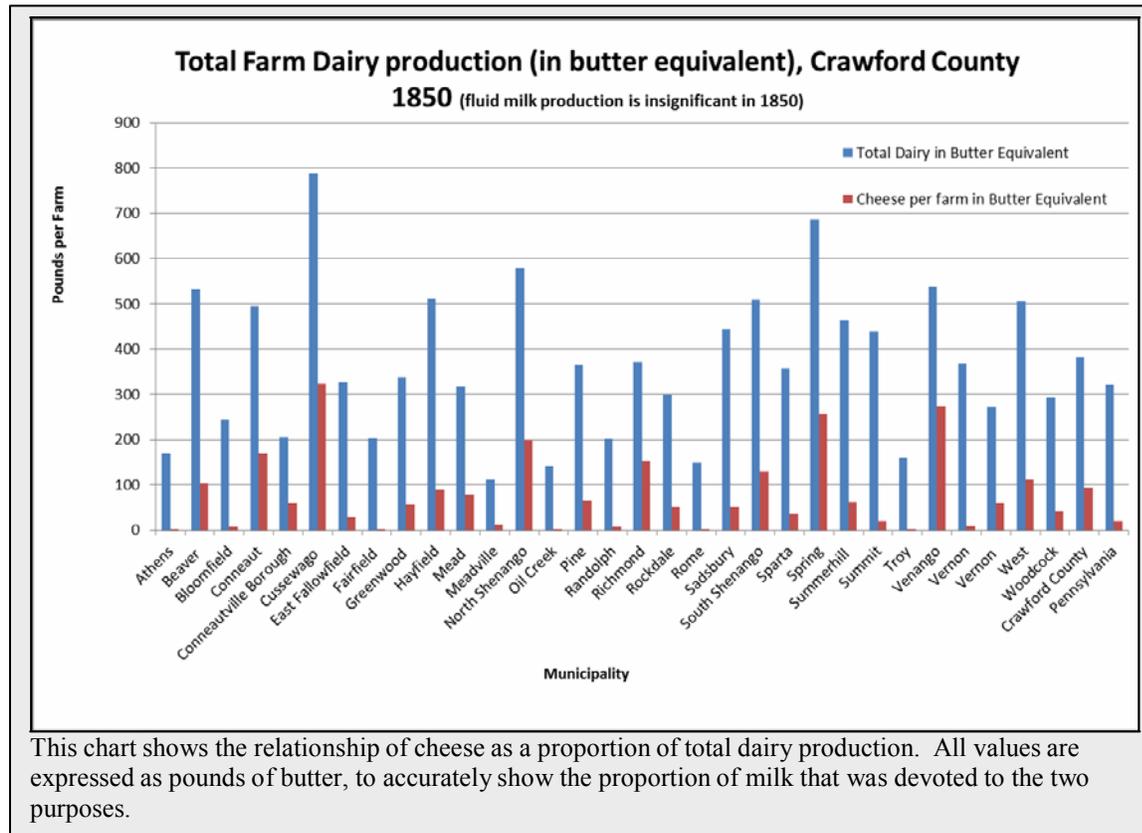
Northwestern Pennsylvania soon gained a reputation as a grazing country. By 1826 a local census found 2,900 horses, 18,000 cattle, and 19,000 sheep; of the 51,000 acres cleared, 12,000 were in meadow.<sup>11</sup> Boosters noted in *Hazard's Register* in 1829 that "the country is peculiarly adapted to raising of stock. The numerous droves of fine horses and cattle taken out of it every season, is [sic] the best evidence of its fitness for stock; and

there is no mode of farming so easy and profitable as that of raising stock; more particularly in a country like this, where grass is produced so abundantly.”<sup>12</sup> A reminiscence written in 1876 noted that “in former years, the leading occupation of the farmers was the raising of stock which was driven over the mountains to Philadelphia. The driving of cattle and boating of lumber to Pittsburg was the variety of employment of a large portion of the middle aged, and young men.”<sup>13</sup> Rebecca Eaton’s school geography, published in 1835, noted that Crawford County was “better adapted to grazing than grain, and cattle and horses form important articles for exportation,” and that a major market was Pittsburgh.<sup>14</sup> Another Crawford County resident claimed in 1848 that “many cattle horses and sheep are raised and sent to New York, New England States and Philadelphia – Wool begins to claim the attention of farmers to a considerable extent – butter and cheese also.”<sup>15</sup>

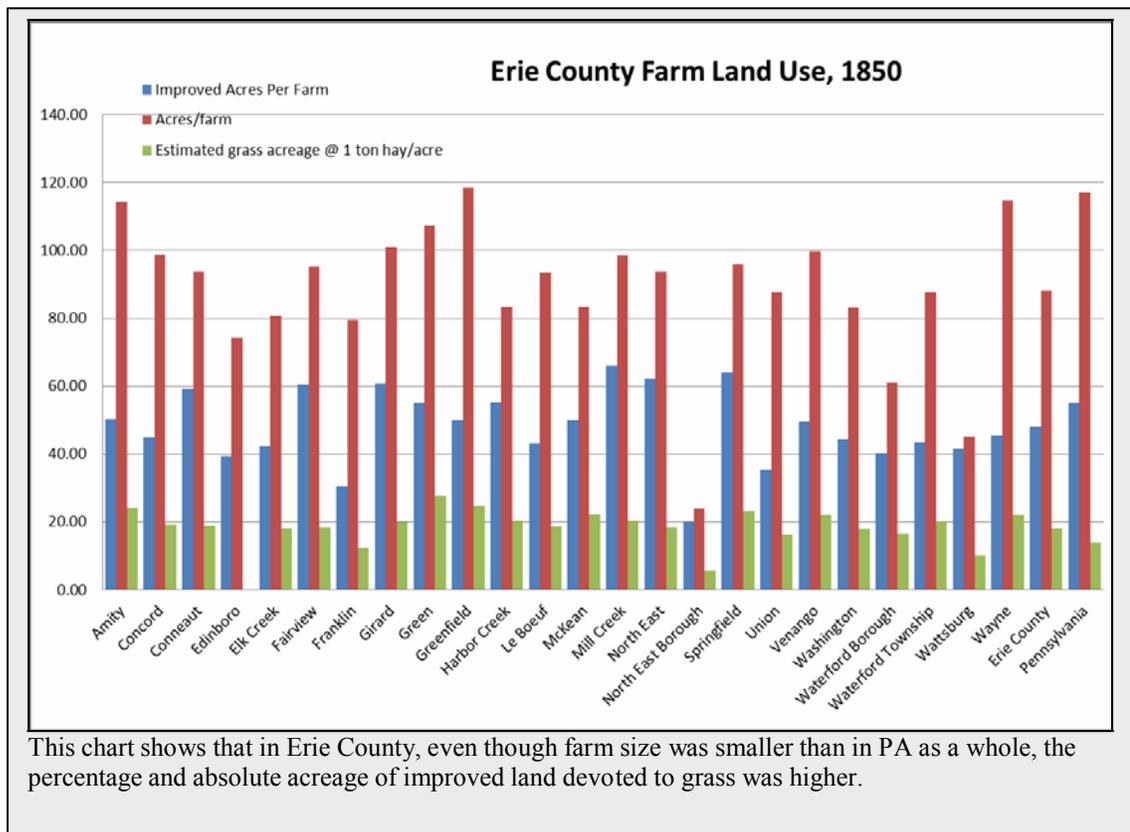
Cattle raising in the northwest was part of a wider system in which the West supplied feeder cattle to counties close in to major urban areas. Young animals were born in the west, raised there on pasture to fattening age, then driven east from Ohio and other areas, including northwestern Pennsylvania, to places such as Lancaster or Chester County, where they were bought up by farmers there who would stall-feed them and then sell them to butchers in the cities.<sup>16</sup> This system reflected relative land values, population densities, and soil conditions in the different regions. Economically, the most intensive value-added activities took place on the lands of highest productivity and value nearest the cities, and vice versa.

Oxen were still popular in the northwest; the 1850 and even 1860 manuscript census shows that many farms had a yoke of oxen. They suited this farming system for several reasons: relatively little cropland was cultivated, so plowing and cultivating were not as important as in other areas. Oxen were better suited to the hilly topography. They were part of a longstanding New England tradition. They thrived better than horses in the cold winters and could survive well on rudimentary shelter, eating just hay – they didn’t need scarce feed grains. And in the end, unlike horses, they could become food for human consumption.

Butter and cheese were also important livestock products. During this period, on average, northwestern Pennsylvania farms did not produce higher than average amounts



of butter per farm, relative to the entire state. The pattern is more complicated, however, since many individual townships in the northwest did achieve significantly higher than the statewide average. Another factor is homemade cheese production. Erie and Crawford County farms averaged close to 200 pounds of cheese per farm, far above state-level averages. In fact, Erie County in 1850 produced more cheese than butter.<sup>17</sup> Mercer and Lawrence Counties, while producing less cheese than the other two, still had a few townships with significantly higher than average production. In other words, when cheesemaking is factored into consideration, home dairying in the northwest takes on greater significance. These counties were the only ones where cheese was made in any significant amounts in the entire state.



The charts for Crawford and Erie Counties show the influence cheese had on dairy production patterns in some townships. Cheese production accounted for the higher than average total production relative to statewide averages.

It is likely that cheese dairying was followed for several reasons. One was proximity to Ohio's Western Reserve, which had drawn skilled New England and New York State cheesemakers to settle. Cheesemaking was a highly exacting art that was difficult to master, so there had to be a nearby source of knowledge. Another was that cheese travels better than butter. Local population centers were still not very large, that is, there were few nearby towns and cities where farm goods could be sold. So, farm families had to think in terms of products that could be shipped a distance. An observer in the 1820s noted that along the turnpike between Bellefonte and Erie "... from Crawford County came the cheese and white-fish peddler. Several people, including the hotel-men, would buy a whole cheese."<sup>18</sup> In the mid nineteenth century, significant quantities of butter and cheese were sent out of northwestern Pennsylvania via Lake Erie, across the Erie Canal, and down the Hudson River to New York City.<sup>19</sup> It is also likely that demand in the

western and southern states helped to encourage cheese production. Cheese was said to provide cheap protein for slaves in the South. It is worth noting that in the northern US, cheese was produced primarily for sale and only secondarily for home use. The Erie Railroad and the Ohio River system provided routes to distant markets.

The field crop mix in the northwest was a predictable blend of wheat, corn (maize), oats, rye, buckwheat, and potatoes. It resembled the Northern Tier mix, in which proportionally more oats and buckwheat appeared than elsewhere, and proportionally less corn, wheat, and rye. Average per farm production was low in the statewide context, probably because elsewhere there were higher yields and greater acreages devoted to field crops other than hay. An Erie County resident attributed the local crop mix to soil and climatic factors: he reported in 1845 that the except for the lakeside strip, land was of "a cold nature" with stiff clay, and limestone deficient soil: "Fall wheat is a very uncertain crop, spring wheat, oats, and grass do very well, corn only tolerably. The Land is quite elevated and generally beyond the influence of the Lake atmosphere in consequence the Soil is very frosty very often in the summer months the crops are much injured by freezing..." At higher elevations, he continued, the land was underlaid "with a tough and tenacious hard pan the surface soil being a stiff cold clay... grass and oats are the only reliable crops." He and others claimed that local cash markets were very limited, and that what few products were sent out to markets went to Pittsburgh, the borough of Erie, and to Buffalo, New York.<sup>20</sup>

Mercer County early became famous for a potato which originated there, but it seems that it was happenstance rather than because the county was an important potato producer. Even by the 1850s, Mercer County was well known as the place where the famed "Neshannock" potato originated, cultivated and then disseminated by an Irish immigrant farmer named Gilky. They were highly valued for their flavor, productivity, and keeping qualities, and according to one account were "found in every section of the Union, either growing or in their markets."<sup>21</sup> Other names were also applied to this potato: "Mercer," "Chenango," "Gilkey," and "Shenango." Only in the borough of Mercer proper, however, did Mercer County farms produce more potatoes than the state average; overall, they actually produced fewer. So it seems that the area produced a well known potato not

because there was intense interest in potatoes or because farmers there grew more potatoes than was typical, but because a random genetic variation happened there.

Again, this farming system was built upon diversity of products and uses. Woodland and grassland products could be sold, traded, bartered, consumed or otherwise used by animals, consumed or used by humans, or turned into value-added products like cloth and cheese. Barter exchange especially continued to hold an important place into the middle of the 19<sup>th</sup> century; an 1845 report from Crawford County noted that "our surplus agricultural products are usually bartered for other necessities as the cost of transportation to a cash market diminishes the value below the cost of production." Together, the lumber, grain, dairy products, and animals were combined as the family pursued its "competency." However, gaining a "competency" was often a struggle here. One resident reported from Erie County that settlers there found a "hard soil and a fickle climate. The first generation of emigrants are worn out..." He believed that people were leaving northwestern Pennsylvania for "a soil and climate more genial."<sup>22</sup>

### **Labor and Land Tenure, c 1830- 1865**

For the most part, patterns of labor would have followed those that predominated in the northern tier, but with a few important exceptions. As in the northern tier, labor was supplied almost entirely by family and neighbors. Mechanization was very low, so human energy was relatively more important than in the Central Valleys or North and West Branch regions. In the northwest, the prominence of droving and lumbering, in combination with home dairying, suggests that the system depended on an interlocking seasonality which in turn was shaped by the gender division of labor. That is, men and boys were off droving in the summer while the women made butter and cheese. This pattern may have been characteristic of this particular region, since in no other agricultural region did this particular combination occur. In the winter, men and boys lumbered, while in early spring everyone took part in maple sugar making. Haying would have called forth all available hands, and harvest time probably did also. It is not clear who performed sheep herding, shearing, and lambing, nor who spun and wove.

Atlases and local histories mention woolen mills frequently, so at least some of the clip was locally processed.<sup>23</sup> Owner-occupancy was high relative to the other regions.

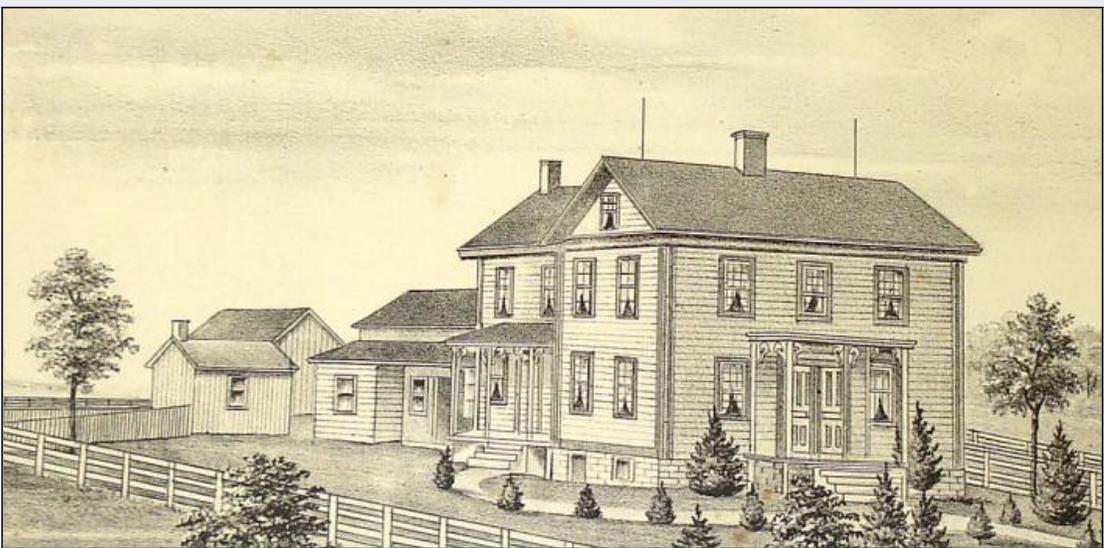
## **Buildings and Landscapes, 1830- c 1865**

### *Houses, 1830- c 1865*

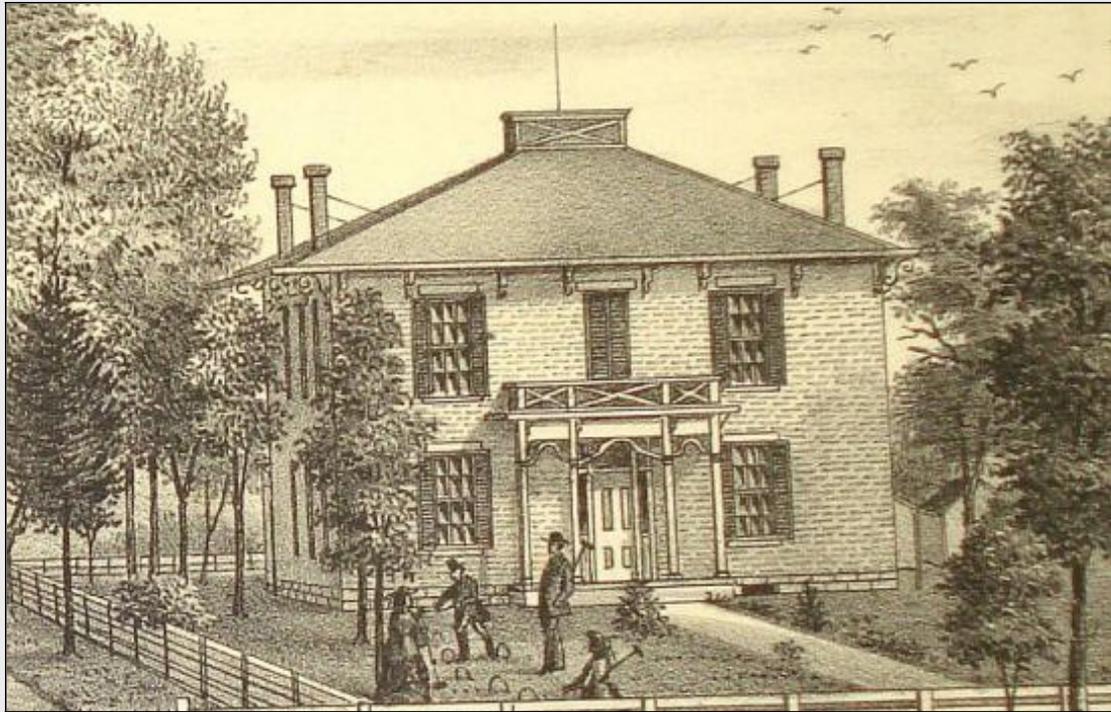
The nineteenth-century county histories and atlases date somewhat later than this period, but they can still be suggestive for houses from this period, since many of the images strongly suggest mid-nineteenth century dates, based on architectural style. As in the Northern Tier, the upright-and-wing house was frequently depicted in Crawford and Erie Counties, and fieldwork confirmed this popularity, with upright and wing in plain, Greek Revival, and Italianate interpretations being heavily favored. Atlas representations depict these buildings at a moment when their period appearance was untouched. The residence of G. B. Conover, for example, showed a classical-revival upright and wing house with gable-front door. Its proportions and details suggest a mid 19<sup>th</sup> century date. The Italianate foursquare form also appeared in the atlas; I. B. Gerow's had six over six lights, heavy bracketed cornice, and chimneys that might suggest a mid-century date. On the other hand, O. O. Kingsley had a much simpler, one story, three bay house that may have been more typical. In Mercer and Lawrence Counties, other types joined the upright and wing. For example, fieldwork recorded several "I" houses.



Greek Revival New England style house, State Route 1022, Crawford County, C. 1840. Photo-only site, no site number.



Residence of Hugh and Catherine Blair, West Fallowfield Township, Crawford County, probably c. 1830-40. *Combination Atlas Map of Crawford County*. Philadelphia: Everts, Ensign, and Everts, 1876, 60.



Residence of I. B. Gerow, Cambridge Township, Crawford County, c. 1850. *Combination Atlas Map of Crawford County*. Philadelphia: Everts, Ensign, and Everts, 1876, 39.

It is very important to remember that farmhouses were workspaces, and they are properly considered as an integral part of the entire farmstead. A kitchen “ell” appears in a significant number of the period illustrations. These bear close examination. Most are a single story. All have chimneys, some of which are located on the gable end of the ell, but most of which sit midway along the ell’s roof ridge. The eaves-sides are pierced by several kinds of openings, and just as significantly, are often blank at strategic points, probably indicating storage or cooling facilities. This is particularly significant when we consider that most descriptions of cheesemaking facilities noted the need for cooling, usually provided by an ice house, sometimes integrated into the dairy kitchen. The cooling area would not have any windows. Also where cheesemaking was concerned, several descriptions noted the provision of shelving areas for the curing cheeses, and these would sometimes have windows and sometimes not. The openings of the dairy ell or kitchen consist of windows, doorways, and recessed porches.

Comparing these to their probable New England antecedents,<sup>24</sup> we find some highly suggestive similarities. Thomas Hubka analyzes the “ell” in the New England connected

farm as an outgrowth of what he calls a “farm factory,” in which efficient organization of women’s work in kitchen ells was an important feature. Often the ells contained a “set-kettle” (located somewhere in the middle, and thus dictating the ridge-top chimney location), stove, washroom, and milk room. This could explain the appearance of Northwestern Pennsylvania ells, too. Sometimes a woodshed filled out the end – and again, the period engravings suggest the same sequence of “Big house, Little house,” followed by a woodshed. Finally, also taking a clue from Hubka’s analysis, we should consider that the area adjacent to the kitchen ell functioned as a dooryard work space.

Nineteenth-century farm periodicals offer additional insight into the productive spaces in upright-and-wing houses. An 1858 article and illustration from the *Genesee Farmer*, for example, clearly showed how the ell in this Greek Revival upright-and-wing house contained a summer kitchen and wood house; further, there was a basement milk room under the parlor, and two cellars under the "upright" section. In another example from Ohio's Western Reserve, built in 1863, the "summer kitchen" was again integrated into the ell, and cellar stairs led down from the summer kitchen.<sup>25</sup>

Thomas Visser's *Field Guide to New England Barns and Farm Buildings* quotes several 19<sup>th</sup>-century descriptions of New England home dairy facilities. The *Maine Farmer* in 1858 recommended that the dairy room be "lighted on the south side" and that "a door opens upon the piazza or recess near the wood-shed (this recess in front of these kitchens will be found by the farmer's wife a convenient place for drying dairy utensils, etc.) Connected with this room are a cheese room and a milk room, with windows to the north..."<sup>26</sup>

While some agricultural writers recommended separate dairy kitchens, farm wives seemed to prefer integrated facilities. An Michigan farm wife wrote in 1895 that a "detached dairy house built of stone, brick or wood, neatly painted, surround by vines and blossoms, looks very pretty..." but "after the woman of the house has used it a month she would be willing to put up with ... fewer accommodations if she could be saved the extra steps in going to and fro between the dairy house and kitchen."<sup>27</sup>

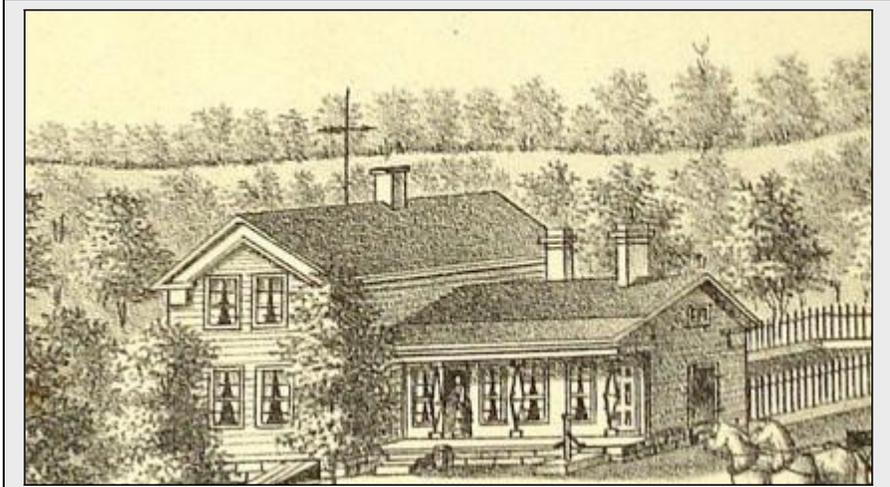
This information on ell functions offers a context in which to evaluate the many upright and wing farmhouses documented by fieldwork in Crawford and Erie Counties. In the eight townships covered in the two counties, two-thirds of all the farmhouses were upright-and-wing forms. Dating them is sometimes problematic, but many at least can safely be placed in the mid-19<sup>th</sup> century.



Upright and wing house, Conneaut Township, Crawford County, c. 1850. The opposite (south) side of the ell has a long blank wall with just one window. Site 039-CON-004.



Upright and wing house, Cussewago Township, Crawford County, c. 1850-70. House West Gable End. On the opposite side of the ell, a recessed porch and door provided protection and direct access. Site 039-CUS-002.



Residence of Sheldon and Charissa Hotchkiss, Cussewago Township, Crawford County, c. 1830-1850. *Combination Atlas Map of Crawford County*. Philadelphia: Everts, Ensign, and Everts, 1876. The kitchen ell depictions often showed a woman in the doorway.

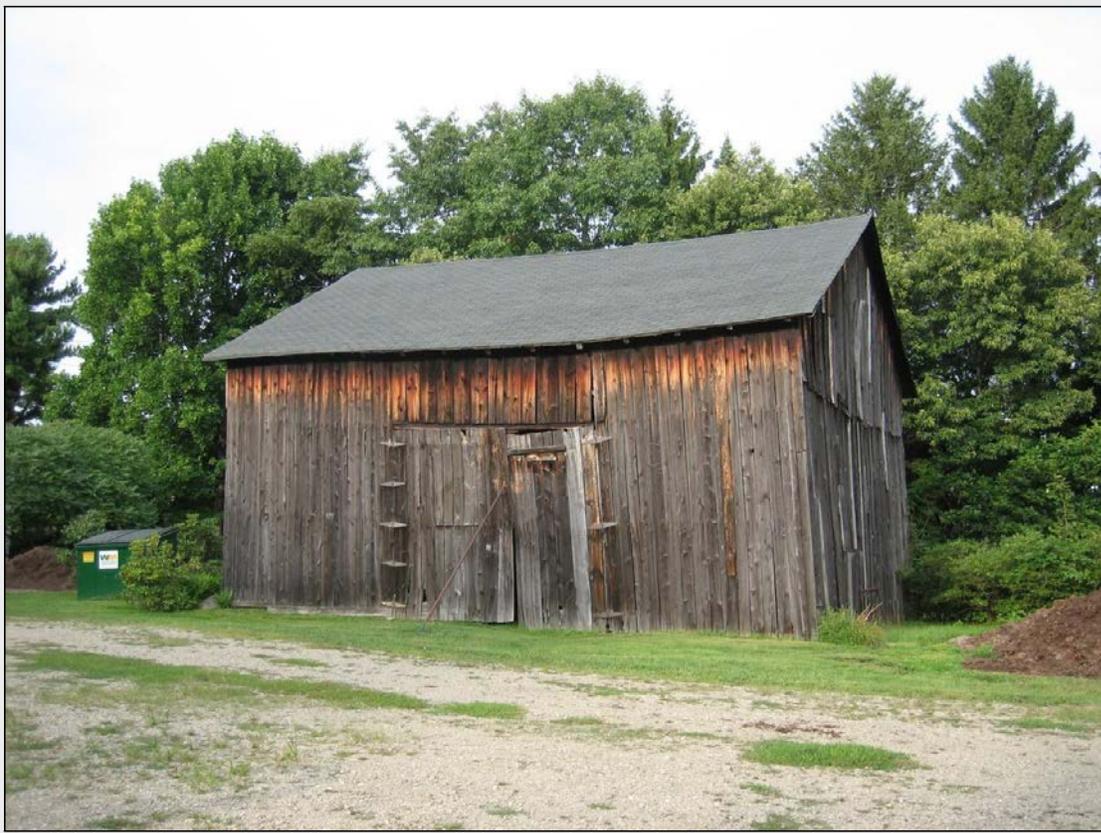


Upright and wing house with "T" main section, Scott Township, Lawrence County, c. 1850. Site 042-SCO-007.



### *Barns, c. 1830-1865*

English Barn: The available evidence suggests that the “thirty by forty” or “English” barn continued to be popular in this period. The "English" barn is also called the "Yankee" barn, "Connecticut" barn, “three-bay threshing barn,” or "thirty by forty," the last giving its characteristic dimensions. An English barn is a one-story barn that is not banked. It has three bays organized crosswise to the roof ridge - one for livestock, a central threshing floor, and a mow for hay, straw or sheaves. Sometimes the third bay was used as a granary. A central door, in the eaves side, leads to the threshing floor. The English barn is almost always constructed of timber post-and-beam framing.



English barn, George Goodell property, Edinboro vicinity, Erie County, no date. Photo-only site, no number.



English barn with gable-end extension, Steamburg Road, Crawford County. Photo-only site, no site number.



English Barn, Residence of D. and H. J. Brown, Vernon Township, Crawford County. Combination Atlas Map of Crawford County. Philadelphia: Everts, Ensign, and Everts, 1876.



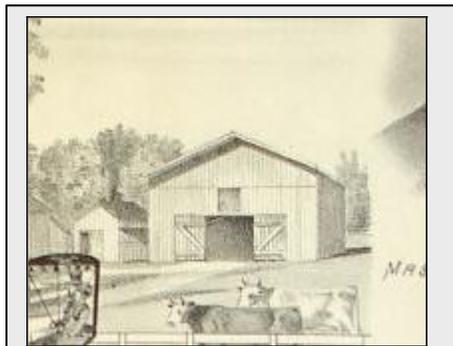
English barn, Conneaut Township, Crawford County, c. 1870. Site 039-CON-001.



The continued use of the English barn reflected the diverse and small scale nature of agriculture in the area. The English barn sufficed to store hay and machinery, and house small numbers of animals.<sup>28</sup>

New England Barn<sup>29</sup>: In New England, a successor to the "English" barn was one that scholars have called the "gable front" barn or the "New England" barn. This type of barn made its appearance in New England between about 1830 and 1850. The New England barn was a gabled frame structure built on grade. Unlike the English barn, the New England barn had its main entrance in the gable end, and it was organized parallel to the roof ridge (rather than in three bays running crosswise to the roof ridge). Smaller doors in the eaves side led to livestock stables. A hay mow occupied one side (usually the north or west) and livestock the south or east. Often, the New England barn would have glass transoms over the gable-end sliding door, affording more interior light. According to architectural historians Thomas Hubka and Thomas Visser, the New England barn became popular because it was a more flexible design than the English barn.<sup>30</sup> Hay

wagons could be driven straight through and out the other end. With a door in the gable end, the barn could simply be extended in modular fashion. Also, the rain runoff went to the side rather than into the yard area. Elongated New England barns accommodated the additional hay and livestock that often appeared as a farm developed. In New England itself, early New England barns sometimes had off-center doors so that a larger mow for hay or bulky unthreshed grain could be built to one side. Later, when threshing moved out of the barn, the interior became more symmetrical. Three New England barns were identified in fieldwork. All were in Crawford County.



New England barn, West Fallowfield Township, Crawford County. Combination Atlas Map of Crawford County. Philadelphia: Everts, Ensign, and Everts, 1876.



New England barn with roof vents and off-center door, Richmond Township, Crawford County, c. 1860-80. Site 039-RIC-005.

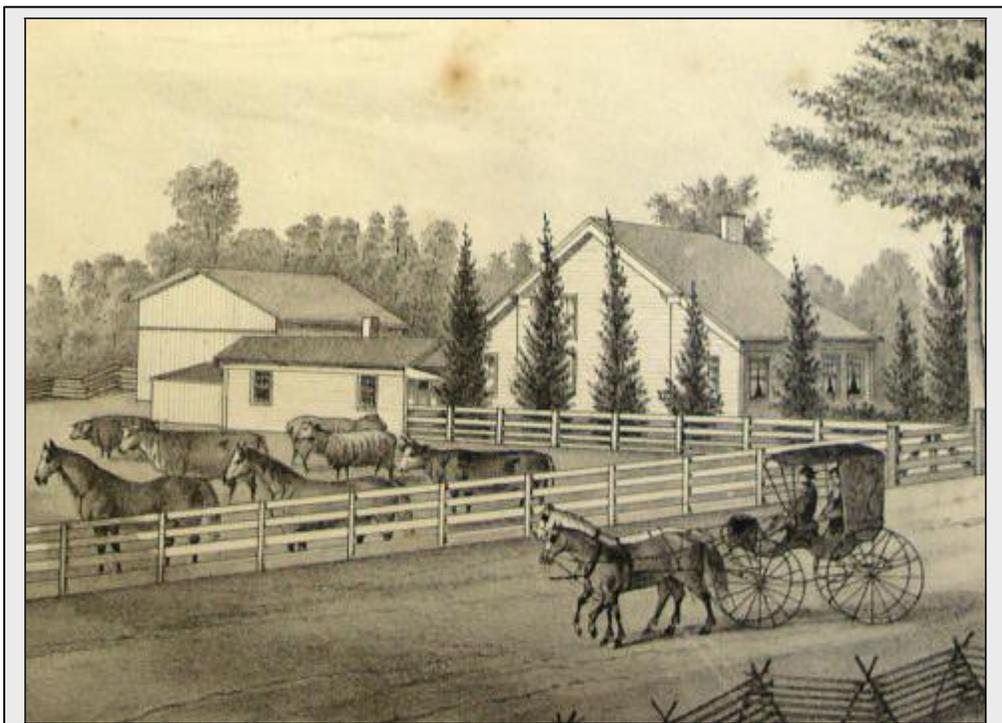


New England barn, Spring Township, Crawford County, c. 1860-90. Site 039-SPR-008.

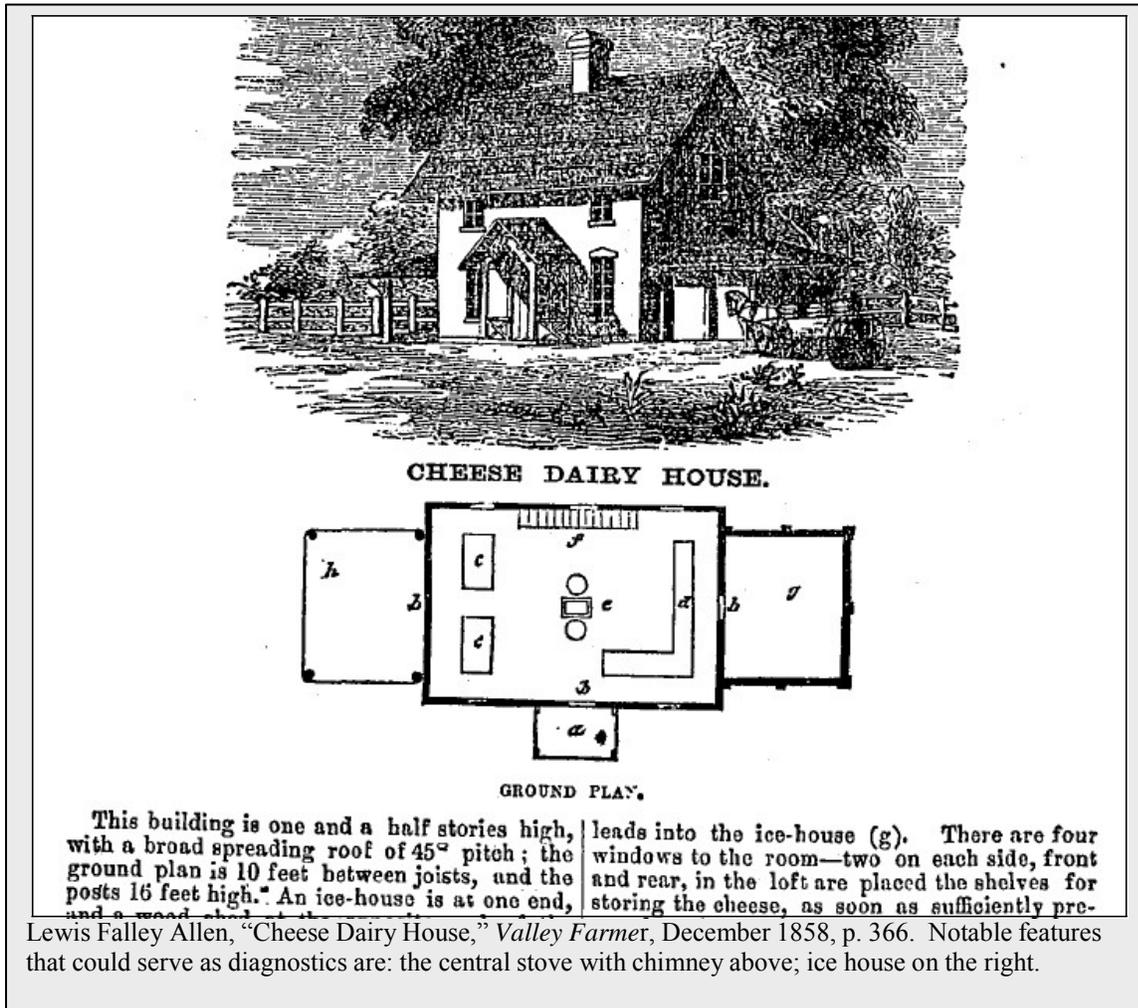
### *Dairy House, c 1830-1865*

Most dairying activity was provided for in ell extensions to the main house. However, because home dairying was significant in the Northwest, especially in Crawford and Erie Counties, some farms may have had separate dairy houses. Thomas Visser, in his *Field Guide to New England Barns and Farm Buildings*, includes a photograph of a Vermont "creamery and cheese house." The nineteenth-century farm press published a few plans of "cheese dairy houses." The 1851 *Ohio Cultivator*, for example, described a cheese house as having a basement storage room, and a ground-floor area that was constructed of stone masonry. Dairy houses often would have a porch or piazza, perhaps providing a shaded place to do work such as churning. The area enclosed within the "ell" functioned as a dooryard workspace. The key diagnostic features would be ice-house, spring, or basement space for cooling; roof-ridge chimney revealing location of a stove; and

sometimes a combination of windows and blank walls. Thomas Visser also notes that "often these structures were built into a bank or behind shade trees, with thick walls to help keep the proper temperature inside throughout the year." One illustration from the 1876 Crawford County atlas -- a house owned by sisters Sarah and Jane Gallagher -- seems to meet these criteria. (Notably, farms in their township in 1850 made 25% of their milk into cheese.) One possible example of a detached dairy house was documented in fieldwork, but it was not easily accessible.<sup>31</sup> It was a stone building sited immediately behind the main house, likely dating to the middle third of the century. Notably, the township where this building was found (Greene Township in Erie County) was the only township where the cheese production accounted for significantly more than half of the milk.



Detached kitchen with features of a dairy house, residence of Sarah and Jane Gallagher, South Shenango Township, Crawford County. *Combination Atlas Map of Crawford County*. Philadelphia: Everts, Ensign, and Everts, 1876



### *Spring House, 1830-1865*

A spring house is a structure built over a spring or creek. Materials can be frame, log, brick, stone, or concrete block. Spring houses generally have a gable or shed roof, but a few have pyramidal roofs. The lower portion is usually masonry, since water either runs through it or rises up into it. Spring houses have a square-ish or rectangular footprint. Sometimes they are banked. Usually they are only one story, but sometimes they have working spaces over the ground-floor level. A gable end door provides access. Few openings pierce the walls. Inside, there is usually a channel for water to run through, or to confine the spring; often there will be masonry or flagstone floors, and low ledges on which milk pans were set.

The purpose of a spring house is to protect a valuable water source, but also to provide a space with a constant, cool temperature for cooling milk and other perishables. The spring house's siting is of course determined by where the spring is; so with respect to the farm buildings, its location is unpredictable. Sometimes it's near the house, but a springhouse can be found in a field. Spring houses in the northwestern Pennsylvania region represent the work of butter and (sometimes) cheese dairying.



Spring house, MacLachlin farm,  
Randolph Township, Crawford County,  
c. 1850. Combination Atlas Map of  
Crawford County. Philadelphia: Everts,  
Ensign, and Everts, 1876, 70.



Spring House, Mercer County, Airport Road and Route 62, mid 19th century. Photo-only site, no site number.

### *Hay Barn, 1830-1865*

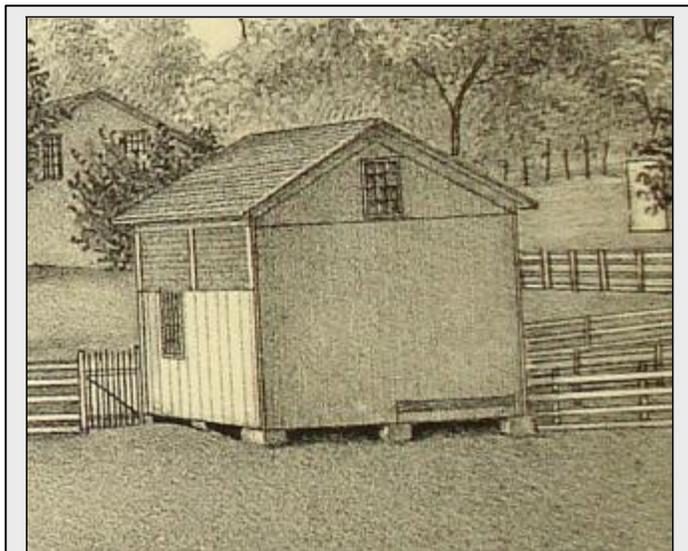
Thomas Visser describes a type of barn he calls a field barn or hay barn.<sup>32</sup> In New England, these dated from the 1830s. They were small two-story barns sited away from the rest of the farmstead, in or near a hay field. They typically had a large opening in the gable end so that hay could be loaded into the barn. It is not clear whether any of these barns would survive in northwestern Pennsylvania. The average Crawford County farm produced sixteen tons of hay in 1850, and as the prevalent English barn was rather small, it isn't out of the question that hay barns might have been present. However, field work did not record any such buildings.

### *Granary, 1830-1865*

A granary is a structure devoted to storing threshed grain. Whether grown as a cash crop or for animal feed, small grains (principally wheat, oats, barley, and rye) were a valuable

and highly vulnerable component of the diversified farm's product mix. So, secure storage for small grains has consistently been a priority. (Corn, another small grain, was stored in the ear in a specialized corn crib.) Their typical characteristics include the following: wood construction; tight boarding, thus few if any windows; gable end pass doors and entry doors; interior bins, partitioned from one another; interior walkway. Very often, the granary was elevated off the ground, as a means of deterring rodents. Many of the granaries surveyed in the Northern Tier area were sited with the gable end facing a road, but a few also were situated near the main barn.

The freestanding granary seems to have been more common in areas where the smaller Basement Barn or English Barn (lacking room or traditional place for interior granaries) were more prevalent. The dates of its appearance for the northwest may be later than 1865, eg in the horsepower era of the late 19<sup>th</sup> century, and fieldwork has confirmed that most date from the late 19<sup>th</sup> or early twentieth century. This custom of freestanding granaries was also part of the "Yankee/Yorker" inheritance. The siting of so many granaries directly on the road suggests that oats were not only fed on the farm, but sold off the farm.



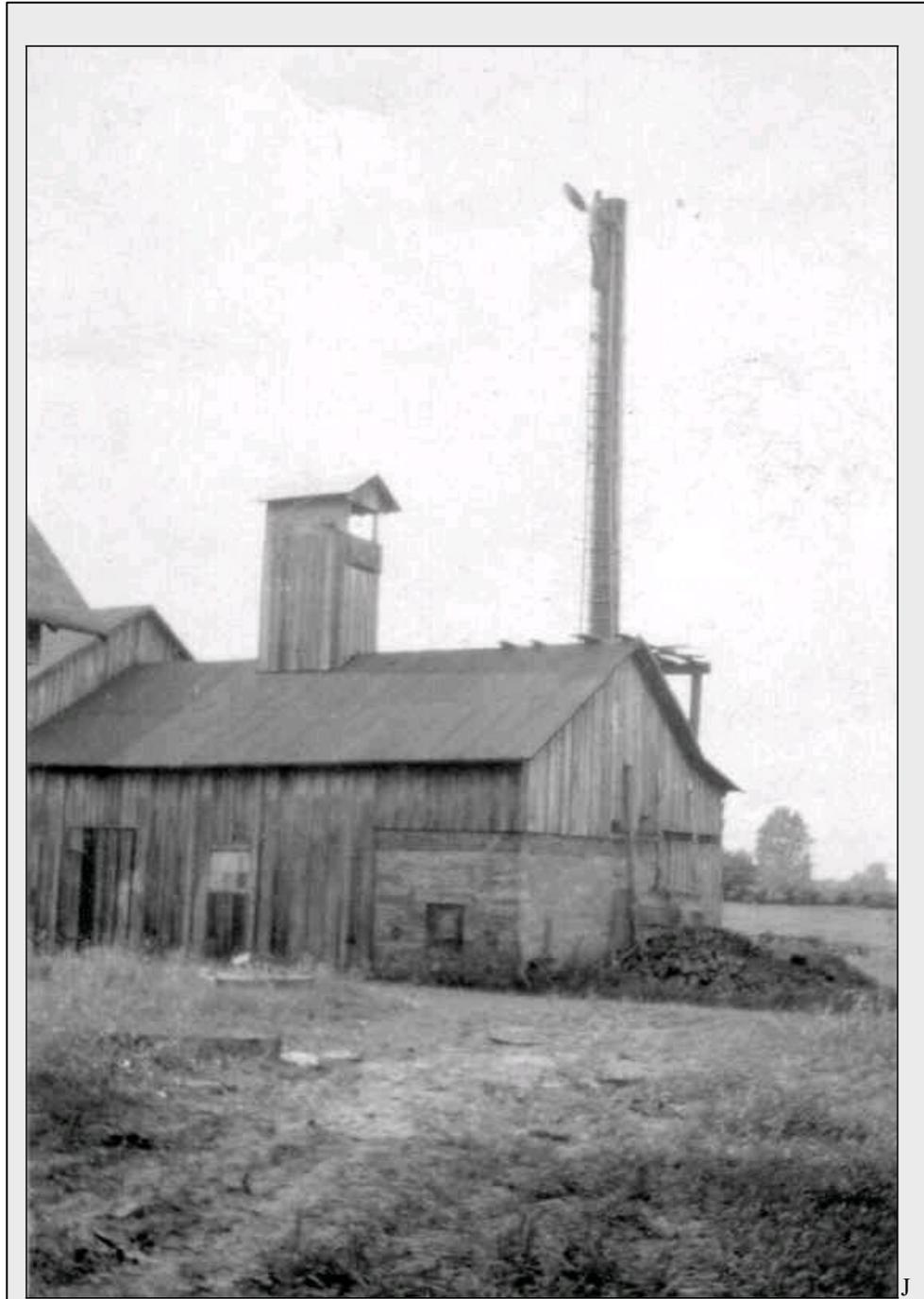
Granary, Pymatuning Grain and Stock Farm, Sadsbury Township, Crawford County, mid 19th century.  
*Combination Atlas Map of Crawford County*. Philadelphia: Everts, Ensign, and Everts, 1876.



Granary, Conneaut Township, Crawford County, date uncertain. Site 039-CON-002.

### *Sugar House, 1830-1865*

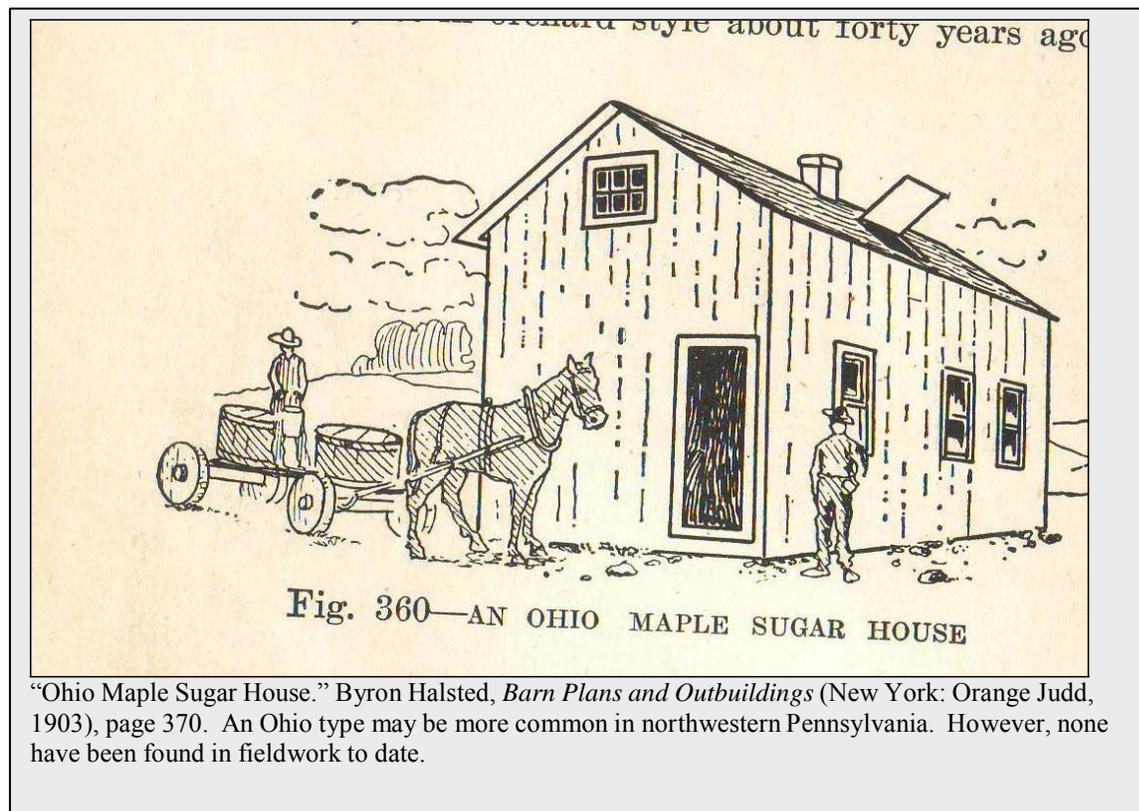
Sugar houses do not likely date to this period, but since maple sugar was important, they are mentioned here. In Sparta and Spring Townships, Crawford County, it is possible that sugar houses might have been built during this period. At any rate, a description is presented here for diagnostic purposes. The sugar house typically had the following characteristics: siting in or near the sugar bush; frame construction, gable end, one story; high smokestack; blank walls where the boiling apparatus was located; open roof clerestory transom for ventilation.



John Young Cider Mill and Maple Sugar House, Crawford County, about 1910.  
[http://www.familyoldphotos.com/pa/crawford/2j/john\\_young\\_farm\\_cider\\_mill\\_and\\_m.htm](http://www.familyoldphotos.com/pa/crawford/2j/john_young_farm_cider_mill_and_m.htm), accessed August 29, 2006. This photo is dated 1910, but the sugar house may predate the photo



Maple sugar house, Waterford Township, Erie County, date uncertain. Site 049-WAT-001.



"Ohio Maple Sugar House." Byron Halsted, *Barn Plans and Outbuildings* (New York: Orange Judd, 1903), page 370. An Ohio type may be more common in northwestern Pennsylvania. However, none have been found in fieldwork to date.

*Corn Crib, 1830-1865*

A corn crib is a storage facility for holding and drying field corn in the ear, which is then used for animal feed. Its features would include slats (usually horizontal wooden ones) and/or wire netting for ventilation; doors in the ends for accessibility; anti-rodent provisions (elevating it off the ground level, tight flooring). Corn cribs can have gabled or shed roofs. The earliest corn cribs were made of log, but few of these survive. Most extant cribs are constructed of frame. “Keystone” shaped cribs, flaring from bottom to top, were designed to prevent settling and shed water. These types were common in the 19<sup>th</sup> century. Once machine-milled beveled boards became available, designs tended to feature straight sides rather than flared ones. Hatches in the roof, either cut right into the roof or elevated clerestory style, aided in filling, while doors at the bottom of the cribs helped in unloading. “Cribbing” boards came in several different profiles: slats on wedges, triangular slats cut from two by fours; and beveled cribbing. The last of these could be spaced an inch or so apart, thus providing ventilation; other types overlapped. Most corn cribs had wire mesh inside to protect from vermin. Double cribs are not uncommon; these usually consisted of two single cribs, roofed over with a sheltered space between for husking or machinery storage. Sometimes the interior side of the crib would be vertical and the exterior sides slanted. (and sometimes there would be a shed with a single corn crib.) Corncribs could stand alone, or be incorporated into a barn assembly, either as an integral feature or (probably more frequently) as a shed roof extension. Inside, the plan usually shows a central aisle flanked by the cribs, which were enclosed with frame and wire.<sup>33</sup>

Corn cribs can be found in the northwestern Pennsylvania region. However, since corn was never as important there as elsewhere in the state, they are less common than elsewhere. It is likely that most corn cribs date from the twentieth century, but the *Combination Atlas Map of Crawford County* does show some slant-sided buildings that are almost certainly corn cribs.



Corncrib, Richard Delamater farm,  
Richmond Township, Crawford  
County, mid 19th century.  
*Combination Atlas Map of Crawford  
County*. Philadelphia: Everts, Ensign,  
and Everts, 1876.



Keyhole shape corn crib, Richmond Township, Crawford County, late 19th century. Site 039-RIC-001.

*Smokehouse, 1830-1865*

A smoke house is a small, usually one-story structure with a square-ish or rectangular footprint. Materials can vary; frame, log, brick, stone, or a combination were all used. A gabled roof is most common, but some have pyramidal roofs. There is a door in the gable side, but no chimney, and no windows, as the purpose of a smokehouse was to contain smoke that would permeate meats hanging within, thus preserving them. A smokehouse might have a small door for ash removal at the base of the structure. The interior is charred, and sometimes it has hooks still in place where the meats hung. Sometimes smoke houses had strong iron bars on their doors to deter would-be thieves. A smokehouse was commonly sited within the house's orbit -- often near the kitchen or summer kitchen, or in a rear yard.

The smoke house reflects the importance of foodways, especially in Pennsylvania German regions. In northwestern Pennsylvania they are less common, because the farm economy placed less emphasis on corn and hogs and because there were fewer Pennsylvania Germans in the area. Indeed, fieldwork documented only one smoke house in the entire four-county survey area. This was in Crawford County, Spring Township.



Smoke house, Spring Township, Crawford County, 19th century. Site 039-SPR-006.

### *Privy, 1830-1865*

A number of privies were documented, but none date from this early time period.

### *Landscape Features, 1830-1865*

Few landscape remnants are likely to have survived from this period. Elements of early siting and circulation pathways (roads, farm paths) might remain, but they are difficult to establish. Early farms were often sited to take advantage of springs and solar heat, rather than oriented toward the roadside. Boundary markers, too, may remain, demarcating boundaries between fields and farms. The *Combination Atlas Map of Crawford County*, though published a decade after the end of our period, nonetheless is suggestive for trends of the 1830-1865 era. These include small, square-ish crop fields, pastures, and meadows; and large woodlots. Garden sites, orchards, and sugar bushes are unlikely to remain. Only one remnant of stone fencing was found; other types of fencing, such as worm fences, stump fences, post and rail fences will not survive from this period. Ornamental dooryard plantings, grassy yards, and picket fences also probably postdate this period. In this wet, swampy region, farm drainage was a major preoccupation. As early as 1857, the *Ohio Cultivator* noted a drainage project on the Mercer County farm of Mr. Charles Meiks. He under drained 8 acres by digging ditches a foot deep and 30 inches wide, and 27 feet apart, then put sandstone in the trenches, then at low spots they "cut a cross drain." Meiks claimed that he doubled his white wheat yield, to 40 plus bushels per acre.<sup>34</sup> It is unlikely that such early remnants of drainage would survive, but this is evidence that "progressive" farmers were experimenting with drainage in the region in the mid 19<sup>th</sup> century. Moreover, since northwestern Pennsylvania is so near New York State, it is conceivable that the influence of drainage pioneer James Johnston was felt there.

### **A Grassland, Woodland, and Cattle-Based Livestock Economy, c. 1865 to 1900**

This was a period of considerable economic adjustment. The oil-region boom, which gathered immense momentum during the Civil War, should have created demand for

food, fiber, and animals, since in the oil fields there was next to no agriculture. However, historians have concluded that because powerful railroad and refinery interests consolidated their control over the area, "oil issued from the earth of northwestern Pennsylvania, but it did not stimulate regional development."<sup>35</sup> In the last decade of the 19<sup>th</sup> century, Mercer and Crawford Counties actually lost population. Overall economic development in the region was thus quite uneven. Erie County and Lawrence County achieved population growth, because there were major urban areas within or near them. The corridor between New York and Ohio seems to have benefited from developing transportation links, especially rail networks. The cities of Buffalo, Cleveland, and Youngstown, all rising manufacturing centers, attracted people from the countryside and immigrants from abroad. The glass, iron and steel, and textile industries expanded in Erie and Lawrence Counties especially, and some bituminous coal mining and other extractive industries were also carried on in the region. Iron was important in the Shenango Valley (bordering the Shenango River mainly in Mercer County) until the late nineteenth century, when it went into a decline.<sup>36</sup>

### **Products, 1865-1900**

Summary: During this period, the northwestern Pennsylvania farm economy showed both change and continuity from the previous era. The total number of farms continued to climb. The continuities included a strong role for woodlands products and a continued important role of livestock and livestock products. However, significant changes warrant a different term for this farming system. One reason is that the livestock mix had changed markedly. Sheep husbandry declined dramatically. The relative importance of cattle therefore increased. Grazing beef cattle continued, though it was increasingly challenged by the growing power from the western states. Rearing blooded animals for breeding substituted to some extent for beef production. Second, there was a notable shift in dairy processes. Home butter dairying remained an important enterprise, increasing in Erie and Mercer Counties. In Erie and especially Crawford Counties, home cheese production was replaced by producing milk for centralized processing, mainly in cheese factories. Crop patterns continued previous patterns, except that hay became more important; Crawford and Erie forged ahead to take top spots in state hay production.

Overall, it seems that economic shifts of the period worked against the northwestern Pennsylvania farm economy. Forest clearing and global developments reduced important sources of income such as cordwood and maple sugar. Western and global competition in sheep raising and beef cattle industry brought hardship to the region too. Crawford and Erie farm families at least were able to draw upon their dairying background. By contrast, Mercer and Lawrence responded by devoting more energy to crop farming, but since their poor soils were only suited to less-valuable crops, this was a difficult road to follow. Even if they did exceed state averages in production, since they mainly raised crops like oats, their revenues were still low. Overall, this was not a prosperous time for agriculture in the northwestern counties.

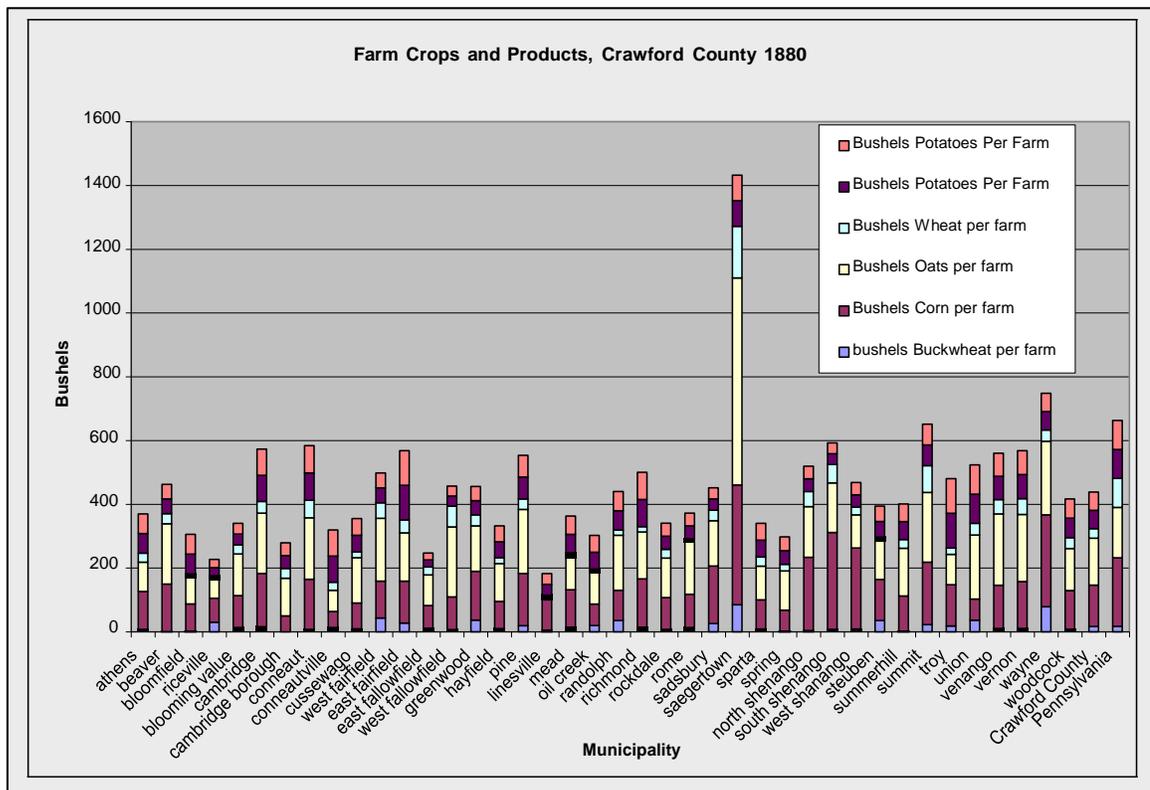
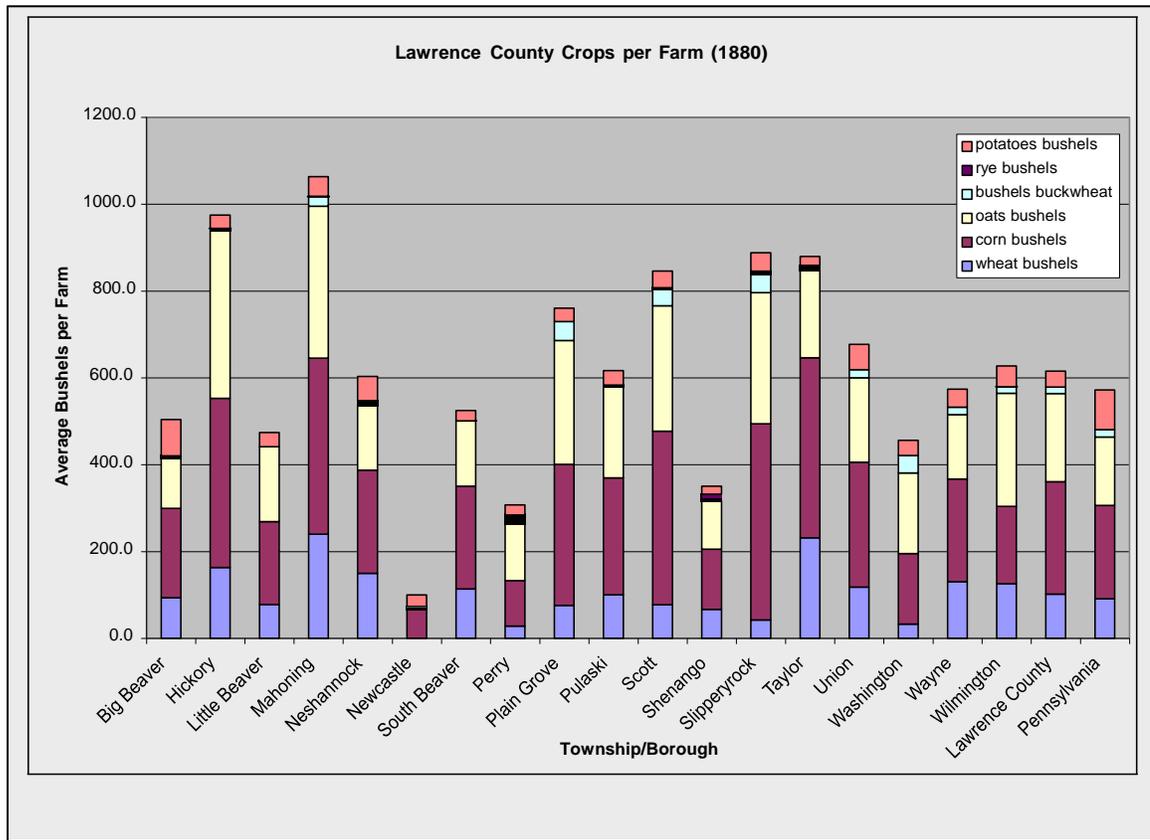
Woodland Products: Cordwood was still very important. Though in general even the northwest was already nearly three-quarters cleared,<sup>37</sup> the 1880 census showed that in terms of absolute numbers, Crawford and Erie ranked first and second in the state, respectively, in cordwood production. On a per-farm basis, Crawford County farms produced twice as much cordwood (32 cords versus 16) as the average Pennsylvania farm. In Erie County, observers noted, "one seventh of Erie is still in primitive forest, and some good timber remains... the value of the timber land equals that of the best improved land."<sup>38</sup> It is not clear if the cordwood was marketed or only consumed on the farm. By the late 1880s, locals thought that dairying "gave a new impetus to the clearing up of our lands, and, while we have considerable of wood lands yet remaining, we have no more than will be sufficient to meet the demands for fuel and building purposes."<sup>39</sup> Regardless of where the wood was used, it is clear that cutting wood and disposing of it must have still occupied a significant portion of the farm family's time. Maple sugar production remained higher than in the state as a whole, but also declined from thirty years earlier to much more modest levels of activity. This occurred as Vermont and Pennsylvania's own Somerset County specialized, thus challenging smaller operations.

Hides and Skins: It seems almost incredible, but in the 1890s Dr. H. B. Warren, Economic Zoologist for the U. S. Department of Agriculture, declared that pelts from "muskrat, skunk, opossum, raccoon, mink and fox" were still being harvested at a brisk pace all over the Commonwealth. He estimated that "Armstrong, Jefferson, Mercer and

Lawrence Counties send from fifteen thousand to twenty thousand dollars' worth of skunk hides every year to the London markets."<sup>40</sup> What Londoners were doing with skunk hides is not known at this time; but if this account is accurate, it means that farmers had another source of income hitherto unnoticed. Or, perhaps it means that in the difficult economic climate, they had to be extremely resourceful.

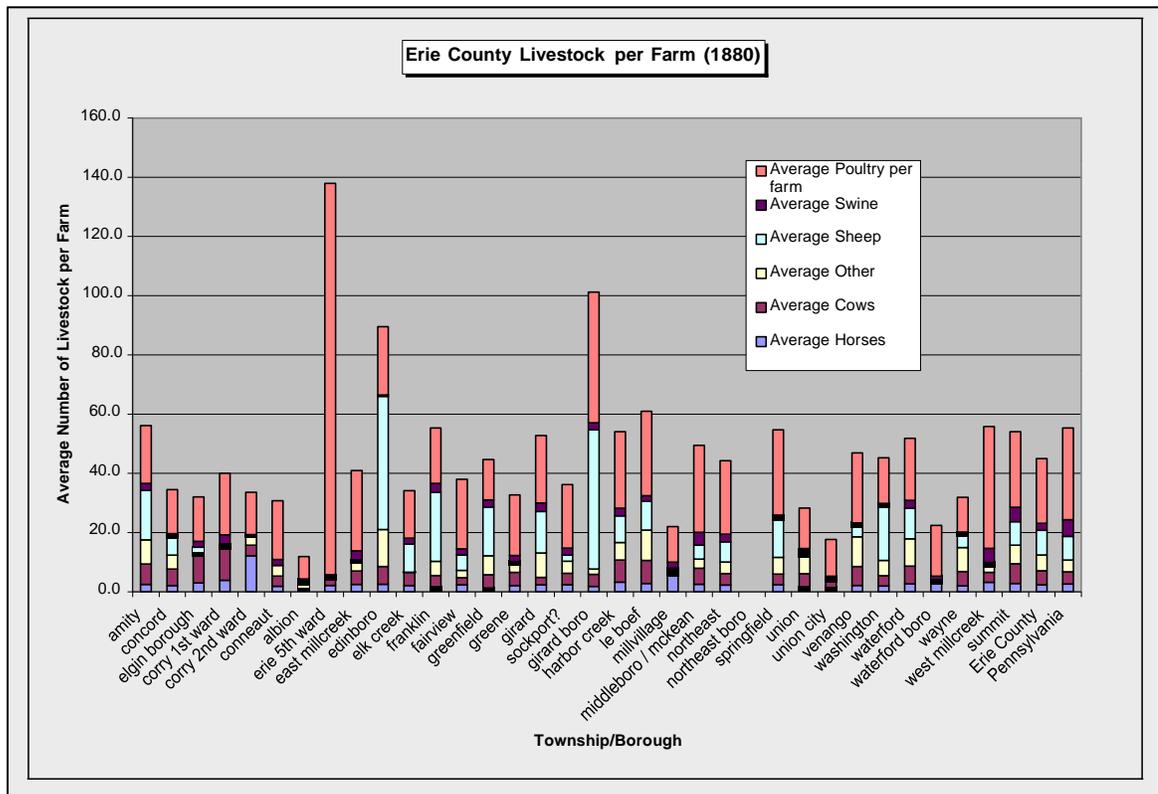
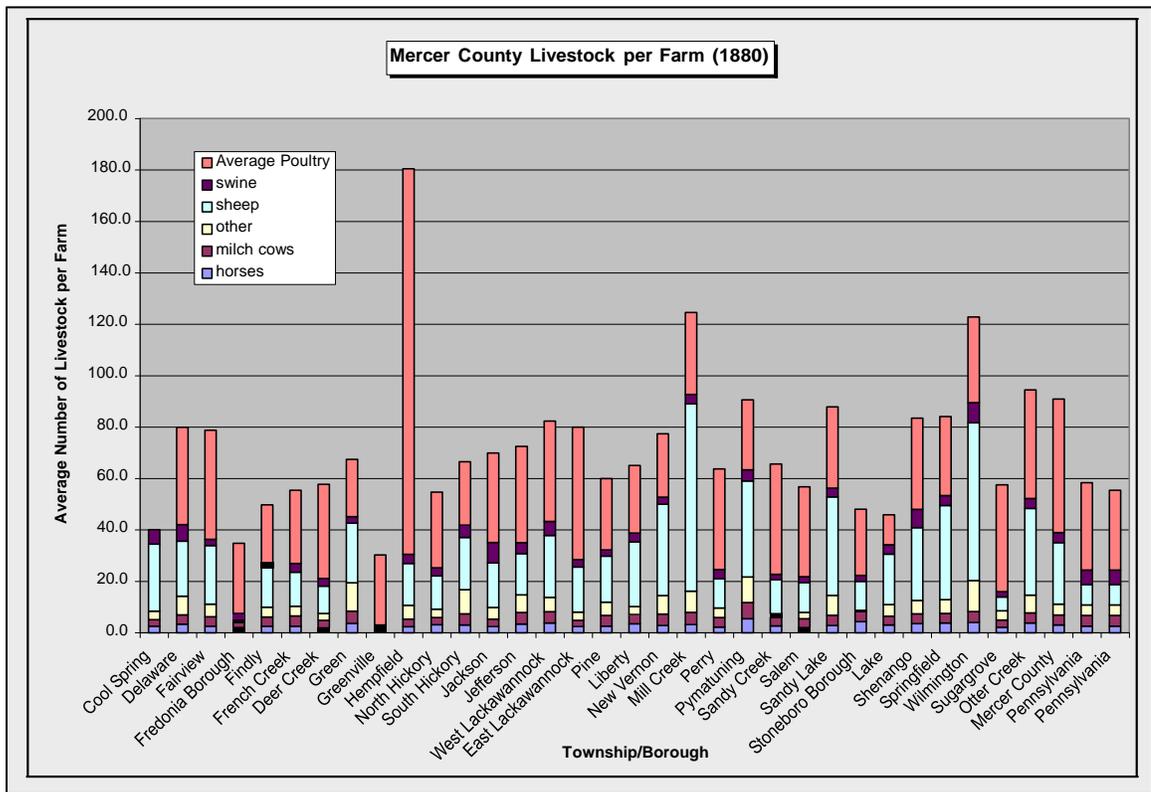
Fruit: An 1887 history noted that "[Lawrence] county is noted for the variety and quality of its fruit. Large quantities of apples are shipped annually to the city of New York, and have acquired a reputation for quality beyond those of any county in the State."<sup>41</sup>

Field Crops: The extreme northwestern counties produced modest amounts of wheat, and more corn, oats, and potatoes, none of these in quantities that would suggest more than modest activity, and (except for potatoes) none in amounts that were even close to statewide averages. For example, the average Crawford County farm produced only 130 bushels of corn and about 150 bushels of oats in 1880. Yields ranked among the state's highest,<sup>42</sup> but even so these quantities may not even have sufficed to feed the farm livestock. In Mercer and Lawrence Counties, the story was different. In both cases, corn and oats exceeded statewide per-farm averages. Perhaps Mercer and Lawrence were exporting these grains to Crawford and Erie, and also to the growing urban and industrial areas nearby in Pennsylvania and Ohio. Horses were still an important factor in transport and mining, and they needed high quality feed.



Hay and Pasture Grasses: Erie and especially Crawford emphasized hay and pasture even more than before, thus accentuating their differences from both Mercer and Lawrence on the one hand, and from the statewide norms on the other. The 1883 Report of the Committee on Grass and Grasses of Pennsylvania included a county-by-county chart in which estimates were given of how much land was mown and pastured respectively. Crawford reported 111,000 acres mown and 165,000 acres pastured; this amounted to about 70 percent of the improved land. In 1890, Crawford County ranked first in the state in both hay acreage and tonnage.<sup>43</sup> Clearly, meadow and pasture figured prominently in the northwest, and cropland for grains took up less land area than the grasslands, possibly even less than the woodlands in some cases. While "production" from pasture is hard to pinpoint (since the products were indirect), we can determine hay production per farm, and it was high in this period. In 1880 Erie and Crawford each averaged 17-18 tons of hay per farm. This was about the same as in 1850, except that the average farm was about ten acres smaller than thirty years earlier, so the proportion of land in hay was greater. Pennsylvania farms in 1880 averaged only 13 tons of hay on farms that were significantly larger than Crawford or Erie County farms. Patterns differed in Mercer and Lawrence Counties. In Lawrence County, the 1883 survey of grass and grasslands listed 20 percent of cleared land in hay and only 5 percent pastured. The report from Mercer estimated 20 percent of land in hay and another 20 percent in pasture.<sup>44</sup> Per-farm production of hay was correspondingly low.

Livestock: northwestern Pennsylvania saw a significant shift in livestock raising patterns by this point. The most obvious change was in sheep keeping, which dropped off dramatically after mid century. The sheep raising industry in the eastern states was hit hard by international and western competition (protective tariffs had been removed in 1846, and except for a brief boom during the Civil War, sheep raising declined), and so farms all over the mid Atlantic and New England abandoned sheep raising for other pursuits. So, the wool clip declined as a contributor to the farm economy, as did sheep droving and selling on the hoof. Crawford County's wool clip plummeted from a million pounds to just 200,000 between 1850 and 1875.<sup>45</sup>



Poultry were counted for the first time in the 1880 agricultural census, so there is little basis for comparison with the earlier period. However, the number of barnyard fowl per farm in the northwest was at or below statewide averages, at around 3-4 dozen birds. Poultry nonetheless made up an important component of the overall diversified farm and household economy, since chickens could be consumed for meat or kept for eggs, and the eggs and birds sold as well.

The number of swine had always been small and declined even further.

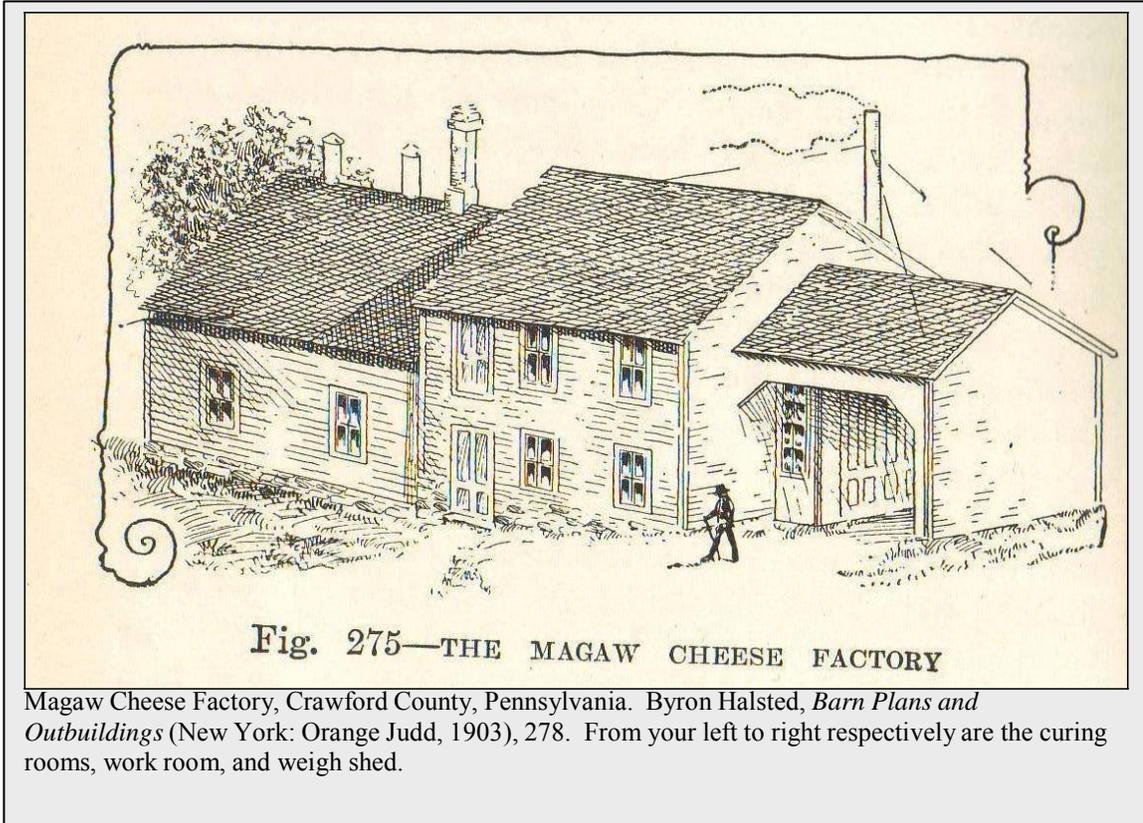
Grazing cattle for beef continued. The number of "other cattle" on northwestern farms was consistently higher than the number of milk cows in all four counties, just as it had been in 1850, thus suggesting that the grazing industry was still hanging on. In 1868, for example, promotional literature for the Philadelphia and Erie Railroad noted that in the vicinity of Waterford (Erie County), there was "a strong soil, particularly well adapted to grazing..." and that the town itself "carries on a large trade in cattle."<sup>46</sup> An 1882 promotional volume, *The Industries of Pennsylvania*, claimed that in Crawford, "flocks of sheep and herds of beef cattle are on every hill-side..." The Pennsylvania State Agricultural Society transactions for the same year reported that Mercer County farmers were raising "beef on foot, grass fed," for \$4.75 per hundred.<sup>47</sup> However, the overall mood regarding stock raising was pessimistic. In 1876 a correspondent of the State Agricultural Society wrote that cattle driving was "now nearly obsolete."<sup>48</sup> The *National Stockman and Farmer* complained: "the local fat cattle business amounts to nothing here [Erie County] now, as there is a branch of the Armour Packing Company's business established in this place, and besides there are two or three heavy local shippers."<sup>49</sup> The problem for local stock raisers was that the large packing companies had their own sources of meat from further west, and they focused on dressed beef, which they imported by rail to the east at prices far lower than Pennsylvania farmers could meet.<sup>50</sup> Stiff competition from the far West and Chicago forced Pennsylvania farmers to refine their approach. Increasingly, observers opined that diversified strategies and dairy cattle would be the wave of the future.

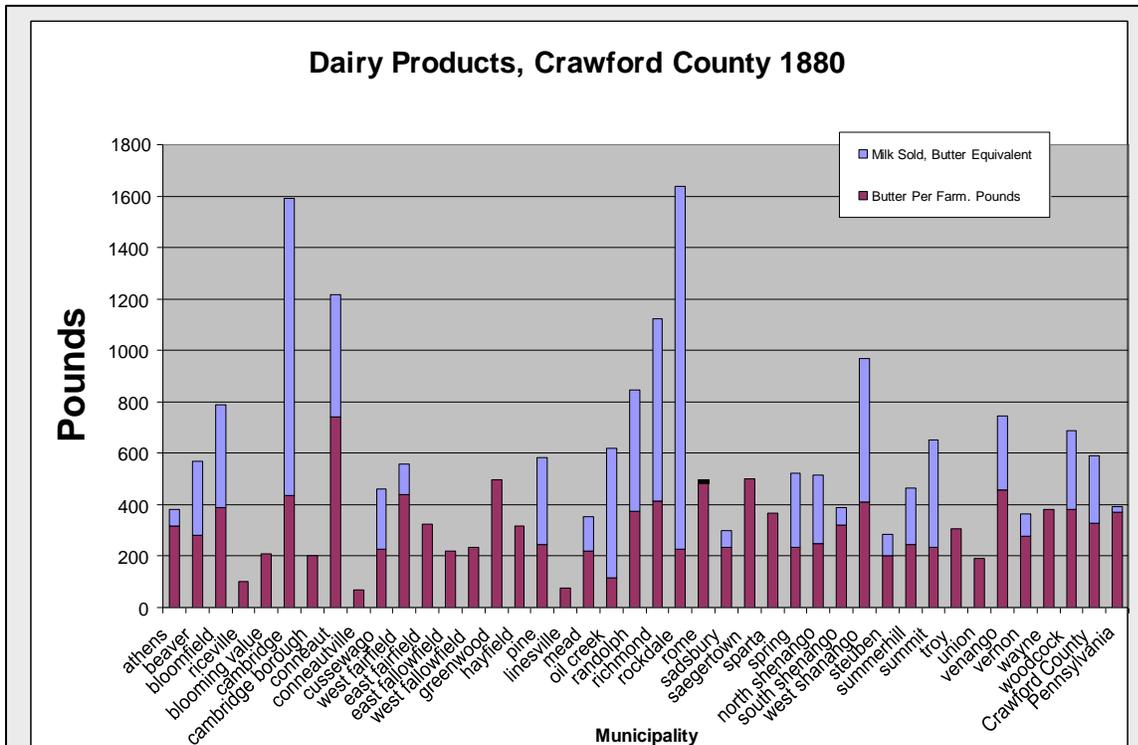
Some turned to raising breeding stock. Capitalizing on the livestock-raising skill and knowledge accrued during the previous decades, stock dealers raised draft horses, beef cattle, and dairy cattle for breeding purposes.<sup>51</sup> The *Ohio Farmer* for March 20, 1869 describes prize steers originating in Mercer County. The same journal in March 4, 1882 describes what it claimed was the "largest pure-bred stock farm of the world," in Springboro, Crawford County. The article noted that the farm produced breeding trotters, Hambletonians, Clydesdale horses, imported Holstein cattle "selected from the very top herds of Holland," Highland black-faced sheep, and Shetland ponies. "Their business... is very large, and their sales extend to every State in the Union and also...to Canada." The article claimed that they sold a Clydesdale every day. The 1882 Pennsylvania State Gazetteer and Business Directory claimed that the town of Mercer was surrounded by "first class farming and grazing lands." The town hosted one of the "best horse markets in Western Pennsylvania and produces a large amount of other livestock". The *National Stockman and Farmer* in 1902 noted the famous "Mercer Shorthorn Sale", saying "Mercer has been a Shorthorn stronghold for many years." So, breeding was a lucrative opportunity for some farmers in the region to utilize their livestock skills; though it was probably beyond the means and skill of the average farming population.<sup>52</sup>

Dairy Products: Dairying increased in relative importance. Some thought it was the difference between success and failure in farming. An observer in the *Ohio Farmer* thought that "were it not for butter and cheese, which bring fair prices, farmers [in Crawford County] would have empty pockets." Between the Civil War and the early twentieth century, the Northern dairy industry underwent significant changes. The most noticeable of these was the centralization of dairy production in "factories." Home buttermaking continued to be followed on a significant scale, but a portion of butter came to be manufactured in centralized locations, usually called "creameries." This was particularly true near major urban centers. Home cheesemaking disappeared almost entirely. Crossroads cheese "factories" (concentrated in upstate New York, Ohio, Wisconsin, and northwestern Pennsylvania) produced nearly all of the US cheese output by the turn of the twentieth century.<sup>53</sup>

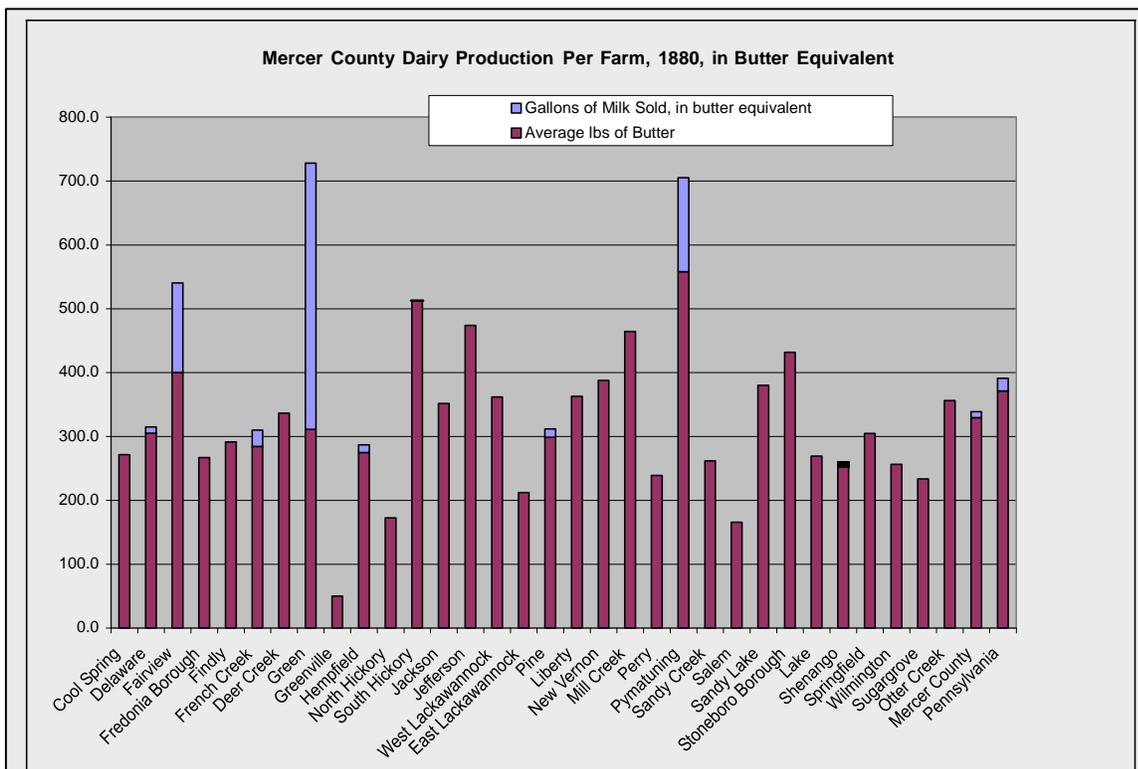
In northwestern Pennsylvania, dairy centralization had a definite impact quite early. Cheese factories appeared in the 1860s and proliferated by the 1870s. These quickly

replaced home cheesemaking. Moreover, they almost certainly diverted milk from farms that formerly had *not* hitherto produced cheese. Crawford and Erie Counties continued as the chief cheese producing counties of Pennsylvania. Pennsylvania had about 140 cheese factories in 1900, and most of them were located in the northwestern counties.<sup>54</sup> At one point, Crawford County alone was said to be producing 10 million pounds of cheese annually.<sup>55</sup> The cheesemaking business fluctuated in its profitability; many people rushed in once its potential became evident, but not all were competent at the complicated business.<sup>56</sup> In addition, creamery butter began to make inroads, though the amount of home produced butter was still huge. An 1888 account estimated that fully half the milk of the county went to centralized places for manufacture.<sup>57</sup> Calculations from the 1880 agricultural census suggest that this was not far off the mark. Reports from the state Board of Agriculture's "Committee on Dairy Products" in the 1880s noted that the number of creameries in the state had increased from 46 in 1870 to nearly 200 by the mid 1880s. Crawford County reported twelve creameries in 1883, and Erie County had 28. Butter made there was marketed locally and also sent to Erie and New York. One observer reported that "only a small portion of the cheese and butter made at the factories is consumed by our own people." He also attributed the success of the northwestern Pennsylvania cheese and butter industry to the organization of a Dairymen's Association there; to cooperative selling through a Board of Trade, and to the introduction of ventilated and iced cars on the A. & G. W. and Erie Railroads.<sup>58</sup>





This chart shows that on Crawford County farms in 1880, the amount of milk sold accounted for a substantial portion of the overall destination of milk. In townships such as Rockdale, more milk went to cheese factories than was made into butter. All figures are expressed in butter equivalents so that the correct proportions can be shown.



By contrast, in Mercer County most milk produced was still made into butter on the farm.

### **Labor and Land Tenure, 1865-1900**

Production continued to be accomplished primarily with family labor. Woodlot work continued, though cordwood and maple sugar were by this time relatively more important than potash and logs. The wood cutting was men's work while maple sugaring was done by men, women, and children. Field work patterns probably did not change much either. However, gender and other patterns of labor changed in dairying, in all likelihood. (This conjecture is based on analysis of other comparable areas, eg New York State cheese regions). With the rapid rise of factory cheesemaking, women's work in home cheesemaking was eliminated. Women were employed in the new factories, to be sure, but it took only a few women to process milk from hundreds of cows. A writer in the *Transactions* of the Pennsylvania state agricultural society noted the change: When cows and calves had been women's concern, "in proportion as they [ie men] were freed from thought and care for the dairy they were rendered incompetent to pursue the business profitably in after years..."<sup>59</sup> It is very possible that men's work increased as factory dairying took hold, as men took over more animal care and milk processing work.

Women continued in home buttermaking, frequently as active participants in innovation. R. S. Hartley of Freehold, PA (Warren County) reported that he kept Jersey cows and made "gilt-edged" butter. "We have a partnership at our place. I furnish the milk and my wife makes the butter." He claimed to get 356 pounds of butter per cow yearly.<sup>60</sup> Women continued and possibly intensified their work in poultry keeping, maple sugar making, food preservation and preparation, and the like. Dairy work was still quite seasonal, since cows freshened in spring and were not milked year round. The average dairy herd was not noticeably larger than in 1850, but there were probably a number of farms with significantly larger herds. The routine of feeding and milking -- primarily men's work in this Yankee region -- did probably become more intensive, though, as quantity production became a more important aspect of the farm economy. Farm family members also had to spend time delivering milk to the cheese factory. Interestingly, one observer thought that even though dairying was profitable, people were quitting it because it was "too much work."<sup>61</sup> Hired labor was still an essential, but seldom year-round, part of the farm economy. There were complaints in the farm press that hired help was scarce and expensive in the region.<sup>62</sup>

Mechanization alleviated human labor to some degree. By 1885 local historian Samuel Penniman Bates could declare that "So numerous are the improvements of late years in farm machinery, that what was once one of the most laborious and wearing of employments has been facetiously designated a sedentary occupation."<sup>63</sup> Probably few who actually did farm work would share his rosy perspective, but nonetheless modest mechanization had occurred. Northwestern Pennsylvania mechanization levels had crept up toward statewide averages from a position well below average in 1850, though they still did not quite reach state averages. The modest upward trend reflects several forces. During the Civil War, acute labor shortages had forced mechanization of important processes such as mowing, reaping, and threshing. Also, in the northwest, farming had moved away from sheep and cattle grazing, which was neither very labor- nor technology-intensive. In Mercer and Lawrence, the increased relative importance of small grains must have implied greater demand for intense seasonal hand labor at threshing and planting time. Mechanization also probably reflected the shift in household labor. As men's energies were diverted to tending milk cows, other jobs which had been predominantly men's were mechanized. Haying would be one of these. Equipment for mowing, raking, hauling, and lifting hay probably accounted for a good deal of the increase in mechanization.

Land tenure was predominantly by owner occupants in this period. The tenancy rate was below the statewide average.

### **Buildings and Landscapes, 1865-1900**

#### *Houses, 1865-1900*

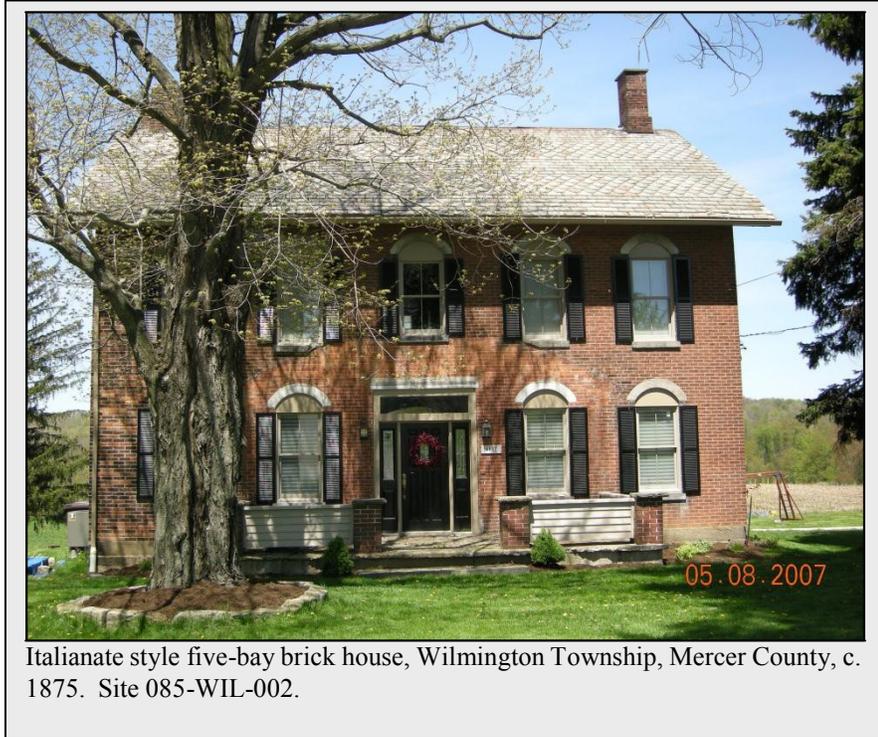
Patterns established earlier continued. The upright-and-wing continued to be the most frequently found form, perhaps updated stylistically. In Mercer and Lawrence Counties, there continued to be greater heterogeneity than in the two northernmost counties. In addition, a few anomalous dwellings appeared in popular styles of the time.



Five-bay center door house with ell, Scott Township, Lawrence County, c. 1875. Site 042-SCO-001.



Italianate style brick farmhouse, Green Township, Mercer County, c. 1880. Site 085-GRN-003.



### *Barns, 1865-1900*

In the Northern Tier of Pennsylvania and Southern Tier of New York, the rise of dairying brought architectural changes in barn design. Northwestern Pennsylvania shared in these developments, and also with trends across the state border in Ohio. English barns and New England barns most likely continued in popularity. After all, the number of livestock carried on a typical farm actually dropped from 1850 to 1880, and the tonnage of hay and production of other crops stayed about steady. So, a multipurpose barn housing a few animals, some hay, and room for storing machinery and maybe some grain sufficed nicely for many farms.

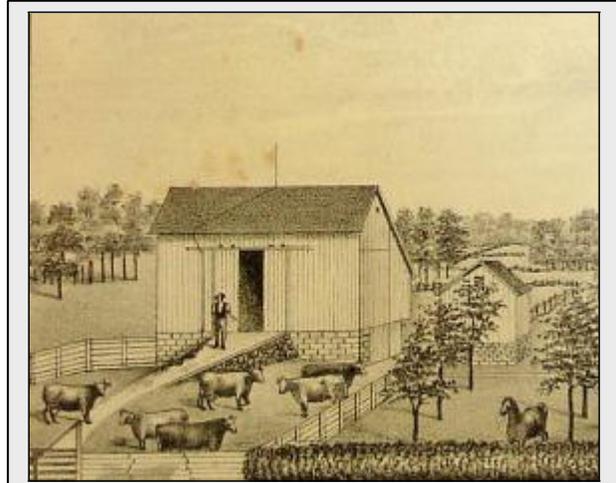
Extended English barn: Sometimes farm families could meet increased demand simply by arranging two English barns side-by-side, or by extending along the gable end of an English barn. In preliminary fieldwork, at least one such arrangement was observed.



Extended English barn, Steamburg Road, Crawford County. Photo-only site, no site number.

Basement Barn: A new type which appeared in Northern Pennsylvania, New York State, and Ohio in the late nineteenth century was the basement barn. The basement barn has many alternative names, making identification confusing. Researchers have also called it a “raised basement barn” and a "Northern Basement Barn." Despite the varied names, this barn type does have some identifying features. It is essentially an English barn raised up on top of a full basement. Henry Glassie has noted that frequently the English barn's three-bay organization was augmented by additional bays (for hay) or runways (for machinery or threshing), so that the basement barn version had more than three upper-level bays. The basement barn never had a forebay, so there would be no forebay wall on the ground level nor framing that would suggest a forebay on the upper level. The basement barn is usually not built into a bank, even though there may be a bank or ramp giving access to the upper level. The lower level usually has a lengthwise central aisle, and stanchions for dairy cows. There are lower-level gable-end doors, usually one in each end. Off center windows in the gable can indicate where the stable area is located. The most common location for these barns was across the road from the farmhouse; the entrance was just off the road. These barns frequently had gambrel roofs for extra hay storage, even in the 19th century.<sup>64</sup>

A great many basement barns were found in the Crawford and Erie County survey regions, and they were also common in Lawrence and Mercer Counties. See the images from the 1876 *Combination Atlas Map of Crawford County* below.



Basement barn, A. N. Griggs farm, Randolph Township, Crawford County. *Combination Atlas Map of Crawford County*. Philadelphia: Everts, Ensign, and Everts, 1876.



Enclosed-forebay Pennsylvania barn, Rush Township, Centre County, c. 1880. Photo-only site, no site number.

The Basement Barn should be interpreted as a response to the intensification of cattle raising in the late nineteenth and early twentieth centuries. In particular, it increasingly paid to shelter animals better and feed them better. The newer barns afforded better shelter and more storage for needed bedding and feed. It is also possible that the belief in

good lighting had an impact on thinking about livestock quarters. The basement level functioned as housing for cows and horses while the upper level could be given over to more storage for machinery, hay, and straw. The vertical organization offered efficient labor savings as feed and hay could be tossed down to waiting animals below.

It is often difficult to tell a "basement barn" from an "extended forebay Pennsylvania barn" in the field. A raised basement Pennsylvania barn more often is built into a bank, thus the ground level is not a full story nearest the bankside. The Extended-forebay Pennsylvania barn in the image (Rush Township, Centre County) shows construction into a bank; the eaves side suggests where the forebay wall was positioned, and the exterior cladding suggests that a prior forebay was closed in. David Griggs's barn, also depicted here, shows a full basement, clearly constructed from the ground up. It also has a constructed bridge rather than a bank for upper level access. Its lower level door is centered, whereas in a modified forebay barn the door would tend to be located where the forebay formerly ended.

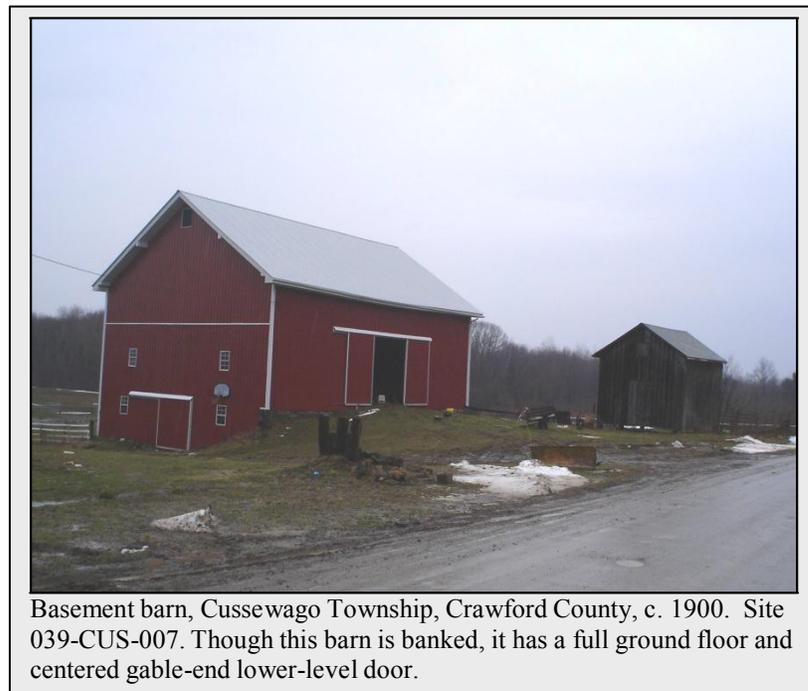
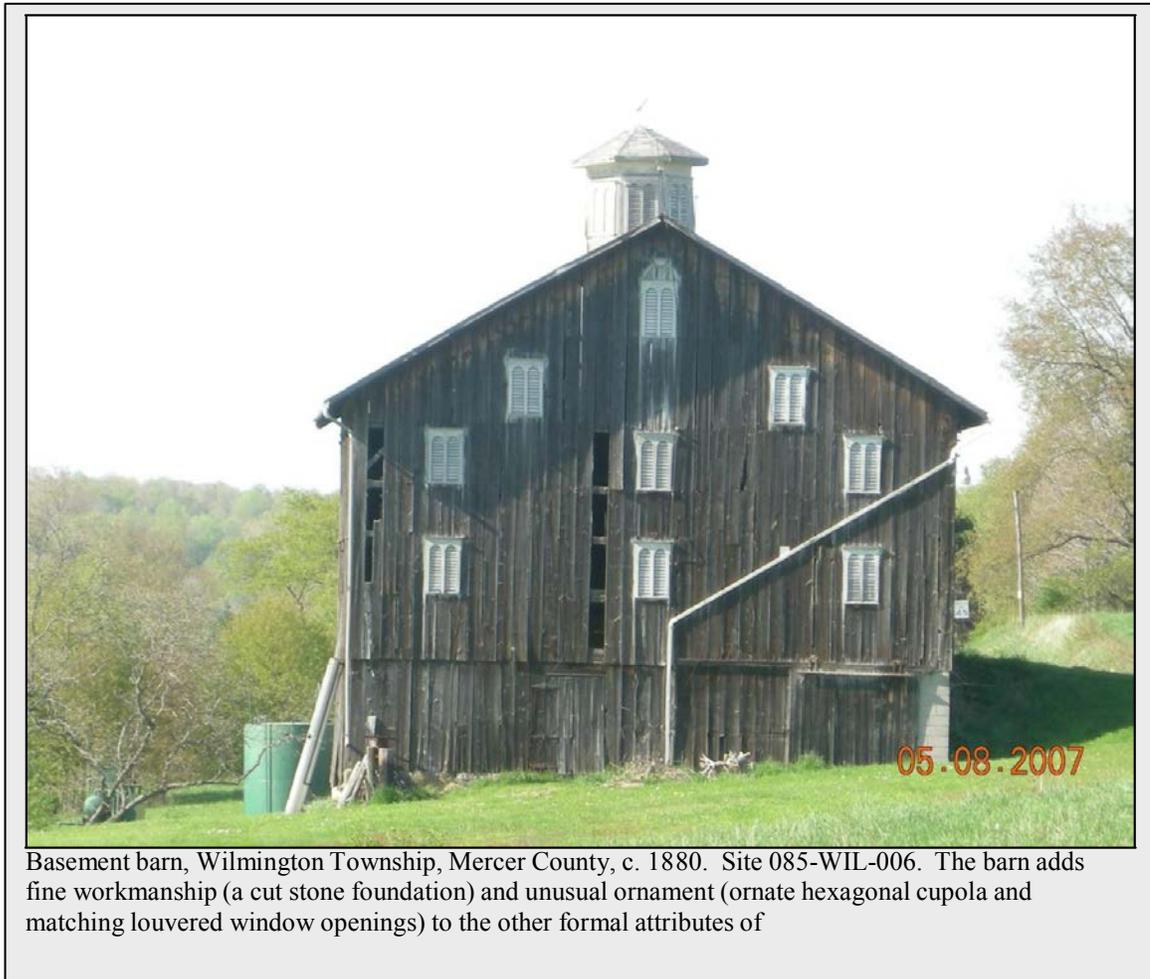
This question of differentiating an extended-forebay barn from a basement barn vexed fieldworkers in northwestern Pennsylvania. In many cases it was simply not possible to determine for certain, because without access to a barn interior to view a forebay wall, exterior features did not sufficiently signal what was inside. However, if we consider the interior function of the two types, it becomes apparent that they were not so very different. In fact, from the evidence that is available, it seems that the extended-forebay barn and the Basement Barn both had lower levels with basically similar layout and function. The "storm shed" of the extended-forebay barn corresponds with the wide aisle as seen in the example by Henry Glassie. Both types organized animal quarters along a lengthwise axis rather than crosswise front-to-back. So perhaps we can detect a convergence here, reflecting the widespread imperative to shelter animals better and possibly also to devote the barn to fewer kinds of animals.<sup>65</sup>



Basement Barn, Mercer County, Airport Road and Route 62. Photo-only site, no site number.



Basement barn, Conneaut Township, Crawford County, c. 1890-1925. Site 039-CON-005.



Hybrid Barns: In 1899, the *National Stockman and Farmer* ran a cover story featuring "A Modern Barn" erected by one Samuel McCleary of Neshannock Falls, Lawrence County. This article described the barn in detail. Its notable feature is that seemed to be a hybrid between the Pennsylvania Barn and the Basement barn. The ground floor layout was organized perpendicular to the roof ridge as would be the case in a Pennsylvania Barn -- though it provided only for horses and milk cows, since Mr. McCleary's main business was sending milk to a local creamery. Eaves-side doors led out into a yard, just as with a Pennsylvania Barn. On the upper level, there was a granary tucked away in the southeast corner. The upper level also echoed many Pennsylvania Barns in its mow: floor: mow: floor: mow pattern of bays (thus it departs from the tripartite English Barn layout). However, this barn was like a Basement Barn in other important respects. It had a gambrel roof, rarely seen in a Pennsylvania Barn. It lacked a forebay. It had a full basement and its upper level was accessed by a constructed "bridge" rather than set into a bank. A modern, "self-supporting truss roof" allowed for a clear space all the way up to the ridge, thus facilitating loading by hay track. Windows admitted light and air on the ground floor level -- another difference from the standard Pennsylvania Barn. This barn nicely reflected the culturally mixed character of Lawrence County, as well as the modernizing adaptations to increased emphasis upon dairying, and finally the role of grain crops on the typical Lawrence County farm.<sup>66</sup> Field work did not identify any hybrid barns with certainty; however, interiors were not often accessible.

Three-Gable Barn: A three-gable barn (also called "raised three-gable barn" or "front-shed barn")<sup>67</sup> consists of a main block, often a Pennsylvania barn, with a large, integral two-story shed, usually gable roofed, at right angles. It thus has three gables, one on each end of the main block and one at the end of the wing. Usually the footprint is an "L," but it can also form a "T" or even a large rectangle. Sometimes the shed has obviously been added to a Pennsylvania barn, in other cases it may appear that the entire assemblage was built at once. Usually the three-gable barn dates to the period about 1875-1925. The three-gable barn does not seem to be associated with any particular ethnic group.

The form is tied to the maturation of a livestock feeding economy; the shed was often called a “straw shed” and was used to store the straw that was produced in large quantities all at once by steam threshing, which was introduced during this time period.



Three-gable barn, Airport Road, Crawford County. Photo-only site; no site number.

The “straw shed” is associated with an increasingly competitive market economy, in which productivity mattered more than it ever had; animals that were sheltered, bedded, and fed better, produced better. It also signifies a relatively large grain production, for large amounts of straw would not be produced without large grain crops. Based on census data, we expected that three-gable barns would be more frequently found in Mercer and Lawrence Counties than in the extreme northwest; and in fact this did turn out to be the case.<sup>68</sup> This is because they would have been well suited to a livestock feeding economy in which animals, straw, and grain feed came together.

There is a three-gable barn at Munnell Run farm, near Mercer.<sup>69</sup> This historic farm is still operated, and is livestock oriented, calling itself an "active beef farm." The other three-gable barns found in field survey work have unclear dates. Many are elevated onto



Three-Gable Barn, George Goodell property, near Edinboro, Erie County. Photo-only site, no site number.

concrete-block foundations that underlie the entire structure; but it is not always clear that the frame dates to the same period as the foundation, since in some cases it appears that the frame sections were constructed at different times. In other words, despite their more modern foundation materials, these barns may still date to the late 19<sup>th</sup> century in their framing fabric.

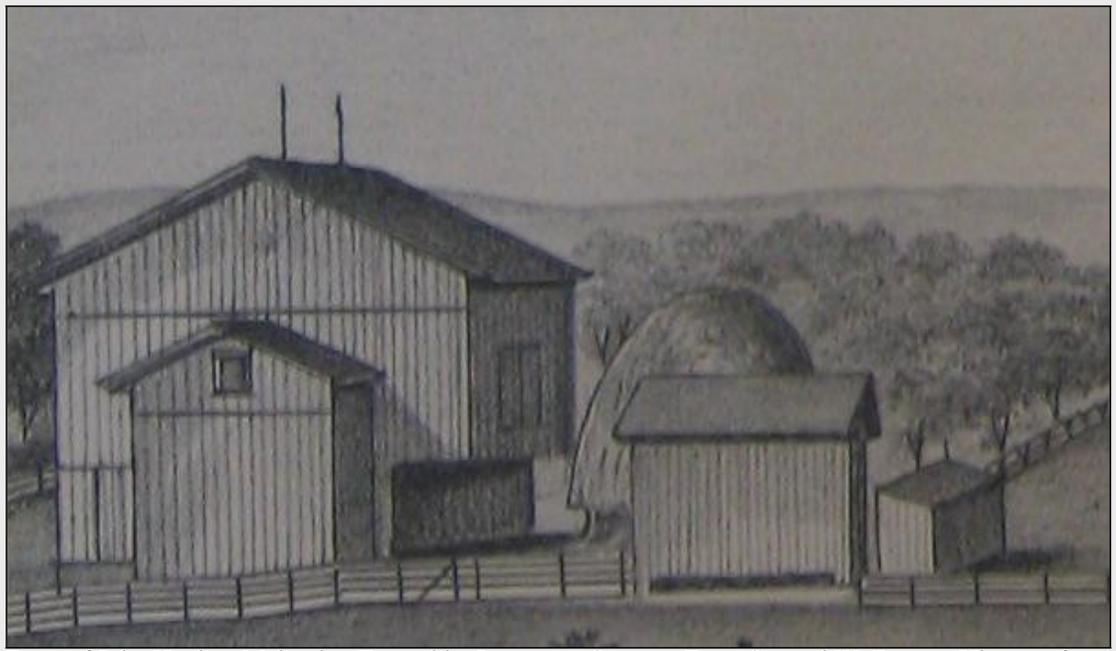


Three-gable barn, Scott Township, Lawrence County, c. 1910 with later concrete block foundation.  
Site 042-SCO-002.



Three-Gable barn, Washington Township, Lawrence County, c. 1910 with later concrete block foundation. Site 042-WAS-005.

Variants of the standard Pennsylvania barn: The 'standard' Pennsylvania barn continued to appear in the Western Pennsylvania landscape, as did the "extended forebay" variant of the Pennsylvania Barn. Other variations appear in engravings in the Lawrence County history of 1877, which seem to be either the work of an unskilled artist or more cases of hybridization like those described elsewhere in this narrative. For example, one engraving depicted a barn with projecting forebay, but no bank:



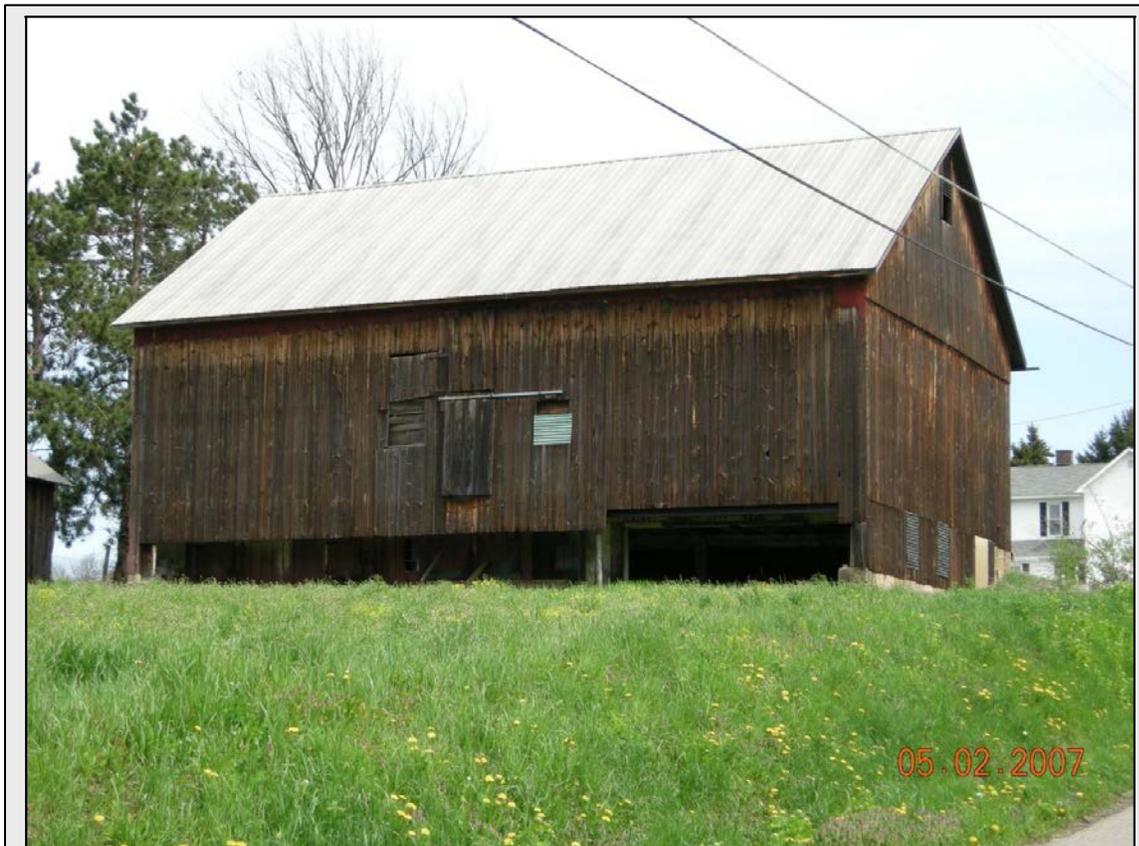
Farm of John Henley, Mahoning Township, Lawrence County. From Samuel W. Durant, *History of Lawrence County, Pennsylvania*. (Philadelphia: L. H. Everts and Co., 1877). The barn appears to have a forebay, but is not banked and has no ramp access to the upper level. Did the artist leave out the ramp, or is this building another approach to hybridizing the Basement Barn and the Pennsylvania Barn?



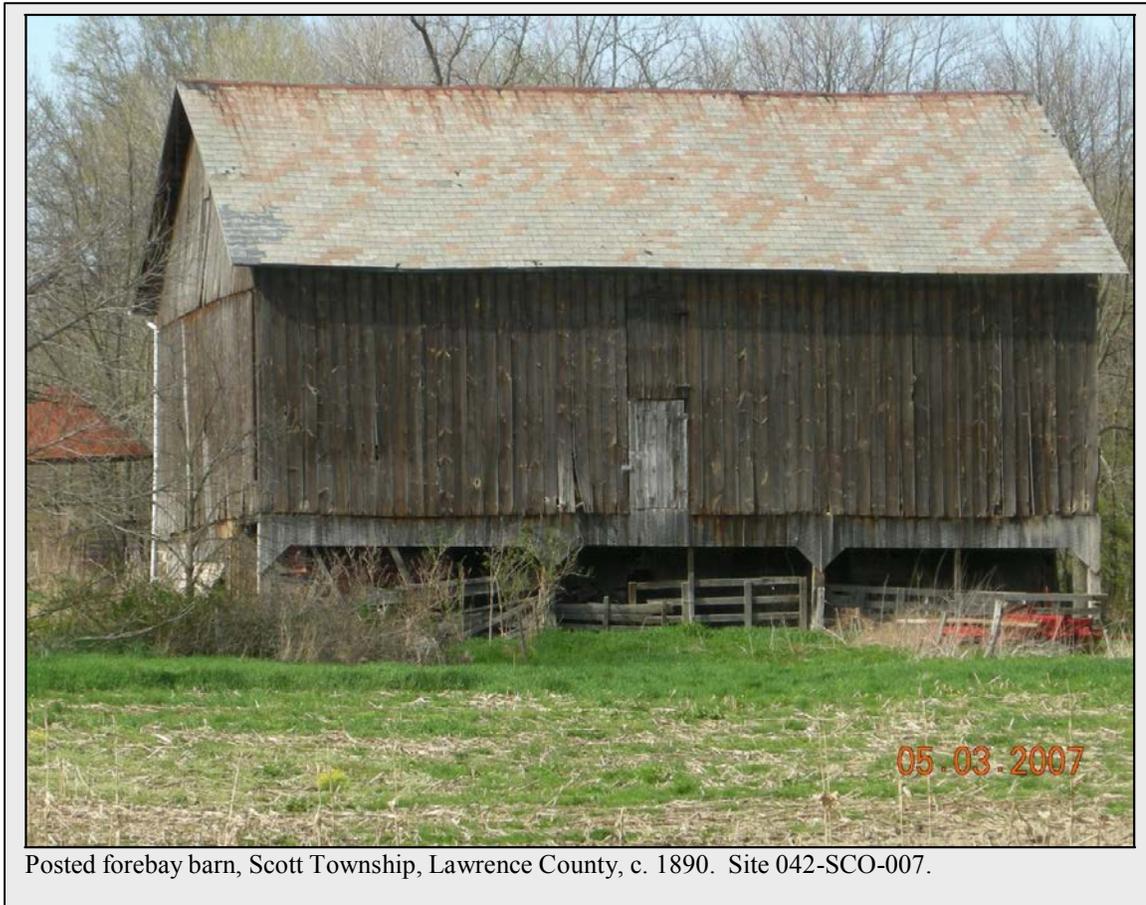
Barn of S. R. Vance, Hickory Township, Lawrence County. From Samuel W. Durant, *History of Lawrence County, Pennsylvania* (Philadelphia: L. H. Everts and Co., 1877), 68.

Posted-Forebay Barn (Pomeranian barn). This variation of the Pennsylvania Barn is discussed by Robert Ensminger. The Ohio State Preservation Office Manual calls it a "Pomeranian" barn. The forebay, because it is so deep, is supported by posts. It provided livestock shelter. Quite a few barns depicted in Durant's 1877 history of Lawrence County show variations on this pattern. Some have a posted overhang that takes up only part of the forebay, with closed-in areas in another corner. Some are clearly banked, and some appear not to be banked.

The depiction of S. R. Vance's barn suggests that this posted-forebay barn had a full ground floor story. Thus it almost "reads" like a Basement Barn with a cut-out shelter on the ground floor level.



Posted-forebay barn, Scott Township, Lawrence County, c. 1880. Site 042-SCO-001.



Posted forebay barn, Scott Township, Lawrence County, c. 1890. Site 042-SCO-007.

Summary: The predominant barn type in Crawford and Erie for this period was the basement barn; in Mercer and Lawrence basement barns were also common, as were three-gable barns, Pennsylvania barns, and Pennsylvania barn variants such as the posted-forebay and extended-forebay types. This difference reflects both cultural and agricultural variations; the New England-influenced counties also had a greater emphasis upon dairying, while the more heterogeneous lower counties raised more grain, beef cattle, and sheep. Interestingly, however, there appears to have been a degree of convergence, for example as regards the ground floor plans of the extended-forebay Pennsylvania barn and the basement barn. Layered on top of these mixtures were new features coming not out of cultural traditions, but rather because of the rise of standardized and industrialized techniques and designs, for example in framing systems. Northwestern Pennsylvania thus reveals much about how culture, agriculture, and nationalizing trends interacted.

*Root Cellar, 1865-1900*

A root cellar is an excavated and covered area that stores potatoes, turnips, carrots, cabbages, and other crops. Sometimes barns had root cellars, but these small detached structures were for household use. Martha Cunningham's farm landscape included a structure which may have been a root cellar, or a spring house:



Root Cellar, farm of Martha Cunningham, Wayne Township, Lawrence County. Samuel W. Durant, *History of Lawrence County, Pennsylvania* (Philadelphia: L. H. Everts and Co., 1877), 130.



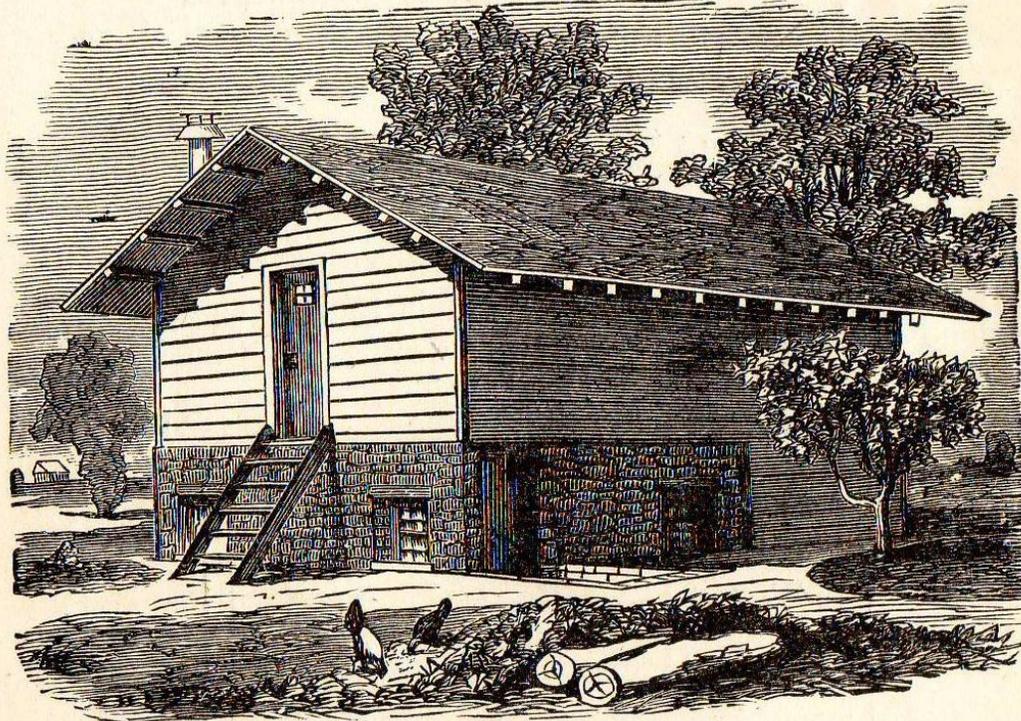
In general, root cellars were rarely found in fieldwork.

#### *Maple Sugar House, 1865-1900*

It is possible that the sugar house depicted in the previous section, site # 049-WAT-001, dates from this period. It was the only extant one found in fieldwork.

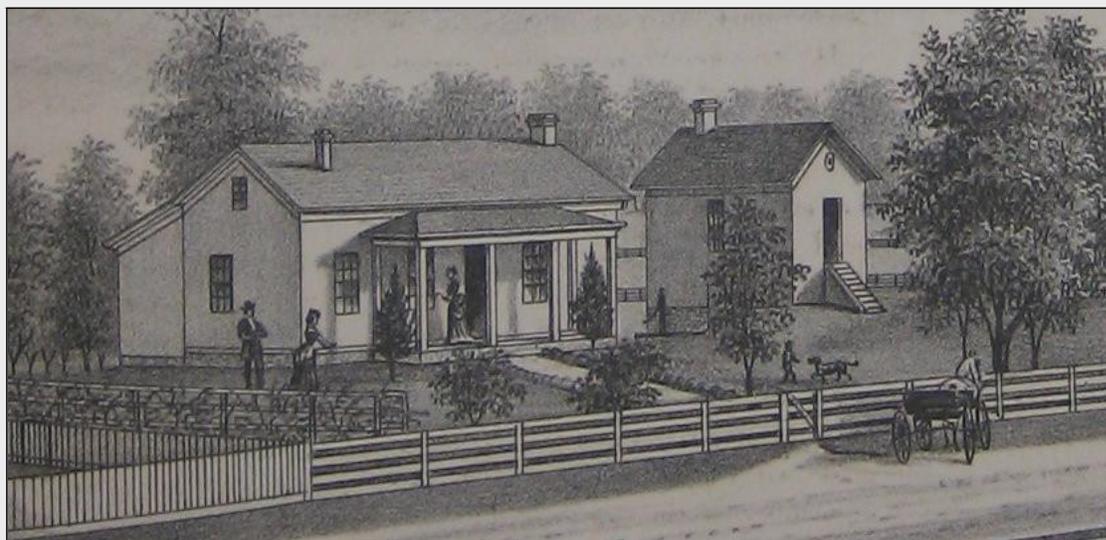
#### *Combination Ice House and Dairy, 1865-1900*

The 1877 Lawrence County history depicts several buildings that have tentatively been identified as combination ice house and dairy buildings. This identification is based on siting and appearance. A 1903 textbook on *Barn Plans and Outbuildings* depicts this outbuilding. The two functions were highly compatible. Usually, the ice would be on the upper level, insulated with sawdust or some other material, so as to allow the cold air to sink. But at least one of these images suggests a reverse placement, ie with ice on the lower level. Siting is always close to the house.



**Fig. 259—AN ICE HOUSE AND A DAIRY COMBINED**

“Ice House and Dairy Combined,” Byron Halsted, *Barn Plans and Outbuildings* (New York: Orange Judd, 1903), 260.



Possible ice and dairy house, farm of William Drake, Wilmington Township, Lawrence County (right). Samuel W. Durant, *History of Lawrence County, Pennsylvania* (Philadelphia: L. H. Everts and Co., 1877).

Field work did not positively identify any combination ice house and dairy buildings.

*Detached Dairy Kitchen, 1865-1900*

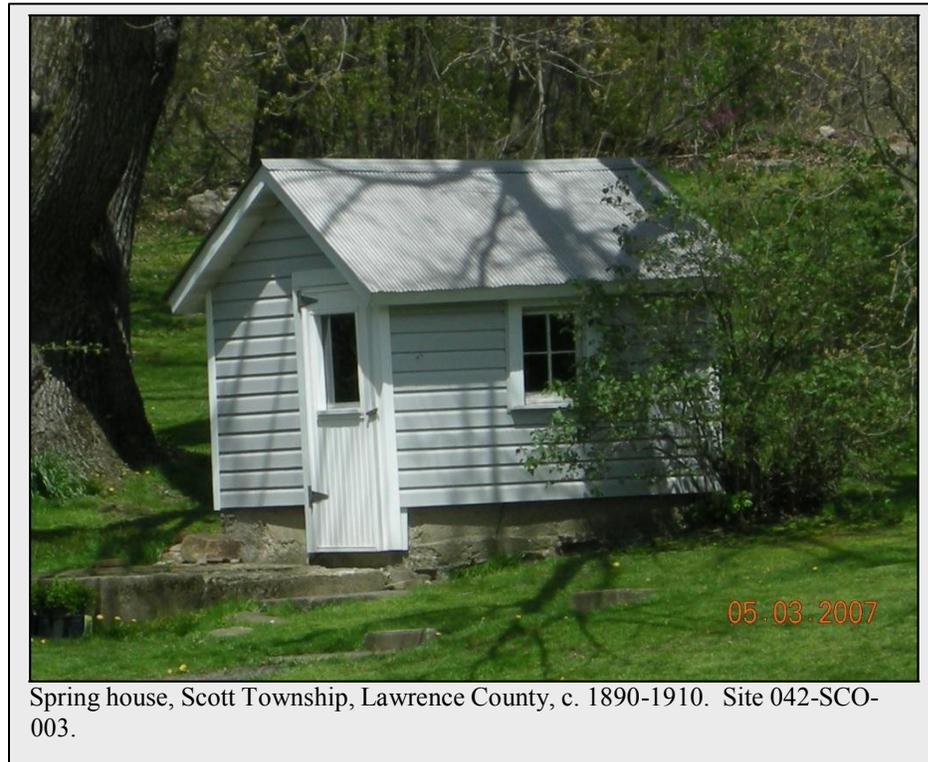
Another building important for dairying was the detached dairy kitchen. (See previous section for a more detailed discussion.) This building is a one- or two-story structure.



Residence of John Barber, Plain Grove Township, Lawrence County. From Samuel W. Durant, *History of Lawrence County, Pennsylvania* (Philadelphia: L. H. Everts and Co., 1877). This building is identified as a detached dairy kitchen based on the siting, on the form, and on the 1880 manuscript agricultural census which reported that John and Mary Elizabeth Barber produced 1,800 pounds of butter that year.



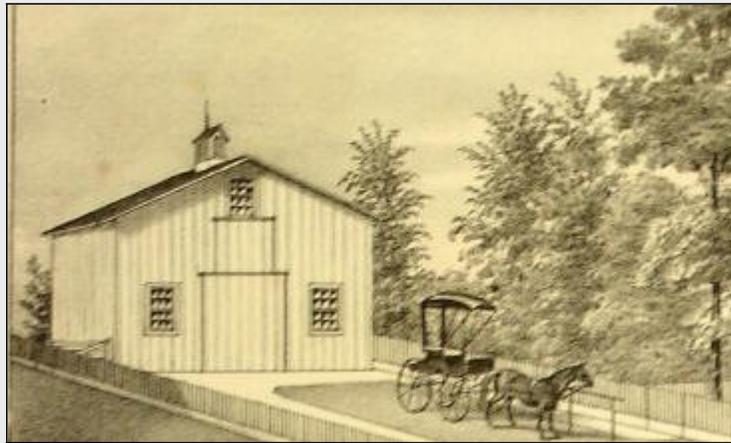
Ice house and dairy kitchen, Waterford Township, Erie County, c. 1900. Site 049-WAT-002.



*Spring House, 1865-1900*

*Carriage House, 1865-1900*

Thomas Visser states that "...these outbuildings are distinguishable by their large hinged doors, few windows, and proximity to the dooryard..." He noted also that carriage houses often appeared when farmers replaced oxen with draft horses.<sup>70</sup> A number of buildings were identified as carriage houses during fieldwork. Each possesses the characteristics Visser names. Though it is difficult to date them, many likely were first built in the late 19<sup>th</sup> or early 20<sup>th</sup> century.



Carriage house, farm of S. H. Findly, East Fallowfield Township, Crawford County, c. 1870. *Combination Atlas Map of Crawford County* Philadelphia: Everts, Ensign, and Everts, 1876. This building has the large doors, windows only on the gable ends, and it is near the dooryard. The decorative cupola and horse and carriage offer more confirmation of its identity.



Carriage house, Conneaut Township, Crawford County, c. 1900. Site 039-CON-007.



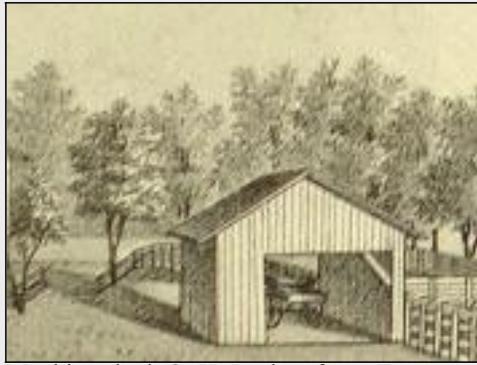
Carriage house, Washington Township, Lawrence County, c. 1920. Site 042-WAS-002.



Carriage house, Washington Township, Lawrence County, c. 1890-1920. Site 042-WAS-007.

### *Machine Shed, 1865-1900*

As mechanization in the region crept up toward state levels, the need for storage also arose. A few machine sheds that may date back to the 19<sup>th</sup> century were identified in fieldwork, but most machine sheds on northwestern Pennsylvania farms are younger. Notably, it was very common to pair up a machine shed with another use, most often a corn crib.



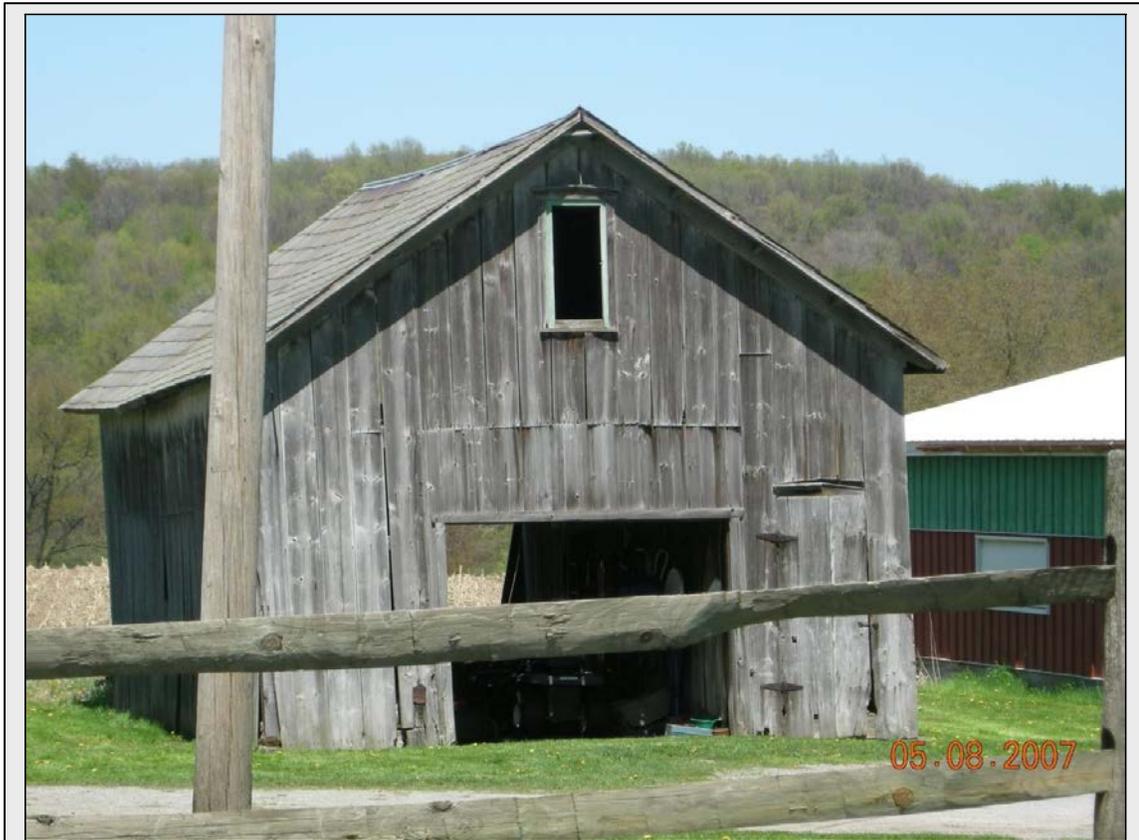
Machine shed, O. H. Lackey farm, East Fallowfield Farm, Crawford County. *Combination Atlas Map of Crawford County* Philadelphia: Everts, Ensign, and Everts, 1876.



Machine shed and corncrib, Cussewago Township, Crawford County, c. 1900. Site 039-CUS-006.



Machine shed, Spring Township, Crawford County, c. 1900-1920. Site 039-SPR-002.



Combination machine shed and corn crib, Wilmington Township, Mercer County, c. 1900-1930. Site 085-WIL-002.

### *Landscape Features 1865-1900*

Few landscape features from this period will have survived. No fundamental landscape changes from the previous period were suggested in the primary evidence. Essentially, previous patterns would be repeated and expanded, but not fundamentally changed.

Road networks: probably contemporary road networks do follow some routes that were there in the late 19<sup>th</sup> century.

Field Size, Shape: fields would have been small, and either irregularly or rectangular shaped.

Treelines, hedgerows: not the same plants, but the lines could certainly survive



Pasture, Meadow: like the fields; continuity of use is uncertain, though hay is still an important crop in the region.

Orchard Remnants: Windshield survey work indicates that orchard remnants may be fairly common in this part of the state.



Woodlot: this was extremely important and occupied a relatively large area on the 19<sup>th</sup> century farm. Remnant woodlots may still be in position.

Sugar Bush: It is doubtful that many of these remain. They would consist mainly of sugar maples thinned and with the underbrush cleared away.

Fencing: the only type of fencing from this period that would have a chance of survival would be stone fence remnants.

Springs and waterways: their location would help determine building and field siting

Ornamental Plantings: there is a chance that some long lived tree species could date back to this period.

Drainage Ditches etc: It's doubtful that remains will be extant from this period, but it is possible; see discussion in the following section. A report in the *Ohio Farmer* for 1894

noted that an attorney from Mercer had bought a poorly performing farm and tilled all the "wet parts."<sup>71</sup>

### **Fluid Milk Dairying with diverse sidelines, 1900- about 1940**

*Introduction:* The next phase in the Northwestern Pennsylvania production system began around the turn of the twentieth century. Rural population was already declining in the late 19<sup>th</sup> century (in fact, Crawford County's population declined steadily each census year between 1880 and 1920), but the number of farms actually did not peak until around the turn of the twentieth century. This trend coincided roughly with a major shift from farm buttermaking and diversification, to relatively specialized fluid milk dairying, complemented by potato and cabbage raising, poultry, and in some cases Christmas tree farming. After 1900, farm numbers dropped and average farm size rose as farm families adjusted to new circumstances. As early as 1901 a Crawford County correspondent worried about bad economic conditions leading to "many public sales and farms for rent."<sup>72</sup> In many ways, the region seemed like a continuation of the upstate New York/New England region, with a declining agricultural economy, poor soils and unfavorable climate, and outmigration. Overall population in the region climbed between 1900 and 1920 (except in Crawford) owing to new industrial opportunities; in Mercer County, for example, Westinghouse Electric and Carnegie Steel established plants in the Shenango Valley in the early 20<sup>th</sup> century. The agricultural population, however, decreased.

Depression conditions in the 1920s and 1930s only worsened an already bad situation; the Depression buffeted agricultural communities. Many farms had negative labor incomes, and young people continued to migrate out of rural areas, unable to find enough economic opportunities to sustain them. The New Deal of the 1930s injected the federal government into farm policy in a big way, introducing price supports, set-aside programs, rural social-service agencies, and aid for rural electrification. The economic impact of specific policies is debated. However, there is little doubt that the rise of an "agricultural establishment" in these years had a huge impact on the direction taken by agriculture. Funding for agricultural colleges (the US Land-Grant system was set up by the Morrill

Act of 1862), extension services (established by the Smith-Lever Act, 1914), and experiment stations (established by the Hatch Act, 1887) stayed steady or even increased (Pennsylvania State College's agriculture faculty increased by 25% even during the Depression years). In tandem with the increasing influence of "agribusiness," these forces promoted capitalistic, mechanized, scientific farming. This modernized farming could be accomplished with far fewer people.

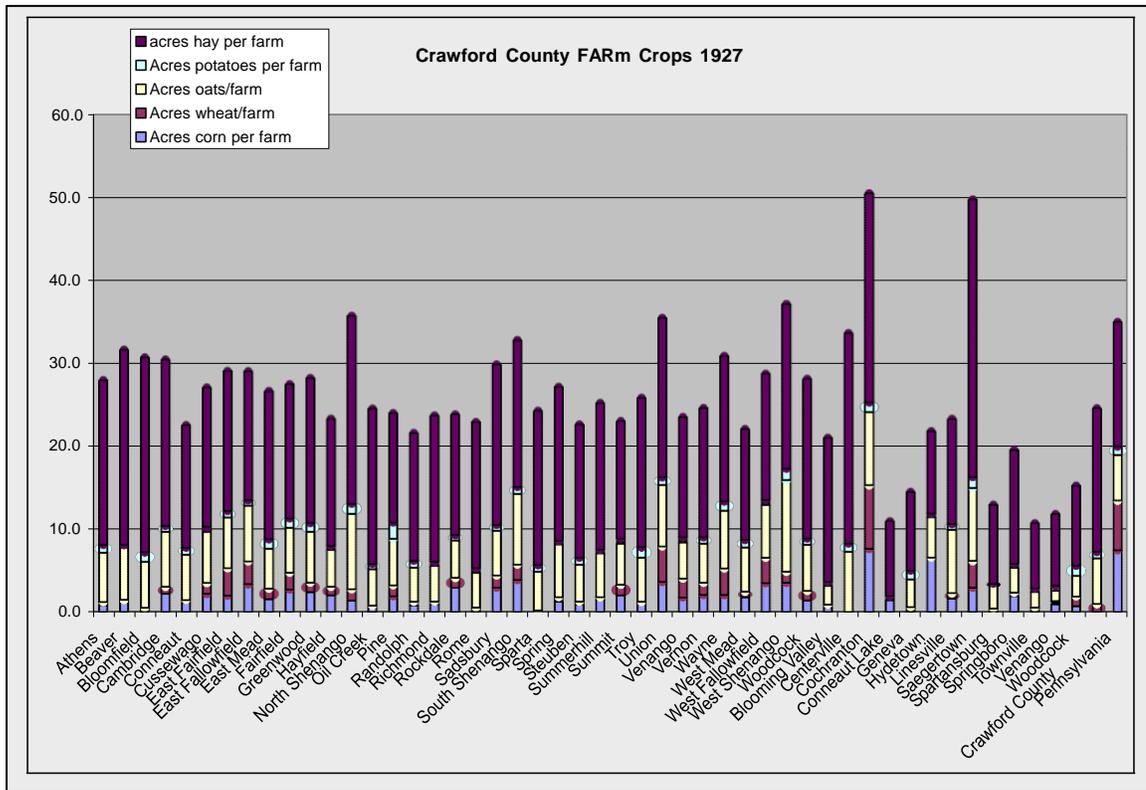
### **Products, 1900-about 1940**

Milk: By about 1900, a major transition was well underway. Home dairying, especially buttermaking, was fast giving way to the sale of fluid milk to urban and industrial markets, and to centralized dairy processing off the farm -- butter mainly, but also such products as evaporated milk, condensed milk, cheese, and ice cream. Reportedly, the destinations of Northwestern Pennsylvania milk were geographically specialized. In 1921 the agricultural extension agent reported that western Crawford County sent milk to Pittsburgh; the south sent cream to Cleveland; the east sent milk to butter and cheese factories, while the central and north made milk into condensed and evaporated products.<sup>73</sup> In Mercer County, a government "experimental creamery" in Grove City was purchased by Borden in 1936; this company bought "all available milk in the district."<sup>74</sup> Extra milk was either made into ice cream or returned free to the farmer to feed to hogs. Creameries also could install machinery to make concentrated sour milk, which was made from skim milk. This went for poultry feed.

The common thread here is that milk was sent off the farm either for direct consumption or for processing.<sup>75</sup> In the state as a whole, 60 percent of milk produced on farms in 1890 had been used to make butter on the farm; by 1924, farm-made butter accounted for just under 30 percent of milk produced. In the northwest, farm-made butter production accounted for only ten percent of milk output.<sup>76</sup> Refrigeration, faster transportation (first rail, then trucks via improved roads), and burgeoning demand (spurred by nutritionists' campaigns and a safer milk supply) drove this shift. In 1923 the county agent for Crawford reported an "Experimental Milk Trip to Pittsburgh" using trucks to get milk to the city in saleable condition.<sup>77</sup> Crawford and Erie Counties led the way in completing

the transition to fluid milk production. With increased emphasis upon quantity of milk rather than quality of processed products, farm families began to pay more attention to yields, first by improved feed and shelter, and later by breeding. This latter was a long, drawn-out process, and even by the 1940s herds were very mixed. Eventually the Holstein came to dominate. If the Crawford County agricultural extension agent is to be believed, the Holstein had already become the main dairy breed even in 1919.<sup>78</sup> A survey of Crawford County bulls in 1928 found that half of them were purebred. This is a high proportion for the time, and suggests that the county indeed was among the early converters to the Holstein. Lawrence and Mercer Counties followed the trend to dairying, though not as aggressively; dairy farms were still only the second most predominant farm types there. Where cropland was concerned, Lawrence and Mercer Counties no longer exceeded statewide patterns in terms of total production per farm. Moreover, in percentage terms, Mercer and Lawrence counties devoted significantly more land to hay, silage corn, and oats, and less to field corn and wheat than in the state as a whole. Thus it appears that the four counties' cropping patterns were converging in the twentieth century after a few decades of divergence.<sup>79</sup>

Dairying not only changed in its nature, but also changed in its importance within the farm economy. By now, dairying accounted for a relatively large portion of the farm income. By 1930, a Pennsylvania State College Agricultural Extension study reported that Northwestern Pennsylvania's predominant "type of farming" was dairying. 51 percent of Crawford County farms were classed as dairy farms in 1929 (more than 40% of farm income coming from dairying), putting it second behind Bradford County, in the Northern Tier. The home economics agent in 1940 estimated that milk, far and away the leading income producer, generated \$4 million, while the second leading enterprise was poultry at just a half million dollars.<sup>80</sup> Other enterprises accounted for an additional \$2.5 million. The modest scale of these ancillary enterprises is reflected in the census figures for livestock numbers: only in the number of dairy cows per farm did the northwest exceed state averages; for all others (swine, sheep, beef cattle, horses, poultry) per-farm numbers were at, or well below, statewide averages. The same was true for the other northwestern counties.



So, by Pennsylvania standards of the times, northwestern farms were quite focused. A very high proportion of farm income came from a single source, and a majority of farms were classified as dairy farms. Moreover, both the crop and livestock mixes were noticeably less diverse than in central, eastern, and southeastern Pennsylvania. For example, the corn/hog complex, tobacco, and cash grains had only a small presence in the Northwest. Ancillary enterprises that formerly had aided northwestern farm families, such as maple syrup making, were in steep decline. This all meant that northwestern Pennsylvania farm families had precious few sources of income. A Penn State study showing sources of cash income in 1925 revealed that the Crawford County farms surveyed had the lowest incomes of all counties surveyed.<sup>81</sup> The *Ohio Stockman and Farmer* noted "lots of public sales,"<sup>82</sup> that is, sales of farms by people who had failed or just decided to quit the difficult farming life, or perhaps hoped to move to a better farming region.

However, northwestern farms were still diversified when set against a twenty-first century context. Even dairy farms often generated as much as half their income from non-dairy sources. The average number of dairy cows in all four counties was just about

six -- not exactly what we would today call large scale specialization. And, the second "most predominant types of farms" in Erie and Crawford Counties in 1929 were "general" and "abnormal" farms. "General" farms were typically 100-acre farms with a diversified mix of crops and livestock, and no single product accounting for more than 40 percent of income. "Abnormal" farms were frequently small (only about 50 acres) and eighty percent of them were part-time farms in which the operator spent 150 or more days working off the farm. Mining and industry likely provided employment opportunities in the area.

The variety of ancillary enterprises included hay sales, cattle raising, and other sidelines. Crawford maintained its position near the top of the state for hay, being the # 2 hay producing county in the state in 1910.<sup>83</sup> By 1926, Crawford was listed as one of a few counties with a hay surplus that was shipped out. Fifty-seven percent of crop land acreage in 1925 in Crawford County was devoted to hay.<sup>84</sup> Because milk prices were lower here than elsewhere in the state, farm families often raised dairy cattle for sale, and engaged in poultry and crop enterprises, particularly hay, cabbage, truck crops (strawberries, cherries, raspberries, vegetables), and potatoes, and sometimes Christmas trees.<sup>85</sup> The Crawford agent reported in 1927 that, inspired by Penn State's potato expert Dr. Nixon, "a number of people put in as high as 15 acres of potatoes in this locality."<sup>86</sup> Near Linesville, Crawford County, swampy muck soils afforded good conditions for onions and parsnips. After Pymatuning Dam was constructed in 1933-4, onion growing was drastically curtailed there, but onion growers still worked in other swampy areas, for example Conneaut Lake vicinity. By 1930, sociologist Irving Lorge reported that in Crawford County there was "general [farming] with dairying, tendency to potatoes and root crops: parsnips, radishes etc., some poultry." Some farm families operated hatcheries with incubators of up to 60,000 eggs capacity. Hatcheries, milk plants, and canneries took eggs, milk, cabbage, cucumbers, sweet corn, lima beans, and livestock from local farms.<sup>87</sup>

In Mercer and Lawrence Counties, the livestock industry, poultry, and fruit farming provided diversification. Proximity to Pittsburgh offered markets generating other sources of income. Truck farming was carried on in Sharon; proceeds from potatoes sold in Pittsburgh reportedly were used to pay taxes. Agricultural extension reports for

Lawrence County made potatoes sound fairly important, but the census evidence shows that potato acreage was below average for the county. The 1917 soil survey for Mercer County reported that "Stoneboro is a well-known strawberry center, 20 to 30 carloads of berries being shipped from this point annually. Several local varieties of strawberries have been developed," including the William Belt, Glen Mary, Eclipse, and Stoneboro Belle.<sup>88</sup> Like every other type of farming, fruit growing was risky; Stoneboro had a near total failure due to weather in 1929.<sup>89</sup> Market gardening was important near Sharon, Greenville, and Grove City, especially for cabbage.<sup>90</sup> There was a reference in the 1921 Lawrence county extension report to a raspberry trade which thrived for a time in the area. The immediate vicinity of New Castle showed in the 1929 "types of farming" map as having a significant presence of truck farms. The agricultural extension reports from 1919 and 1920 report that there were still about 250 "sheep men" in Lawrence County, and that some farms found good markets in the city for poultry and eggs. The Mercer horse market was mentioned in 1917 as one of the largest in the region.<sup>91</sup> Cordwood still played an important role. The *Ohio Stockman and Farmer* carried notes from Crawford and Erie in the late 1920s<sup>92</sup> mentioning that farmers were drawing wood and logs.

Household subsistence activity kept many farm families going, especially during the Depression. The Home Economics agent for Crawford County reported in 1933 that families "stored" carrots, cabbage, potatoes, onions, beets, pumpkins, and squash; and they dried corn, beans, and peas. Even so, she worried that "only about 1/6 of the 180 families [who were surveyed] canned enough vegetables... to supply them for the seven months when they cannot depend on fresh vegetables."<sup>93</sup> This concerned her, considering that three-quarters could not afford to purchase fresh vegetables at the grocery. Indeed, a Depression era study included a map showing that all across the northwest, the percentage of people receiving relief was between 15 and 30 percent -- the second to highest of four groups that were mapped.<sup>94</sup>

### **Labor and Land Tenure, 1900- about 1940**

As the list of products suggests, family and neighborhood labor still predominated in this system, as families struggled to cobble together an adequate living. As dairying came to dominate, seasonality decreased and the daily round of milking, feeding, and cleaning

took over. Probably the gender division of labor varied from one household to another, with all members performing these tasks on an occasional if not regular basis. Wage labor assumed greater importance as neighborhood networks diminished in importance, though the latter did not by any means disappear. Silo filling, for example, became a new type of communally shared work. Men and boys worked to fill the silo, and the women cooked.

Machinery and other technologies (like electricity) assumed a greater role in farming. In general it seems that Northwestern Pennsylvania had higher than average electrification rates even though the area struggled so badly during the Depression era. Electrification came to parts of the region by the 1930s, bringing lights and other amenities. Agents encouraged rural families to use electricity to pump water and run farm machinery.<sup>95</sup> In 1930, 18 percent of Mercer County rural residents had electricity, compared to a national average of 10%. A 1938 Penn State thesis noted a strong cooperative, the Northwestern Rural Electric Cooperative Association, in Saegertown. According to its website, this was the first permanent rural electric coop in PA, established 1936.<sup>96</sup> Though electricity only slowly became a major factor in typical farm life, its impact among the families who acquired it was profound. An ad in the 1939 *Pennsylvania Farmer* noted that contestants from Mercer, Crawford, and Lawrence counties won prizes for describing their favorite electric powered appliances: a milking machine (from a woman in Mercer County); an iron; a feed grinder; and water system.<sup>97</sup> It seems possible that the strong Northern Tier tradition of cooperatives in dairying helped to make the rural population receptive to electric cooperatives.

Most farm families had an automobile by 1927. The auto significantly reshaped work patterns in many families, as it came into use for marketing, visiting, errand running, and the like. There is little direct evidence from the region itself, but other work has shown this. Women, for example, often found themselves in a supporting role, driving the car to run errands, fetching parts, feed, and so on.<sup>98</sup>

Mechanization of field work also continued. However, it is important to note that even in the twentieth century this process was gradual and uneven. Less than half the farmers surveyed owned tractors. Much work was done with horse power or stationary engines

even to the mid twentieth century. A 1927 survey noted that in Erie County, the commonest equipment included walking plows, horse or tractor plows, harrows, grain drills, cultivators, mowers, hay balers, ensilage cutters, and feed grinders. Most of these machines had been in service at least a decade, more commonly 15 to 20 years. Moreover, overall percentages of respondents owning equipment were low relative to the other areas surveyed.<sup>99</sup>

The Home Economics Extension agents encouraged farm women towards new roles emphasizing consumerism (they used the curious and infelicitous term "buymanship"), child care, and home decoration; not all women were receptive to these prescriptions. In 1941, for example, the Home Economics agent tried to encourage "clothes buymanship" at the retail level, but found little interest among farm women, who were still more interested in dairy work because Depression conditions motivated them to create wealth rather than to spend money they did not have.<sup>100</sup>

## **Buildings and Landscapes, 1900-1940**

### *Houses, 1900-about 1940*

A Community Study of Linesville (Crawford County) conducted by Pennsylvania State College in 1923 surveyed twenty "average homes in the country districts" and found that they were built of frame and averaged 9.5 rooms. Just 7 had indoor water, while fifteen had an outside water supply averaging 55 feet away from the house. All had outdoor toilets. Five had electric lights, supplied in all cases by independent electric plants; and seventeen had kitchen cabinets.<sup>101</sup> Thus, the one item farm kitchens almost always possessed was a kitchen cabinet, but not other conveniences that would materially change labor conditions for women. By 1940, a survey of "Housing in Rural Pennsylvania" placed Erie and Crawford in the "high" and "middle" groups respectively, regarding adequate space and amenities.<sup>102</sup> The Home Economics extension agent that year believed that "Nearly all have running water, bathrooms, and electric lights. The houses are painted and in general and in general well kept. The furnishings are not elaborate but are comfortable and well cared for...." Judging from fieldwork, little new farm housing appeared in the first half of the twentieth century.<sup>103</sup> Rural people's housing investments,

when they could make any, evidently were devoted to installing plumbing, electricity, and better heating.



Brick house, Washington Township, Lawrence County, c. 1920. Site 042-WAS-001.



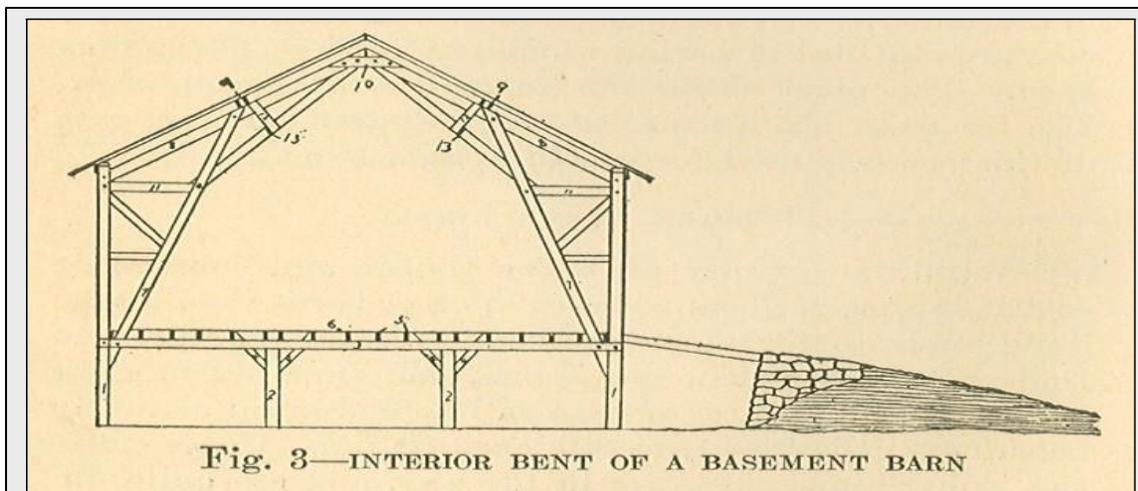
Bungalow, Washington Township, Lawrence County, c. 1920. Site 042-WAS-005.



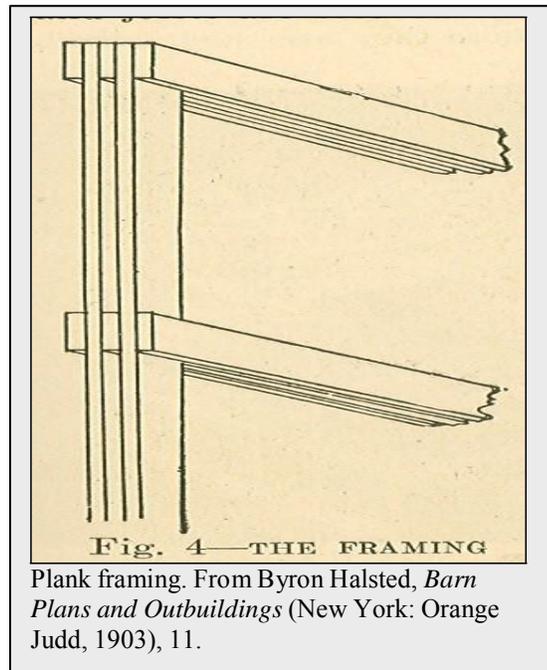
Bungalow, Conneaut Township, Crawford County, c. 1930. Site 039-CON-007.

*Barns, 1900-about 1940*

Barn Alterations: Field survey work has shown that alterations were frequently made in the twentieth century. The biggest changes occurred in barn layout, as labor efficiency in dairying became more important and as farming specialized more. Layout changes would include such modifications as adding stanchions, subtracting horse stables, widening barns, raising the roof to give more hay storage; cutting out (or even entirely replacing) roof framing to accommodate hay tracks, and reorienting the floor plan from crosswise to lengthwise. I. F. Hall, writing in 1929, surveyed over 700 New York state farms and found that over 500 of these had cows face out, so manure could be efficiently gathered; cows could reach their stanchions more easily; hay could be thrown down in front of cows, and so on.<sup>104</sup> In keeping with the emphasis on larger dairy herds, another strategy for altering barns was to add a one-story cowshed. Gambrel roofs and “rainbow” or “gothic” style roofs were popular, framed to accommodate hay tracks and forks, since the average farm produced a lot of hay and storage became more critical as pressures for quantity milk production increased. Framing systems were simplified, and also adapted to make use of poorer quality materials, since huge wood beams were no longer available. The plank frame, Shawver truss, and laminated rafters came into use. An illustration of plank frames can be seen below.<sup>105</sup>



Shawver Truss. From Byron Halsted, *Barn Plans and Outbuildings* (New York: Orange Judd, 1903), 10.



Mr. J. C. Prather of Crawford County published a picture and description of his barn in the *Ohio Farmer* for January 25, 1900. This 64 by 50 foot barn had an eleven-foot basement apparently built on a level. It had a "driveway through basement, 16 feet wide." Since the door is positioned in the gable end, a lengthwise interior layout is implied. A key feature was the "20 windows, making the barn light in all parts." On the upper level, accessed by a bank or ramp, there were two barn floors and two bays (I interpret this to mean mows), each 16 feet. Though the photo caption described it as a "Pennsylvania barn," this barn's characteristics identify it more accurately as a Northern basement barn.

Barns of this era almost universally were altered to include concrete flooring and increased sunlight on the stable level. Whitewashing appeared; metal stanchions replaced wooden ones; ventilation was added; windows were added and/or enlarged.<sup>106</sup> Alterations relating to light and cleanliness can be directly traced to the impact of municipal (later state) sanitary regulations. During these years, urban municipalities often introduced or tightened milk sanitation standards, necessitating renovations to bring

barns and milk houses into compliance. The Dairymen's League was active in the northwest, and this brought an additional influence to bear, since the League often entered into marketing negotiations on behalf of many dairy farmers. Even so, sanitation and disease eradication were sometimes a hard sell. The agricultural extension reports for Erie and Crawford frequently mention efforts toward quite a few instances where agents advised on TB eradication (1917, 1919, 1924, 1927) but the Bangs program (Bangs's disease refers to contagious abortion) was not an immediate success and took many years to complete.<sup>107</sup>

Basement Barn: the basement barn continued to be built in this period.



Erie Shore Barn: The Erie Shore barn was identified by Alan Noble as a regionally specific type which probably originated late in the 19<sup>th</sup> century. Its characteristic feature is the off-center large door in the eaves side, which leads to a crosswise passageway; it

also has regularly spaced windows along the eaves side and a gable end door. It is a multipurpose, small barn.<sup>108</sup>



Possible Erie Shore Barn, Conneaut Township, Crawford County, c. 1925. Site 039-CON-007.

Foundation barn: Allen G. Noble puts this barn in its own category. According to Noble, a foundation barn has a one-story foundation (he mentions stone) and two levels, but no ramp or bank giving direct access to the upper level. Noble speculates that the foundation barn is an adaptation of the basement barn to new hay loading equipment. He further notes that "the main wagon door is usually on one gable end." Earlier foundation barns had few windows, but later ones have more. Fieldwork did document four multi-level barns with no direct upper-level access, and lacking a better label, these have been tentatively identified as foundation barns. They do not have a full-story foundation, nor do they have hay hoods, so there may need to be another designation for these barns.<sup>109</sup>

Stable Barns: Early twentieth-century barns have been put into several different classifications by scholars Thomas Visser and Allen G. Noble. Their classification systems are cross-cutting and analytically confusing. The following discussion proposes a reasonable compromise.



Foundation barn, Cussewago Township, Crawford County, c. 1925-40. Site 039-CUS-003.

Visser uses the term “ground-level stable barn” and Allen G. Noble uses the term “Wisconsin dairy barn” to refer to a 20<sup>th</sup> century barn that was built all on one level, often with original concrete flooring and concrete block foundation walls. Two rows of stanchions lined the eaves sides, and multiple large windows along the eaves sides admitted ample light. The story above (really more like a story and a half, since the ground floor story had low ceilings) functioned as a hayloft and had a large hay door and hay hood in the gable end. Ground-level stable barns could be built with a gambrel roof or a Gothic roof (also called a “round roof” or “rainbow roof”).<sup>110</sup> This latter roof type is usually a pointed arch or sometimes rounded. It was made possible by new truss systems, sometimes prefabricated, and it allowed more hay room than even a gambrel roof. Some companies in the Midwest offered complete designs and materials for these barns. They were designed to be specialized, ie to house and feed dairy cattle. These barns could be large or small, (though Noble suggests most were at least 36 feet wide and as long as 100 feet). The term “ground-level stable barn” seems to capture the type best, since it is descriptive and does not limit the range to the Wisconsin version, which tended to be large.

A related type has similar features (concrete block construction, gable end door, lengthwise arrangement of stanchions, upper level hay storage, concrete flooring) but has multi level access. Allen G. Noble uses the term “raised round-roof barn” for these structures.<sup>111</sup> The features that differentiate this type from the ground-level stable barn are multi-level access, and the large hay door on the upper eaves side, which is designed to admit the high hay wagons of the mid 20<sup>th</sup> century. They also almost always have round or rainbow roofs, but to call a barn by a roof type is problematic, because many types of barns either had round roofs or were later covered with round roofs. Perhaps the term “raised round-roof stable barn” would best capture its diagnostic characteristics. Regardless of specific configuration, these barns all represent rationalizing, specializing, industrializing agriculture. Their very materials -- mass produced and marketed -- came out of an industrialized building system. The barns themselves were marketed by corporations. Companies such as Sears, for example, sold "kit" barns, as did lumber concerns like Weyerhaeuser.<sup>112</sup>



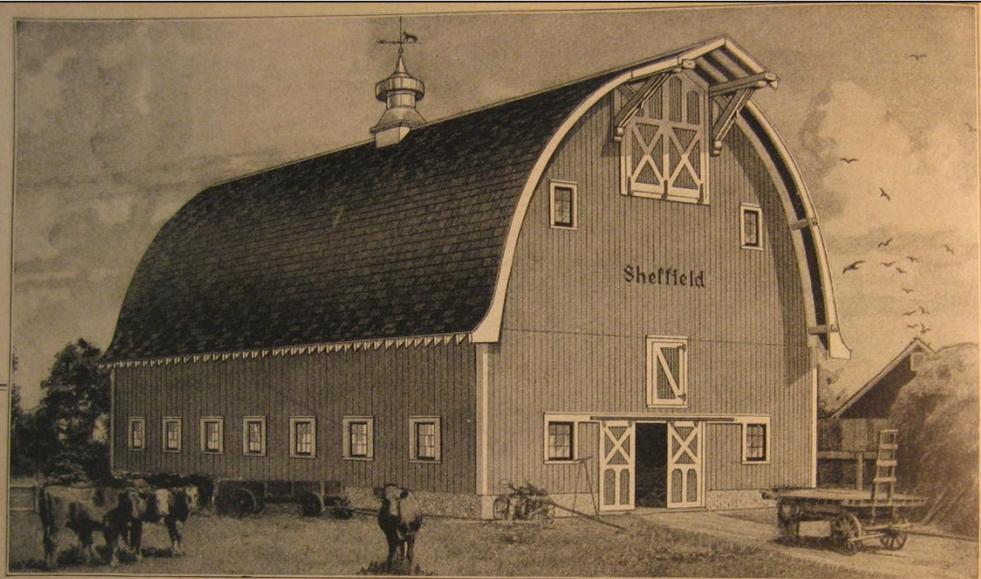
Ground-level stable barn, Airport Road, Crawford County, c. 1945. No-photo site; no site number



Stable barn showing hay door, Green Township, Mercer County, c. 1950. Site 085-GRN-003.



Stable barn with gable end bank and rainbow roof, Airport Road, Crawford County, c. 1940. No-photo site; no site number.



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“Our Leader” Modern Barn. From *Modern Farm Buildings Already Cut and Fitted*, Sears Roebuck and Company, 1927.

*Granary, 1900-about 1940*

An interesting finding of fieldwork in Northwestern Pennsylvania is that granaries were quite common in the twentieth century.<sup>113</sup> Indeed, more than a dozen granaries that probably date to the twentieth century were found in fieldwork; many of these buildings are constructed of, or clad in, modern materials. What accounts for this pattern? After all, grain production in the northwestern counties was quite modest. For a tentative explanation, we must look to the broader context. The basement barn was ubiquitous in the northwest, and descending as it did from the English barn with its tripartite mow:floor:stable arrangement, it normally did not have an interior granary as a Pennsylvania barn would. English custom was to have a number of small outbuildings with specific functions, and this too may have played a role in the continued importance of the granary. The primary barn in this region was often a relatively specialized stable or basement barn, thus the late granary accompanies this trend also.



Granary, Cussewago Township, Crawford County, c. 1940. Site 039-CUS-001.



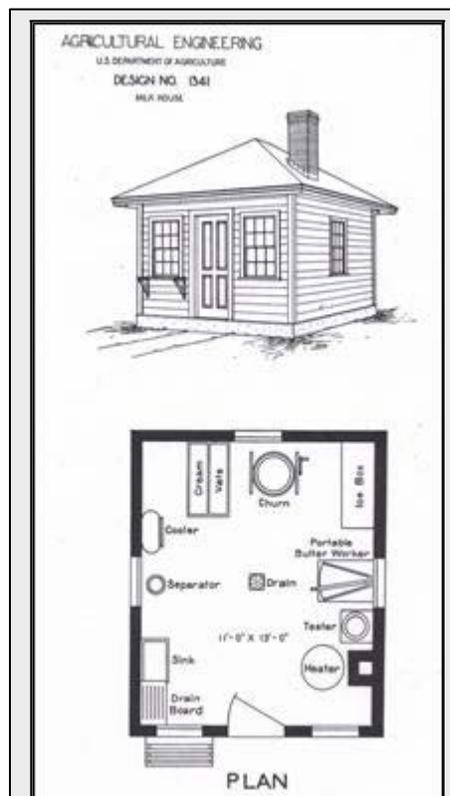
Granary, Cussewago Township, Crawford County, c. 1930-50. Site 039-CUS-004.



Granary, Green Township, Mercer County, date uncertain. Though it has been clad in metal siding, the blank walls and gable end pass door indicate its purpose. Site 085-GRN-003.

*Milk Houses, 1900-about 1940*

The milk house was another major new form on the early twentieth-century dairy farm. It wasn't a big building, but is an important reminder of the new role of the state and the agricultural establishment in agriculture. The state (meaning the government at any level) influenced the construction of milk houses in the first place, because during the Progressive and New Deal eras, legislatures and municipalities passed sanitary codes that required inspection not only of milk, but of dairy herds and milk production facilities.<sup>114</sup> New York City pioneered in these efforts, and also seems to have been more effective at enforcement than other areas. In Pennsylvania, according to Stevenson Fletcher, a very few municipalities had inspection laws starting in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries; however, enforcement was patchy. The first statewide dairy inspection law was passed in 1929, with a revision in 1933. This law provided for inspection of farm sanitary conditions, including facilities for sterilizing dairy equipment and milk houses for



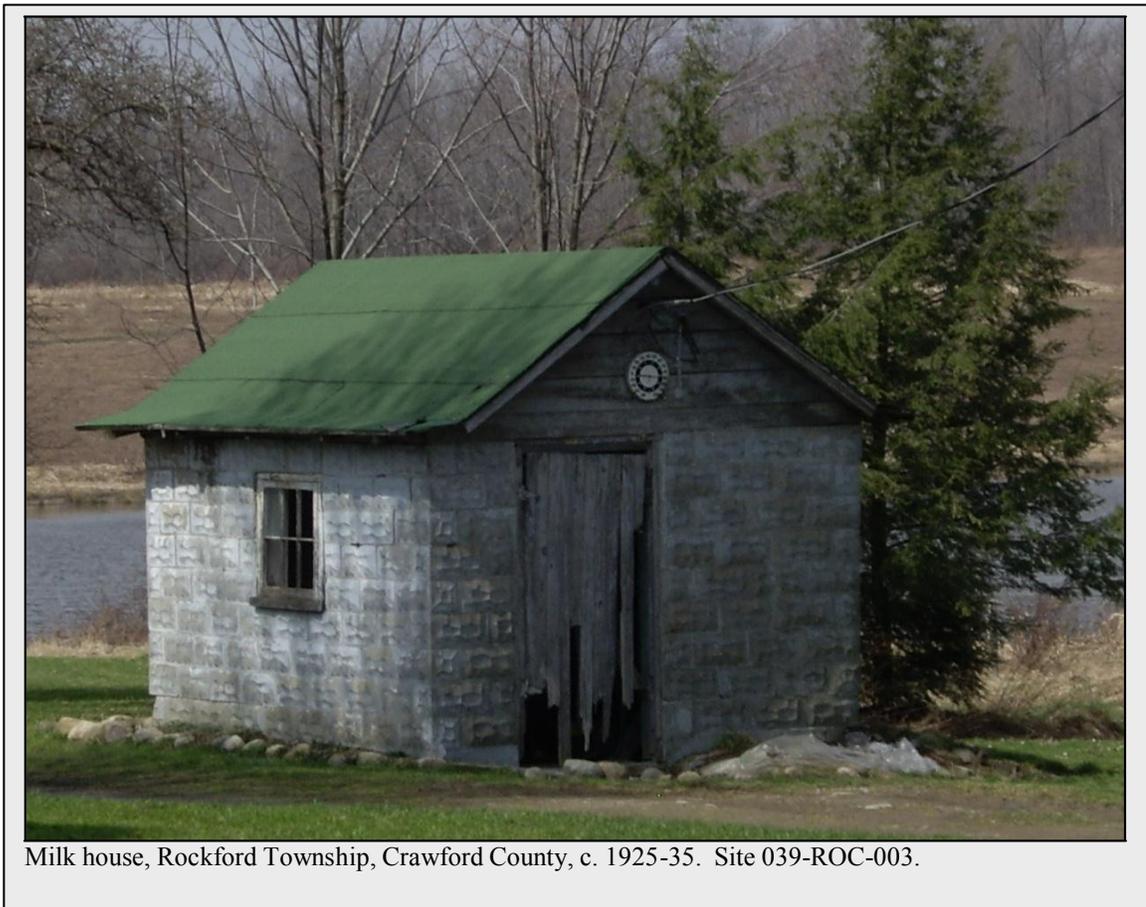
Milk House Design #1341. USDA Office of Cooperative Extension Work and Bureau of Public Roads Cooperation, *Farm Building and Equipment Plans and Information Series*, 1929. Not paginated.

isolating milk.<sup>115</sup> It is not clear how well these were enforced. These regulations were a facet of the assault that was launched on bovine tuberculosis and other diseases in this period, aiming at ensuring a fresh, uncontaminated milk supply. In order to market milk, increasingly farm producers had to comply with regulations that required them to install easily cleaned surfaces (like concrete) in barns, remove milk storage areas from dirt and odors (by building milk houses), cool milk, sterilize equipment, and the like. In Pennsylvania, these regulations took effect relatively early in the Northern Tier, because New York City, where most milk went from there, passed quite stringent inspection standards by the 1920s. The milk house was one product of these new laws. In turn, its form and construction were influenced significantly by the agricultural establishment (meaning the complex that included state departments of agriculture, the land-grant university and extension apparatus, and agribusinesses). This new element in the farm landscape, therefore, illustrates the growing influence of the “agricultural establishment” on everyday farming practices and landscapes. Agricultural extension agents regularly disseminated plans for milk houses. Likely, for every farmer who followed a plan exactly there were more who either copied his building, or who adapted the basic guidelines using available materials and expertise.

Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash containers (and sometimes other equipment like separators). Plans offered by the USDA for farm milk houses typically gave dimensions ranging about 10 by 13 feet up to around 12 by 20 feet. Interior plans for a 10 by 13 milk house with ell (# 909, “capacity 20 to 30 head market milk”) show a two-room plan with door leading to a wash room; milk room to one side, which contained a cooling tank and led to raised loading/unloading platforms and sunning racks, mounted on the outside. The ell contained a boiler room with its fuel supply, and back door. Larger milk houses had the same basic three spaces, only larger, and sometimes equipped with testers and separators. One (#1337) had a churn, butter worker, ripening vat, and refrigerator, and another (#1339) had quarters for workers. Another small, 12 by 14, one-room milk house (#1341, see illustration) was designed for “butter making by hand” for 20 cows. It contained the same basic spaces, but not divided. The very smallest, at 7 by 9, had a concrete foundation with a sunken vat for cooling cans of milk.<sup>116</sup> All of these

plans had sloping floors with drains, and provision for ventilation and light. After about 1950, milk houses were sometimes altered to accommodate bulk tanks.

Despite these activities, agricultural extension agents in Crawford and Erie seldom mentioned milk houses. Fieldwork confirms that this was likely because milk houses were simply so ubiquitous as to be taken as a given; virtually every farm in Crawford and Erie counties had a milk house, and many in Lawrence and Mercer did too.<sup>117</sup> Indeed, they remain on the landscape in large numbers. Following is a sampling of two of the more architecturally interesting milk houses encountered in fieldwork.



Milk house, Rockford Township, Crawford County, c. 1925-35. Site 039-ROC-003.



Milk house, Washington Township, Lawrence County, c. 1940. Site 042-WAS-003.



Milk house, Green Township, Mercer County, c. 1930-50. Site 085-GRN-001.

*Spring House, 1900-about 1940*

Interestingly, quite a few new spring houses were built in the twentieth century. A fine example of a rock-face concrete block springhouse can be seen at site 042-SCO-005 in Lawrence County, a beveled concrete block springhouse at SCO-007, and a regular block springhouse at WAS-003. There is another rockface block springhouse in Mercer County at 085-WIL-004 and a hollow tile one at 095-WIL-007. What explains this late persistence? Census data indicate that Mercer and Lawrence Counties, where these buildings were found, had lower than average fluid milk production; they also had higher than average farm butter production, coming in at over 200 pounds per farm. This is not a high number, and it is lower than 19<sup>th</sup> century figures. Nonetheless, this amount is roughly what Joan Jensen estimated would supply a farm household in the mid 19<sup>th</sup> century, so it is plausible that these twentieth-century springhouses were an important facet of subsistence strategies, particularly considering that farm income in the 1920s was threatened by gathering agricultural depression.



Spring House, Scott Township, Lawrence County, c. 1925-35. Site 042-SCO-005.

*Summer Kitchen, 1900-about 1940*

Several summer kitchens were documented by fieldworkers, all in Lawrence and Mercer Counties.<sup>118</sup> In general in Pennsylvania, especially German Pennsylvania, the late 19<sup>th</sup> century and early twentieth centuries witnessed a wave of summer kitchen building. The very term “summer kitchen” did not seem to come into common use until the mid 19<sup>th</sup> century.<sup>119</sup> The timing of its appearance can be related to the adoption of the stove for both cooking and heating. Here’s why: the wood-burning cook stove, popularized from the mid 19<sup>th</sup> century onward, created considerable heat and took up space in the middle of a room, unlike its open-hearth predecessor. Simultaneously, it permitted greater architectural flexibility, because a building didn’t need to be designed around heavy, structurally complex hearths and flue systems. The result was that cooking was increasingly isolated within the house, or isolated outside the house in a summer kitchen. There is also evidence that people actually moved the cookstove into the main house for the winter, and into the summer kitchen for the summer.<sup>120</sup> The summer kitchen should also be interpreted as a reflection of the increasingly complex subsistence work, done mostly by women, in this period. In Pennsylvania German households, the summer kitchen also helped to sustain ethnic foodways.

Mid-century summer kitchens might be built of brick or frame; later summer kitchens tended to be frame. Summer kitchens typically had a higher level of finish than would be found in rougher outbuildings; stove or set-kettle; tables; sash windows. Some historians suggest that families actually ate meals in the summer kitchen in summertime. Siting was either adjoining the house as a wing, adjoining through a partial connection, or separate, but still close to the house. A chimney would indicate where the stove was placed.

Summer kitchens should be interpreted as strong evidence for an elaborated set of subsistence activities, related to rich foodways, largely postdating the arrival of the cookstove, and sustained primarily by farm women.



*Silo, 1900-about 1940*

The most significant new structure to appear on the agricultural landscape in this period was the silo. A silo is an airtight structure that holds fresh organic matter (moisture content 50-65 percent) destined for winter animal feed. It is filled with shredded or chopped grass, corn, or sometimes other plant material, which ferments into a highly nutritious and palatable feed. Silage feed resulted in significant productivity increases for dairy cows, and also permitted marginal farms to carry more animals. Ensilage was first publicized in the US in the late 19<sup>th</sup> century when the results of experiments in Europe became known. However, it did not become widespread until dairying was taken up more seriously.

Silos can be constructed horizontally in pits, or vertically. Most silos of the first half of the twentieth century were vertical. Early silos were sometimes placed inside the barn, rectangular in shape, and of wood construction. These were quickly supplanted by round vertical silos located outside the barn, usually in a spot that would permit efficient filling (usually from holes in the top) and unloading (usually from a tier of doors from which silage was thrown down an exterior chute, which contained a ladder for access to the doors). Early silos were unloaded by hand, from the top. The land-grant establishment published many “how-to” brochures aimed at helping farmers build their own silos of wood or concrete. Because masonry is more durable and cleaner, it became the norm. Commercial organizations marketed many types of silos too. Some sold special curved brick; others made tiles; still others advertised systems depending on interlocking rings of poured concrete. Cement staves became popular after about 1910. Galvanized iron was mentioned by Hall in 1929.<sup>121</sup> A 1918 Penn State circular mentioned wood stave, hollow tile block, poured concrete rings, concrete staves, concrete blocks, metal, and bricks as silo construction materials.<sup>122</sup> Alan Noble, in *Wood, Brick, and Stone*, argues for a sequence in roof types, from gable to cone to hip to dome to hemisphere, but documentation for this argument is thin.<sup>123</sup>

Corn for silage accounted for an increasing amount of cropland in Northwestern Pennsylvania during this period, twice the state average. The 1927 agricultural census showed 1500 silos in Erie County and over 2000 in Crawford. Probably half the farms in

the region had silos by around 1930. That was significantly more than in the state generally, where the percentage was under 40. Moreover, there were at least two silo manufacturing plants in Crawford County.<sup>124</sup> Field survey revealed that wood silos can still be found, along with every other type of vertical silo.<sup>125</sup>





Gable roof barn with exterior wood silo, State Route 1022 and Grange Hall Road, Crawford County, c. 1920. Photo-only site, no site number.



Beveled concrete block silo, Cussewago Township, Crawford County, c. 1905-1925. Site 039-CUS-005.



Wood stave silo with metal roof, Richmond Township, Crawford County, c. 1890-1925. Site 039-RIC-001.



Hollow-brick silo, Washington Township, Lawrence County, c. 1920-35. Site 042-WAS-004.

*Poultry Houses, 1900-about 1940*

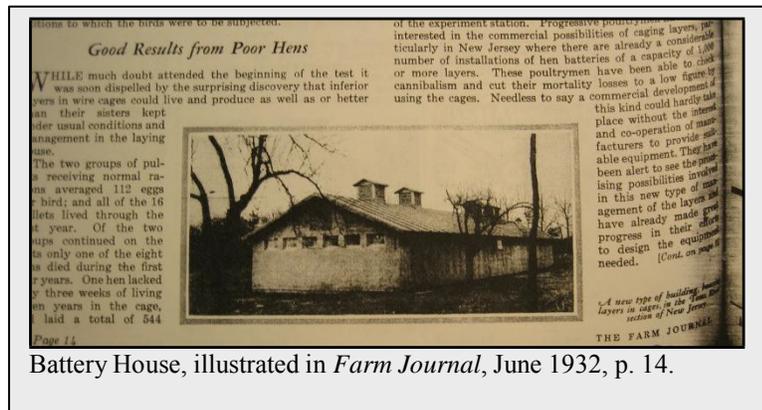
## General Developments in Poultry Housing:

In general, poultry housing in the twentieth century responded more and more to developments initiated by the agricultural establishment, whether the extension system, agricultural research universities, or agribusinesses marketing mass-produced equipment. For example, home-scale incubators and “brooder stoves” were advertised and illustrated in the farm press in the 1920s. The incubators were heated box like affairs mounted on legs. The brooder stoves had a central heat source (sometimes an oil burner), which warmed a protective, usually conical hood under which the chicks could huddle. It is not clear where these devices would be set up, but advertisements usually featured women making testimonials, which suggests that this equipment might be set up near or possibly even within the farmhouse.<sup>126</sup>



Metal Silo, Greene Township, Mercer County, c. 1920-35. Site 085-GRN-007.

By the 1930s, “battery” brooders were appearing where larger numbers (over 500) of chicks were raised. These consisted of stacked cages with “wire-mesh floors with dropping-pans underneath and water- and feed-hoppers on the outside.”<sup>127</sup> Proponents claimed many advantages over the traditional brooder house, especially lower cost of building, the ability to keep many more birds in a smaller space, and lower labor costs.<sup>128</sup> Notably, one author pointed out that “battery brooding will produce good birds without much experience on the part of the operator...”<sup>129</sup> The shift to less-skilled labor probably occurred as men took over poultry raising, because male laborers were not likely to have the background in poultry raising that women did. The buildings in which batteries were housed often were indistinguishable from other types of poultry houses; but some purpose-built battery houses were built which were characterized by high windows around the perimeter walls. These permitted batteries to be ranged along the walls, and light to enter from above.



Battery House, illustrated in *Farm Journal*, June 1932, p. 14.

The “battery” philosophy soon extended beyond chicks to adult birds. Articles began to appear advocating batteries not only for brooders and layers, but also for broilers. By the 1930s, the free range philosophy was in decline among the agricultural establishment (i.e. in the farm press, among extension agents, and with agribusiness), though on many a farm range practices continued. *Farm Journal* poultry editor D. C. Kennard wrote in 1932 that “Today the pendulum is swinging toward confinement.” Agricultural experiment station testing in Ohio and other states established that confined birds actually did better than those who were raised partly or wholly on free range. An important nutritional discovery -- that cod-liver oil added to the birds’ diet helped chicks thrive indoors -- spurred a “revolution in hen-coops.” With yards no longer emphasized and

numbers of birds rising, multi-story laying houses began to appear, and the new philosophy also encouraged renovations to large barns for poultry.<sup>130</sup> These barn renovations did not necessarily always contain battery cages, but they did illustrate the abandonment of free-range practices.



By the 1950s, the battery technique was modified, because cages stacked above one another had resulted in ventilation and disease problems. Among large producers, cages were retained, but in single rows suspended above a concrete floor, often in a long, low building. Waste pits reduced disease and cleanup problems. Novel construction techniques such as trussed rafters and sheet-metal construction minimized the number of posts and thus created an open, flexible space. Farm magazines also advertised manufactured poultry housing, including conventional shed- or gable roof structures, but also pointed-arch houses. Prefabricated poultry houses were also discussed in the farm press. It is not possible at this time to determine how many farmers in the region took advantage of these technologies.<sup>131</sup> Many continued on a more modest scale and their buildings were correspondingly modest.

MORE PROOF...IT PAYS TO FEED PURINA

Smiles predominate as Mr. and Mrs. Gardner carry eggs from their profitable "cage egg factory." Already they have been able to add 180 new cages and pullets to their original 500.

**500 hens boost family income**

Young Southern couple find better, longer and more profits from the

Ralston Purina advertisement, *Farm Journal*, 1958. This illustration shows a "cage egg factory." Note the long, low housing.

Poultry housing in northwestern Pennsylvania: Poultry numbers were modest here, and field work confirmed that poultry housing was not prominent in northwestern Pennsylvania, though small poultry buildings did appear because virtually every pre-1950 farm had poultry.<sup>132</sup>



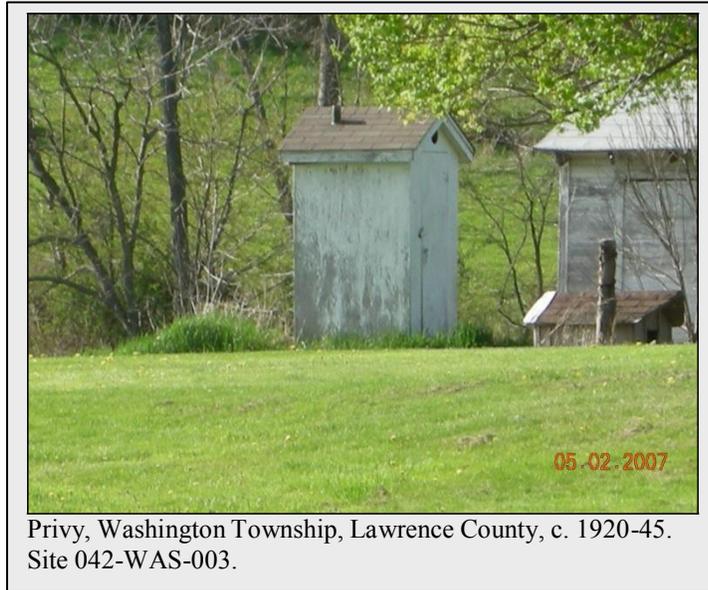
Poultry house, Spring Township, Crawford County, c. 1920-40. Site 039-SPR-006.



Poultry House, East Lackawannock Township, Mercer County, c. 1925-45. Site 085-WIL-007.

*Privy, 1900-about 1940*

This outbuilding persisted into the twentieth century, as many a Northwestern Pennsylvania farm lacked plumbing.<sup>133</sup>

*Garage, 1900-about 1940*

Of all the new types of machinery that became available in the twentieth century, the automobile was the most popular. Even in 1927 Northwestern Pennsylvania farms had more cars than silos, or radios, or tractors. So, the garage became a feature of the farmstead. Again, this was a new building type, generated not from a regional economy or culture but by a national trend; and garages were built with materials of the new industrial age (concrete block, rock face concrete) and often took on a generic look. However, sometimes garages were created by recycling older buildings, too. Fieldwork found garages at virtually every site, though most postdate 1940.<sup>134</sup> A rockface example was found in Mercer County at site 085-GRN-007.



*Machine Shed, 1900-about 1940*

Machine sheds were needed to house the equipment that was used on the Northwestern Pennsylvania farm. However, separate machine sheds may not have been very common in the pre-World War II period. A Pennsylvania State College survey undertaken in 1927 found that 95 percent of Erie County respondents housed all their machinery, but that only 39 percent owned a separate, dedicated machine shed. Most stored machinery on a barn floor.<sup>135</sup> Very frequently, machine storage was combined with another use, most often corn cribs.



Combination Workshop and Machine Shed, Scott Township, Lawrence County, c. 1920-40. Site 042-SCO-006.



Machine Shed & Corn Crib, Wilmington Township, Mercer County, c. 1940. Site 085-WIL-002.

*Corncrib, 1900-about 1940*

The corncrib continued to be a minor outbuilding on the Northwestern Pennsylvania farm. Wooden corncribs are difficult to date due to their generic appearance.<sup>136</sup>

Cylindrical metal corncribs date from the mid-twentieth century onward.



Corncrib, 201 Airport Road, Mercer County, c. 1940. Photo-only site, no site number.



Drive-through corncrib, Washington Township, Lawrence County, c. 1925-40. Site 042-WAS-001.

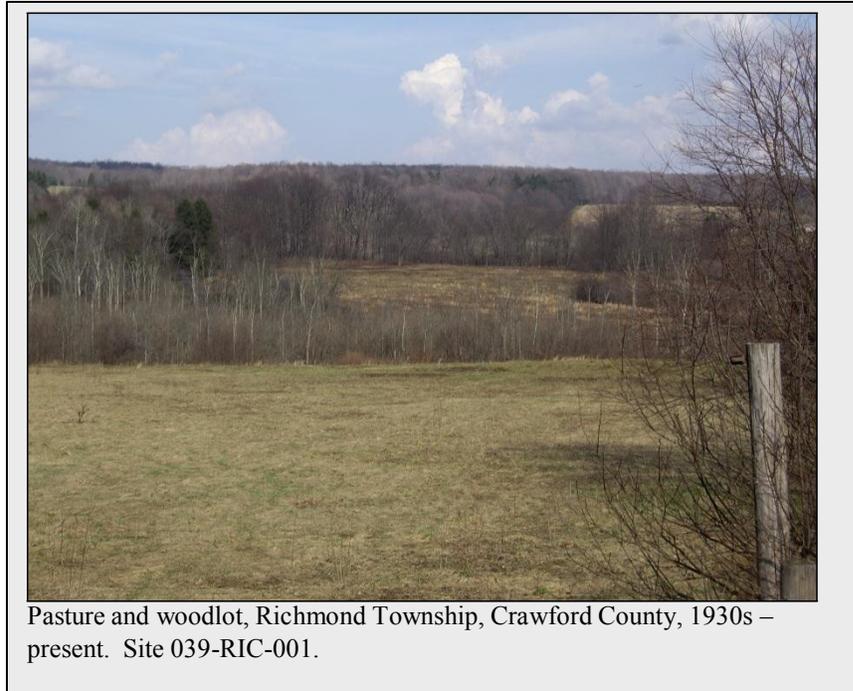
*Other Buildings, 1900-about 1940*

A few other building types will be mentioned here, either because they appeared very occasionally or because they may have once existed. A few hog houses were found.<sup>137</sup> No hay drying sheds were found; this was a little surprising given the importance of hay in Crawford County. And, no onion storage houses were found. There were isolated areas of onion growing before Pymatuning Lake was built, but no onion storage houses appeared on survey farmsteads.

Crawford was the most enthusiastic Grange county in Pennsylvania, according to the *Ohio Stockman and Farmer*, July 2, 1927. The Grange was an organization of rural people which in its early days had a political purpose, but which by the twentieth century was more likely to stress educational programming, debates, cultural events, and social opportunities for rural people. There was insufficient time to document Grange halls during field work.

*Landscape Features, 1900-about 1940*

Pasture: The Crawford County agricultural extension agent claimed in 1937 that "over one-half the entire area of Crawford County is in either open or partially wooded pasture land."<sup>138</sup> As before, this proportion was significantly greater than in other parts of the state. Pasture lots were commonly observed in fieldwork. While no extensive comparisons have been done with 1930s aerials, the impressionistic evidence suggests that the size and scale of pastures has not changed drastically over time.



Crop Field Size, Shape: historic crop fields would have been small. Shapes varied, from irregular to quite square or rectangular or even strips. Some small fields remain.

Orchard: Home grown fruits, especially apples, were staples in the family diet on nearly every farm.<sup>139</sup> Remnant orchards appeared at a number of field sites.

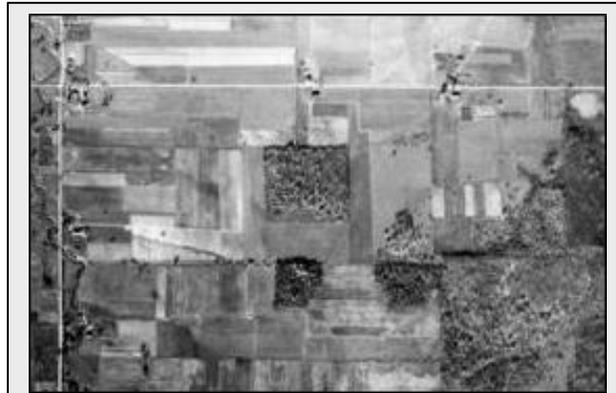


Contour Plowing and Strip Cropping: Contour plowing arranges furrows along contours of slopes, thus reducing runoff. The *Farm Journal* in August 1935 defined strip cropping as “a form of contour farming in which strips of densely-growing, erosion-resistant crops, such as alfalfa, lespedeza, sweet clover, Sudan grass, timothy, and the small grains, are alternated across the slope with strips of cultivated row crops. The strips of erosion-resistant crops check the speed of the runoff, filter out the soil being carried by the water, and cause the land to absorb moisture.” The article also noted that strips demanded less labor than square fields and “permit more efficient use of machinery.” They also fit well with terraces.<sup>140</sup> The 1941 Lawrence agricultural extension report claimed that strip cropping was in use there.

This resulted in longer narrower fields, and destruction of some fence lines. The extension reports for northwestern Pennsylvania do not mention this often; in fact, they sometimes noted a pronounced lack of interest in contour plowing, because of relatively flat topography. However, 1930s aerials do show fields with long, narrow strips. It is not clear if these were crop strips or something else. Certainly the region had drainage problems even if soil erosion was not thought to be serious. Even today, there does not appear to be a great deal of contour plowed land, so the likelihood that historic crop fields survive may be greater than in hilly areas.<sup>141</sup>



Farm Woodlot: If primary source accounts are accurate, even in the twentieth century the farm woodlot would be more important than in almost all other of the state's agricultural regions. 1930s aerial photos suggest that there were wooded areas thoroughly interspersed with farmland. Some woodlots were actually square, configured clearly within property boundaries. Many appear to have still been present in 1990s aerials of the same locales.



Conneaut Township, Crawford County, October 31, 1938. Penn Pilot crawford\_103138\_ape\_21\_10.jpg.  
This photo shows a number of farm landscape features: farm woodlots, treelines, long fields apparently strip cropped, small, square fields



Crop strips, pasture, and woodlot, Richmond Township, Crawford County, date unknown. Site 039-RIC-003.

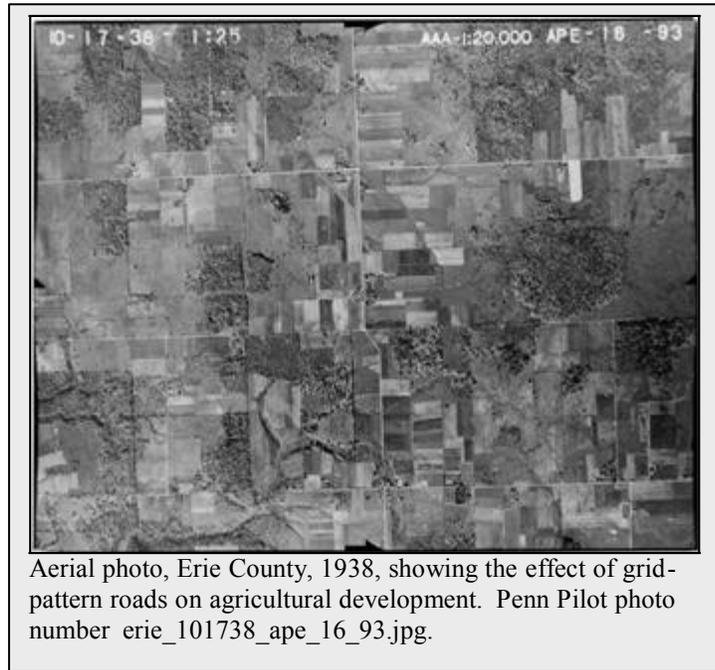
Tree Plantings: 1924 and subsequent Crawford County Agricultural Extension Agent reports give updates of forestry planting demonstrations along the highway. They planned to plant half a million trees, though it is not clear if the plans were fully realized. The reports listed specific locations of plantings, but these were not located in the field. Christmas trees were reported to be among specialty crops in Erie and Crawford Counties. Fieldworkers did not find historical evidence for this industry.

Tree Lines: the late 1930s aerials on the Penn Pilot website clearly show that treelines were important landscape features in the rural areas. Some delineated rigidly straight property or field boundaries, while others were not so straight and perhaps marked out a pasture or meadow area. This can be verified not only in the field, but also by comparing recent aerials with 1930s aerials from the Penn Pilot website.



Crop Field & Tree Line, Scott Township, Lawrence County, date unknown. Site 042-SCO-004.

Road Patterns: Rectangular and square road patterns exert a major influence on the landscape in this part of Pennsylvania. The late 18<sup>th</sup>-century, rational grid plan shaped all



future landscape configurations.

Land Distribution Grid There also appear to be more regularly shaped land parcels than in other parts of the state. This is probably because the major divisions occurred after the Revolution and in the period of the Northwest Ordinance, and also because the topography is simpler than in other parts of the state. Regardless of its origins, this exerts another discipline on farm layout and landscape.

Utility Poles and Wires: Rural electrification was relatively early here. The 1938 extension agent report said there were several thousand miles of lines in Crawford County alone.<sup>142</sup> Thus there could be significant remnants of early infrastructure even if the particular components have been replaced. Field work did not focus on these features.

Farm Drainage Systems: Field workers looked for evidence of farm drainage systems in northwestern Pennsylvania.<sup>143</sup> Following is a survey of farm drainage in general, then a discussion of the Pennsylvania northwest specifically.

Farm drainage manipulation in the United States began with experiments conducted in neighboring New York State starting in the 1830s. John Johnston, a Scottish immigrant farming near Geneva, New York, underlaid his farmland with a crisscrossing network of trenches, then inserted tiles. The first tiles he used were imported, but later he worked with others to establish manufactories. These tiles channeled water away from the fields and into streams, rendering the land more workable and productive. Advocates made extravagant claims for underdrainage, ranging from heating up the soil, to making roads more passable, even to making farm life more attractive.

By the late nineteenth century, one history estimates, there were 6,000 miles of tile lined, 13,000 miles of stone lined, and 7,500 miles of open ditch drains in New York State alone. In the even swampier states of Ohio, Illinois, Michigan, and Indiana, the practice was adopted too, and by 1880 there were over a thousand drainage tile factories in these Midwestern states. Early digging was with hand labor, but by the late 19<sup>th</sup> century steam-power trenchers came on the market, followed by gasoline power. In the post-World War II period, farm drainage accelerated significantly, owing to government programs subsidizing farm drainage; more powerful equipment; and vigorous promotion by the agricultural establishment, particularly the Soil Conservation Service and the Agricultural Extension Services. One historian estimates that by 1955 there were more miles of publicly supported drainage projects than miles of highway in the US.<sup>144</sup>

By the mid twentieth century, contradictions in Federal postures towards wetlands were coming to a head. Agriculture remained one of the largest agents in reducing wetland areas in the United States.<sup>145</sup> The US Department of Agriculture was heavily engaged in supporting drainage, even subsidizing farm drainage projects, while other agencies (Fish and Wildlife Service, for instance) began trying to preserve wetlands. Wildlife advocates and conservationists pointed out that subsidizing drainage had huge environmental impacts, ranging from flooding problems to loss of wildlife habitat. Legislation protecting wetlands was passed, and though it was unevenly enforced, impediments to farm drainage projects became more common. By the turn of the twenty-first century, some farmers were even required to un-do drainage projects in the name of conserving wetlands. One such instance occurred in Erie County, where farmer Robert Brace and the federal government tangled over his attempts to drain a 30 acre parcel of his farm.<sup>146</sup>

Recognizing farm drainage features can be a challenge. In a 1908 book, Charles G. Elliott, Chief Drainage Engineer of the USDA, explained that there were two basic categories of farm drainage system: open ditches and underdrains. His heavily illustrated treatise showed recommended profiles of open ditches, together with instructions for digging them and maintaining them. Clearly an open ditch system would create a significant landscape impact on a farm, because the ditches were large, the more so if farmers followed Elliott's exhortation to maintain a grass strip on either side to prevent the ditch from accumulating too much debris.<sup>147</sup> While Crawford County agents did describe a few open farm drainage ditches, the heavy labor and expense of these features, not to mention the fact that they reduced farm land area, seems to have made them rather uncommon.

Underdraining was also expensive and hugely interventionist. Ditches were opened up, graded, then materials were laid in them that channeled water away. Some underdrains were constructed of stone, but these were enormously labor intensive. Tiles were far more popular. These tiles were typically round pipes (early ones made of clay, later ones of cement and still later of plastic), and the water would seep into them at the joints, and from specially constructed surface inlets. Once the tiles were in, the ditch was backfilled. These seem to have been more popular than open ditches, because land area could be maintained, and advocates claimed fewer problems with obstructions. Once buried, these lines would not necessarily be easy to detect (in fact, unless they kept maps, farmers themselves sometimes lost track of their whereabouts.) But there might be accompaniments that would appear on the landscape. These would include surface inlets; outlets; catch basins; and silt basins. The materials Elliott mentioned were stone, cement, brick, and vitrified clay pipe. These would appear as surface features.

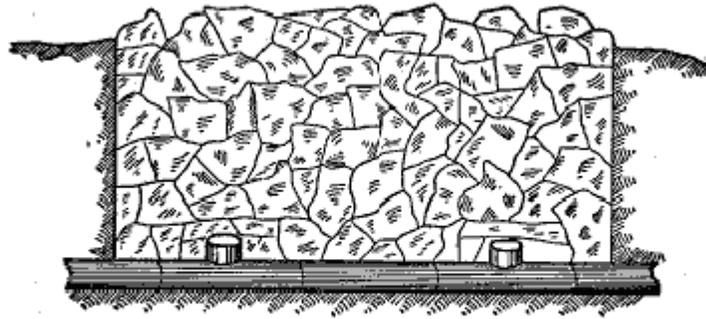


FIG. 31.—Surface Inlet to Tile Drain.

Charles G. Elliott, *Practical Farm Drainage, A manual for Farmer and Student*. (New York, 1908), page 107.

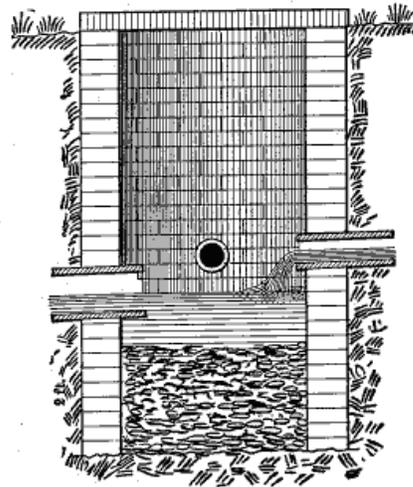


FIG. 29.—Brick Silt Basin.

Charles G. Elliott, *Practical Farm Drainage, A manual for Farmer and Student*. (New York, 1908), Figure 29, page 103.

It is not clear how widespread were farm drainage projects in northwestern Pennsylvania. However, agricultural extension specialists and others commented on what they regarded as poor drainage and swampy conditions. Topographic maps confirm that there were many low-lying wet areas.<sup>148</sup> The glaciated soil area that embraces parts of New York State and Ohio cuts across Crawford and Erie Counties, so conditions were similar in all three states. Little documentary evidence appears of extensive drainage projects before

the 1930s, but by the 1930s, agricultural extension agents were showcasing drainage projects on Crawford County farms: in 1937 the Crawford County agent reported a soil erosion demonstration project in Springboro on Fred Thornton's farm. Thornton had dug ditches which were supposed to divert water and prevent gullying. In 1939 the Crawford agent reported a demonstration of ditch blasting in which "over 600 yards of open ditch was put in on the farm of County Commissioner Wesley G. Reitze. This open ditch will drain part of a 40-acre field." The Lawrence County 1921 agricultural extension agent report mentions two drainage systems laid out by the State College Farm Engineer. In 1930, there was mention of a co-op project with Mercer involving dynamiting a stream into a different channel. The 1932 Lawrence County report estimated that 50% of farms have been under drained or need tile drainage, and reported that 19 were given information in that year. So it appears that drainage projects were pursued in the region, though it is not clear to what extent.



Ornamental Plantings: No regionally distinctive ornamental plantings were found in fieldwork. Sentinel trees, windbreaks, ornamental shrubs, and flowering trees would be among the possibilities.



Fencing: In this area, typical fencing includes barbed wire fencing, woven wire fencing, electric fencing, and very few remnants of stone fencing.

Farm Lanes: There are typically internal lanes connecting fields, barn and house, etc.

### **Petroleum Era Specialized Farming, 1940-1960**

The agricultural economy revived with the Second World War, but by that time federal policy had shifted from a focus upon keeping farm people on the land, to actively encouraging urbanization and a smaller number of highly capitalistic farms. So though farm prosperity rose (at least temporarily), agrarian communities continued to empty out. During World War II, rural displacement was especially pronounced in Crawford County, because construction of a huge munitions plant took 200 farms out of production. The extension agent's report for 1942 had a headline in capital letters: "**BOOM -- T. N. T. PLANT!**" However, the overall population trend reversed, since over 10,000 new residents came in to work at the plant. After the war, the auto, school

the decline of small villages and favored larger centers that served a bigger rural hinterland. These patterns were in keeping with national trends.

By the post war period, it seems that agriculture was experiencing severe decline in the region. A 1963 report on Lawrence County reflected that the farm population as a whole was declining rapidly in numbers; those who remained in farming were older, and more often than not were forced to supplement their income with off-farm employment.<sup>149</sup>

### **Products, 1940-1960**

The Northwestern counties continued to become more specialized during and after the second world war. In wartime, the government encouraged increased milk production, and this contributed to further specialization and intensification in the dairy industry. The 1951 Lawrence agricultural extension agent report said that dairying accounted for over half of farm income in the county, though in 1953 he also opined that per-cow production was low. Egg and poultry accounted for 20% of farm income, while wool, pigs, apples, and other items made up the rest. Crawford County was reported as a leading Pennsylvania and US buckwheat producer; this product was mostly shipped east for milling for griddle cakes, but also used whole for poultry food, and straw sometimes fed to livestock. Potatoes were reported second in value to hay as a cash crop in Crawford County.<sup>150</sup> Soybeans made their appearance and rapidly became popular in rotations. Artificial insemination was introduced, and corporations made their influence felt by encouraging farmers to put up grass silage.<sup>151</sup>

A 1944 Penn State thesis noted that Crawford County was among the top 100 counties in the entire US, for "value of farm products used by farm households." For that year, it was a dubious honor to be ranked highly in subsistence activity. The author, Kathryn Mills, further probed the reasons why families had to self-provision to such a great extent. The primary reason was that "54 percent of the income is derived from dairy products, while opportunities for income from other farm enterprises are limited."<sup>152</sup>

Along with the trend to specialization, agriculture became more capital intensive and important new technologies were introduced. Electrification was one of them. Of course, rural electrification had begun well before the second world war, but its coverage was very uneven. By 1946, a Penn State report concluded that 65 % of Pennsylvania farms were electrified and 58% of rural farm dwelling units had electric service (presumably the discrepancy is because some farms had independent plants). The REA had been a relatively minor factor in PA: only 28,600 Pennsylvania consumers were "served by REA-financed systems in PA," out of a total of 109,800 farms with electric service. The committee recommended education and aggressive promotion of electrical uses, among them lighting, cooking, milking machinery, and barn ventilation.<sup>153</sup>

The gasoline combustion engine, of course, revolutionized farming. It was not until after the war that the transition away from horse farming was really completed. Other new technologies also had a big impact in the postwar period. The Crawford County agent remarked in 1945 that "DDT, the new wonder insecticide was tried out in two dairy barns with amazing results. At the county farm, all flies were dead each morning when the barn was opened again to receive the milking cows." Next were petroleum-based fertilizers and other pesticides; bulk tanks; artificial insemination; and hybrid seeds, to mention a few of the more important innovations. Labor demands dropped and capital requirements soared.

It is important to note another economic activity in the northwest that took place beneath the farm's surface and had potentially large implications for farm income. This is natural gas production. More research needs to be done on when farms first began to realize significant income from natural gas, and to what extent this was a factor in the two Northwestern counties.

### **Labor and Land Tenure, 1940-1960**

During the second world war, in Crawford County many farm women supplemented family income either by working in the munitions plant or by housing boarders who worked there.<sup>154</sup> There was an extreme shortage of farm labor, because of the

work exchanges and pressing everyone, even "aged and crippled men," into service.<sup>155</sup> In at least one community, prisoners of war were used to harvest potatoes.<sup>156</sup> High school students were also used. Women spent less time canning and diverted their energy to farm or wage work. Not surprisingly, still more mention was made of farm machinery, including electric hay hoists, buck rakes, and the like.<sup>157</sup>

Tenancy rates seem to have remained fairly constant.

### **Buildings and landscapes, 1940-60**

#### *Barns, 1940-1960*

In 1946, a Penn State Agriculture college committee investigated "Some Postwar Agricultural Problems in Pennsylvania." Where farm buildings were concerned, they found, "farm building development and maintenance have been inadequate." They estimated that on rural farm (as opposed to rural non-farm) properties, thirty percent needed "major repairs"; 42 percent lacked electric lighting; 62 percent lacked running water; and over three-quarters lacked indoor plumbing. The committee believed that "many buildings have become obsolete, particularly barns, having been built to serve a system of agriculture now partially outmoded. The development and adoption of rubber-tired tractors and of new machines for handling crops such as the pick-up baler and the combine have changed building requirements." Of course, the war scarcities further exacerbated the problem.<sup>158</sup>

A new barn-related structure that came into wide use in the US after the Second World War was the milking parlor. Under the older system, human milkers moved from cow to cow, and carried milk from barn to milk house. With milking parlors, the cow moved to the milking machine, and the human attendant did not have to stoop, nor to move from one cow to another, nor even collect milk, since it was pumped directly to cans. Milking parlors were low, relatively small, usually concrete block structures appended to a barn, sometimes integrated in a newer barn.



Basement barn with loose housing or milking parlor addition, Green Township, Mercer County, c. 1960. Site 085-GRN-002.



Wisconsin style dairy barn with milk house and rainbow roof, Steamburg Road, Crawford County, 2005. Photo-only site, no site number.

Stable barns, c. 1940-60. Larger stable barns appeared during this period. Generally these were specialized dairy barns with a central aisle running the entire length of the ground level, flanked by stanchions, and with gable end doors on one or both ends. The second, upper level provided ample feed and hay storage room, often by means of an arched roof. This is preeminently a dairy barn. Its large size accommodated not only larger herds, but larger Holstein cows and the huge amounts of feed they required. The specialized dairy barn also represents a response to stepped-up state regulation of the dairy industry, which mandated (among other things) ample light and ventilation for dairy cows.

Pen barn, (Free Stall Barn, Loose Housing, Pole Barn): In the post World War II period, the pen barn (also called a free stall barn or loose housing) became more highly recommended by agricultural engineers. Some farmers used the pen system to replace

the stall-and-stanchion type of arrangement. The advantages of the pen system involved financial savings (on labor and construction costs), and improved animal health and productivity. A famous University of Wisconsin study offered powerful evidence that dairy animals suffered fewer injuries and infections, and actually gave more milk under the loose housing regime. When not being milked, cows roamed freely in a large open space with dirt floor and ready access to hay or silage. This space sometimes had minimal walls, admitting plenty of air and sunlight. As long as cows were protected from winds, they were not bothered even by very low winter temperatures. At milking time, the cows were trained to walk into a milking parlor, where they ate feed concentrates while being milked, then proceeded straight ahead back into the pen or pasture. This saved on labor costs in feeding (the animals fed themselves in the pen, and were fed concentrates simultaneously with milking) and stable cleaning, and it saved construction costs because the pen barn lacked full walls, expensive stanchions and full concrete floors, and was less well insulated. The pen barn system incorporated milking parlor, and often the milk house then adjoined the parlor.<sup>159</sup> Very often, the pen barn was made of pole construction, also an innovation in the postwar period. Preliminary survey work and documentary research suggested that these barns may have a significant place in the northwestern counties. In 1949, for example, the Crawford County agent reported that

Two new barns were built in the county during the year where the owners asked for help from the extension agricultural engineer. One barn was built using concrete masonry walls and a laminated rafter roof. The mow floor is a new type of concrete block construction with no wooden supports. Assistance was given in the matter of ventilation for this barn. Another interesting dairy barn is in the process of construction using the new pole barn construction which originated in the middle west. This is the first of its kind in the area and is important in that it is being built entirely without help from professional builders.<sup>160</sup>

Pole construction must have proved attractive to local farmers, because by 1954 Penn State published a circular featuring pole barn construction in Crawford County.<sup>161</sup> In 1958, the agent noted that "Many of our dairymen are considering remodeling their present barns with cow comfort and herd health as goals... [some are] looking to loose

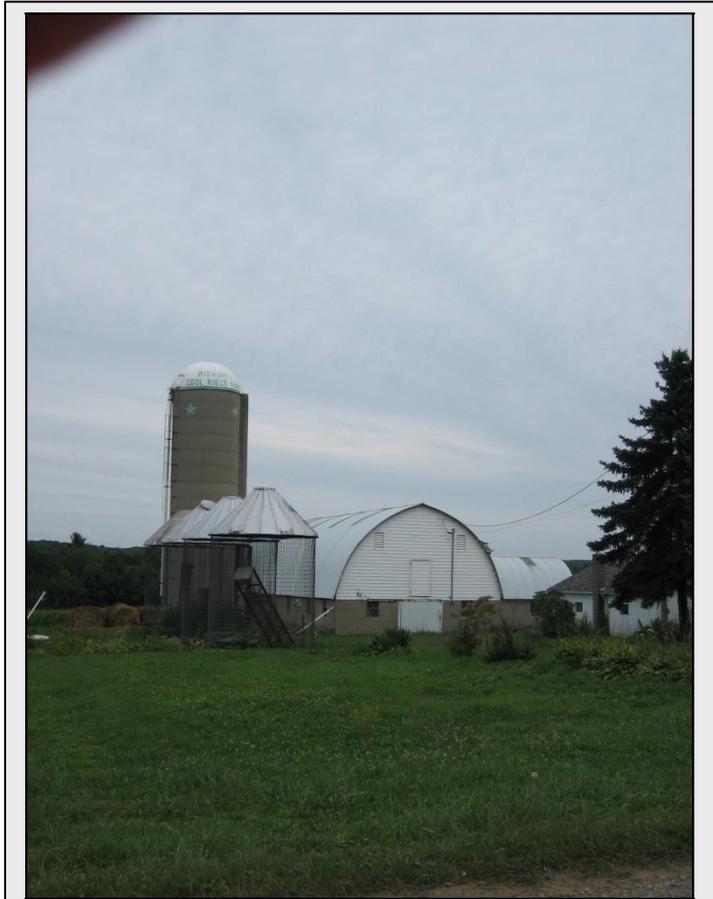
housing." And indeed, pole barns and loose housing did appear in field survey work. These buildings are difficult to date and may post-date 1960.

As new manufacturing processes and materials developed, they affected farm buildings. Manufacturers like the Stran-Steel Corporation advertised farm buildings with all steel components, or hybrids that combined wood and steel.<sup>162</sup> Often these were used for machine storage, but none were found in fieldwork.<sup>163</sup>



Loose housing with open sides, Wilmington Township, Mercer County, c. 1960. Site 085-WIL-001.

In the postwar period, conventional corn cribs were built of beveled wood slats and lined with wire mesh. However, a new type also appeared. This was the cylindrical crib with conical roof.



Cylindrical metal corn cribs, Crawford County, date unknown.  
Photo-only site, no site number.

### *Potato Storage, 1940-1960*

The March 1959 issue of *Farm Journal* contained an article about Gene Troyer, a Crawford County potato grower, who had erected a 60 by 204 foot potato storage building with materials supplied by the Wonder Building Corporation of Chicago. This building consisted of steel panels "shaped like culvert halves" and set upon a poured concrete slab. Troyer was quoted as saying that spray-on insulation helped keep the

interior temperature at a constant 55 degrees. Troyer was raising Katahdin potatoes for potato chips.<sup>164</sup>

Potatoes were a fairly important crop in the northwest; Erie County ranked 4<sup>th</sup> in PA potato production in the 1920s. Potato storage buildings are typically subterranean structures with just the roof projecting from the ground. None were found in fieldwork.

### *Grain Bins, 1940-1960*

A number of corrugated-metal grain bins were encountered in fieldwork. Their dates are uncertain, but this type of storage was available toward the end of the research period.



Metal cylindrical grain bins, Crawford County. These are recent, but the type was available by the early 1960s. Photo-only site, no site number.

*Silos, 1940-1960*

By the 1950s, agricultural extension agents noted the increasing popularity of the much less expensive, and equally effective pit or trench silo.<sup>165</sup> Otherwise, the same types were popular as in the previous period.

*Landscape Features, 1940-1960*

Strip Cropping and Contour Plowing: (see the previous section for further details.)

The 1948 and 1949 Lawrence County agent reports said that 46 contour strip demonstrations were in operation.

Woodlots: (see previous section) Postwar agricultural extension reports from Lawrence County mentioned that slopes were being used as farm woodlots or replanted with trees; in some cases they were being converted to pasture.

Ponds: In the postwar period, there was a great deal of interest in farm ponds. The Crawford agent reported assisting in pond building in each of the years 1945, 1946, 1947. Pond building seems to have been a response to a number of forces. Insurance companies regarded them with approval, and in the postwar period farmers often had physical plants worth protecting. Large scale earth moving equipment was available. Interest in recreational uses rose; many pond owners stocked them with fish, installed docks, etc. The 1949 Lawrence County report noted the popularity of ponds. Fieldwork found ponds at many sites.<sup>166</sup>



Farm Pond, Richmond Township, Crawford County, date unknown. Site 039-RIC-003-002.

Drainage: As elsewhere, drainage projects picked up after the war: in 1946 the Crawford agent reported that "it was very natural to expect considerable interest in this work." The "Buckeye ditch digger" was booked for several years ahead and the agent noted that each time he made a visit to a farm drainage project in progress, half a dozen interested people tagged along. In 1948 the agent reported that "in the past two years 28 farmers have installed 37 miles of tile. These 28 farmers all lived within a radius of one and one-half miles of Center Road." He claimed that drainage increased the carrying capacity of fields and meadows by fifty percent.<sup>167</sup>

Natural Gas Extraction: In much of northwestern Pennsylvania, oil and natural gas underlie farmland. Fieldwork did locate some evidence of this in farm fields; site 039-RIC-004 has one. These features are not historic, but they are important landscape features today.



Natural Gas equipment, Holmes Road, Mercer County, date unknown. Photo-only site, no site number.

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## **Property Types and Registration Requirements – Criterion A, Agriculture**

Property Types: These property types apply to properties in all regions.

### **Farmstead**

A farmstead is defined here as encompassing the farm dwelling[s]; barn; outbuildings; and the immediately surrounding land on which these buildings are situated. It normally excludes cropland, meadow, pasture, orchard, and woodland, but would include such landscape features as yards, windbreaks, ponds, gardens, ornamental trees, decorative fences, driveways, etc.

### **Farm**

A farmstead plus crop fields, meadows, pastures, orchards, woodlots, etc., including landscape features such as fences, tree lines, contour strips, streams, etc. and circulation networks.

### **Historic Agricultural District**

A group of farms which share common architectural and agricultural landscape features; are linked together by historic transportation corridors, including roads, railroads, paths, and/ or canals; and together express characteristic features of local historical agricultural patterns.

### **A. Criterion A, Agriculture**

This section first outlines general consideration for Pennsylvania as a whole, with reference to considerations related to labor, gender, and tenure. These are followed by Criterion A requirements for each region and subregion.

### **General Considerations for Pennsylvania as a Whole**

National Register eligibility with respect to agriculture in each Historic Agricultural Region of Pennsylvania will depend upon how well a given property reflects the

historical farming system in that region. It is very important to remember that Criterion A significance should be assessed in relation to how a given property typifies a farming system, not in relation to whether a property is exceptional or unusual. A property should exemplify a farming system in all its aspects. The totality of a property's representation in the areas of production, labor patterns, land tenure, mechanization, and cultural traditions will determine its National Register eligibility.

### **Historic Patterns of Agricultural Production**

A key characteristic of Pennsylvania agricultural production from settlement to about 1960 is diversification on small, family farms. Therefore, a farmstead, farm, or historic agricultural district must reflect diversified agriculture through a variety in historic buildings and landscape features. It is critical to note that diversified agricultural production involves two facets:

- 1) a mix of products. This mix varied with time, place, and culture. For each region, the narrative explains the prevalent mix.

-AND-

- 2) a variety in use for those products, ranging from direct household consumption, to animal consumption, barter exchange, and cash sale to local or distant markets. In general, as far as use is concerned, over time a larger proportion of products went to cash markets, and money figured more and more prominently as farm income. However, production for family consumption, animal consumption, and barter exchange continued to occupy a significant position well into the twentieth century, with a notable surge during the Depression years. Historic resources should reflect the variety of household and market strategies employed by farming families.

### **Social Organization of Agricultural Practice**

Historic production patterns are necessary but not sufficient to determine eligibility. Social organization of agricultural practice had a profound influence on the landscape that must be recognized. Labor, land tenure, mechanization, and cultural practice should be considered. For example, in the Central Limestone Valleys, share tenancy was an important and enduring practice that significantly influenced the architecture and landscape of farmsteads, farms, and farm districts. In the Northern Tier, conversely, high

rates of owner-occupation lent a different appearance to the landscape. The level of mechanization was related to labor practices, and also shaped the landscape through field patterns and architectural accommodation (or lack thereof) for machinery storage. Insofar as cultural factors influenced agricultural production or practice, they should be taken into account in determining the eligibility of farmsteads, farms, and farm districts. For example, Pennsylvania German food ways may have influenced agricultural production patterns and hence architectural forms; Yankee/Yorker families brought with them the English barn (which, because of its organization, shaped farming practice) and the penchant for classical revival styling.<sup>168</sup>

### **Issues of Chronology**

To be determined significant with respect to Criterion A for agriculture, a farmstead should either:

1) possess a strong representation of typical buildings and landscape features from one chronological phase of the region's agricultural history,

-OR-

2) possess a strong representation of typical buildings and landscape features that shows important agricultural changes over time.

### **How to Measure a Property in its Regional Context**

Whether it depicts one chronological period or change over time, a farmstead, farm, or historic agricultural district will normally be significant under Criterion A only if:

1) its individual production, for the period in question, reflects the average or above average levels for its township in the same period. (This can be determined by comparing the farm's manuscript agriculture figures to township figures.)

2) its built environment reflects that product mix. (The Narrative explains how different agricultural building types relate to agricultural production.)

3) its built environment reflects locally prevalent social organization of agriculture including a) levels of mechanization, b) labor organization (including gender patterns) and c) tenancy.

3a) levels of mechanization: in highly mechanized areas (relative to the state levels) we would normally expect an array of machine sheds, machinery bays integrally placed in barns, horse-power extensions, etc.<sup>169</sup> Conversely, in low-mechanization areas such as the Northern Tier, these facilities will likely be less visible.

3 b) labor organization: Patterns of collective neighborhood labor may be present; for example, a butcher house might be located near the road. For early phases of agricultural development, we would not expect to find overt architectural accommodation for hired laborers. But in the wage-labor era, those expressions would range from accommodations on the farm (rooms over springhouses, wings of houses) to purpose-built migrant housing. Mechanization could affect labor organization because it eliminates workers. Architectural and landscape elements that illustrate patterns of labor organization should be assessed for significance (with respect to agriculture) based on the level of clarity, intensity, and chronological consistency with which they show labor patterns. For example, if a c. 1850 farm house has a c.1880 workers' wing with back stair and no access to the family living area, which is both a clear and chronologically consistent illustration of shifts in hired labor's status.

Establishing significance for the gender organization of labor is more complex. We could think in terms of a continuum: from work almost always done by men—to work almost always equally shared by men and women – to work almost always done by women. In general, the farmstead and even the farm should be regarded as a mixed-gender workspace, because so much farm work was shared. However, there are a few cases where work was not only clearly associated with either men or women, but also had spatial and architectural manifestations to match. So we should focus on these cases when assessing significance with respect to gender patterns of agricultural labor. In the regions under discussion here, besides work done in the house (by women), several cases fit these criteria. On Northern Tier farms (1830–1900), men generally milked, and

women made butter; the former activity occurred in the barn, the latter either in a farmhouse ell or in a separate “dairy kitchen” sited between house and barn. Later, fluid milk sale (mainly organized and conducted by men) replaced home butter making. Some sort of facility for home dairying is a *sine qua non*; one that is sited and oriented efficiently with respect to house and work-yard would be of greater significance than one that was not. And, a farmstead that contained both an ell or kitchen and a milk house located by the barn would demonstrate the shift in gender patterns better than a farm with just one of each. Another important case is pre-1945 poultry raising, which was dominated by women. If a pre-1945 poultry house is located well within the house’s orbit, it suggests that expresses more significance with respect to women’s agricultural labor than a pre-1945 poultry house that sits on the edge of a field. And, if a farmstead has both a pre-1945, small poultry house located between house and barn, and a large, post-1945 poultry house sited far from the house, this illustrates changes in gender patterns better than a farmstead that has only one poultry house.

3 c) Tenancy: This aspect of social organization will be reflected most in historic agricultural districts (rather than on farmsteads or farms). A historic agricultural district should reflect prevalent levels of tenancy for its region. So, we would expect to see fewer documented tenant properties in Northern Tier districts than in a Central Limestone valleys district. Where individual farms or farmsteads are concerned, a farm or farmstead with a documented history of tenancy are significant for tenancy, but only in regions where tenancy rates were historically higher than the state average.

### **Cultural Patterns**

If, in instances where a farm has a strong, documented connection to a particular ethnic group, its architecture and landscape should show evidence of that connection. [See Narrative for discussion]. Significance should be evaluated by the degree of clarity with which ethnic heritage is expressed (i.e. is it highly visible in more than one way, for

example in both construction details and use?); and in cases of farmsteads, the extent to which multiple buildings and landscape features express ethnically derived agricultural practice.

In every case, even where all of these substantive requirements are met, there will be degrees of quality in representation. In other words, it is not just the presence of links to the region's agricultural history (i.e. the overall property's integrity) that makes a property outstanding, but also the quality and consistency of those links. Where possible, nominations should attempt to assess what we might call "intensity" or "layering" of representation. This intensity of representation may appear in the way the farm's component parts preserve historical relationships. For example, if a farmstead retains a springhouse near the main house and a milk house sited near the barn, which is an especially intense illustration of changes in the dairy industry. The idea of "layering" connotes the multiple meanings that can be contained in the siting, layout, and content of the architectural and landscape features. The farmstead and farm features together might, for instance, offer expressions that are simultaneously cultural and local, and also show how wider trends affected agriculture. For example, a Northern Basement Barn indicates cultural heritage (in placing an "English barn" above a basement) and agricultural change (in dairying-oriented basement level). Another example of "layering" could be if the economic and cultural importance of livestock is illustrated by several buildings and landscape features – not just one or two. And, there could be a variety of farm workspaces that testify to the diversified strategies historically pursued by farming families in the region.

When assessing agricultural change, remember to consider not only changes in barn, outbuildings, and landscape, but also in the farmhouse. For example, on a farm where large-scale production was accompanied by a shift in gender patterns of labor, look for changes in the farmhouse's interior work space; typically these might include smaller, more isolated kitchen spaces and more spaces devoted to display or leisure. Or, where dairy processing became centralized, dairy dependencies attached to a house might be converted to other uses. Rural electrification and the shift away from wood for fuel could also affect interior farmhouse organization. For example, with electrification, the summer kitchen's function often moved back inside the house.

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## Registration Requirements Specific to the Northwestern Pennsylvania Historic Agricultural Region

To be determined significant with respect to Criterion A for agriculture in this region, a farmstead should either:

1) possess a strong representation of typical buildings and landscape features from one chronological phase of the region's agricultural history,

-or-

2) possess a range of buildings and landscape features that illustrate change over time in the region's agricultural history.

Substantive Guidelines:

**Strong representation of typical buildings and landscape features from one chronological phase of the region's agricultural history (#1):** A farmstead will normally be significant under Criterion A only if: 1) its individual production system, for the period in question, reflects the average or above average production levels for its township in the same period, 2) its built environment and landscape reflects that product mix, 3) its built environment and landscape reflects locally prevalent levels of mechanization and tenancy, and labor patterns, and 4) if, in instances where a farm has a strong, documented connection to a particular ethnic group or land tenure system, its architecture and landscape shows evidence of that connection. [See Narrative for discussion].

To be considered significant for agriculture in the period "A Woodland, Grassland, and Diversified Livestock Economy, c. 1830-to About 1865," a **farmstead** should contain a house characteristic of the period; an English barn or New England barn; and two or three outbuildings (such as a spring house, dairy kitchen, cheese house, corn crib, or freestanding granary) reflecting production patterns of the era. A kitchen ell on a farmhouse should be considered an equivalent productive space. A **farm** should contain at least remnant wood lot,

pasture land, and cropland. A **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

To be considered significant for agriculture in the period “A woodland, Grassland, and Cattle-based Livestock Economy, c 1865-1900,” a **farmstead** should have a farmhouse characteristic of the period; an extended English barn, basement barn, three-gable barn, or Pennsylvania forebay barn; at least two outbuildings (such as spring house, granary, corn crib, machine shed, or carriage house) reflecting production patterns and the intensified mechanization of the era. A **farm** should have a woodlot, crop or hay land, and pasture land. Remnant fencelines, treelines, and circulation corridors would enhance the farm’s significance. A **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

To be considered significant for agriculture in the period “Fluid Milk Dairying with Diverse Sidelines, c 1900-1940,” it is desirable – but not imperative -- that a **farmstead** have a house characteristic of the period. More important for this period would be for a farmstead to have a basement barn (built or altered to accommodate dairy animals); a stable barn; or a foundation barn. Construction techniques introduced in the period (such as the Shawver truss) add to the significance. A farmstead should also have a milk house and silo dating from the period. Other outbuildings which strengthen the case for significance would include granaries, machine sheds, garages, poultry houses, corn cribs, and any building that would illustrate the “diverse sidelines” of the period. A **farm** should have the buildings plus woodlot, hay land, and tree lines. Evidence of drainage, contour or strip farming, ornamental plantings, or fencing would enhance the case for significance considerably. A **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

To be considered significant for agriculture in the period “Petroleum era Specialized Farming, 1940-1960,” a **farmstead** need not have a house characteristic of the period. It should have either an older barn with clear adaptations made for dairying during the period; or a style of barn characteristic

of the period, such as a pole barn or a Wisconsin style dairy barn. It should have a milk house and silo dating from the period. Since agriculture became more specialized and mechanized during this period, outbuildings which illustrate significance would normally include machine sheds, garages, and corn cribs. A **farm** should have the buildings plus woodlot, hay land, tree lines. At least one of: contour strips, drainage features, ponds, ornamental plantings, or period fencing should be represented. A **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

**2) a range of buildings and landscape features that illustrate change over time in the region's agricultural history.**

To be considered significant for representing the major agricultural changes in the Northwestern Pennsylvania Historic Agricultural Region from 1830-1960, a **farmstead** should have architectural evidence of the major shifts over time. A 19<sup>th</sup> century house with spring house, late 19<sup>th</sup> or early 20<sup>th</sup> century barn, early 20<sup>th</sup> century silo, and milk house, for instance, would effectively portray a shift from home dairying to centralized dairying. There should be an array of outbuildings which illustrate key changes. For example, mechanization could be illustrated if a farmstead possessed a c. 1890 carriage house and a c. 1930 garage or machine shed. Early twentieth-century poultry houses and springhouses illustrate adaptive subsistence strategies. In all cases, diversification should be represented in the form of outbuildings related to contributing enterprises – spring houses, corn cribs, granaries, root cellars, and the like. A **farm** should have woodlots, pasture, and cropland. Orchards are desirable but not required. Landscape evidence of change would include drainage works, ponds, contour or strip cropping, varying types of fencing, or a combination of old, small and irregular fields with enlarged more recent ones. A **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

## **Property Types and Registration Requirements – Criterion B, Association with the lives of Significant Persons**

These requirements apply to properties in all regions. To be eligible under Criterion B, a farmstead, farm, or historic agricultural district must establish a documented link to an individual who had a sustained and influential leadership role which resulted in a verifiable impact on local, state, or national agricultural practices, trends, or thought. A “sustained” leadership role would mean long-term involvement in important agricultural organizations such as the Grange, Dairymen’s League, rural electric cooperative, and so on. Impact should be demonstrated, not asserted. An agrarian figure who achieved a higher than usual degree of productivity or prosperity in farming would not normally meet this standard, nor would one who was an early adopter of new agricultural methods or technologies. But, an individual who influenced others to adopt new practices could. For example, Robert Rodale clearly played a foundational role in the rise of the organic farming movement nationally. On a more local level, a hatchery owner who initiated a new industry in an area, thus creating a shift in production patterns on many farms, might qualify.

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## Property Types and Registration Requirements – Criterion C, Design and Construction

These requirements apply to properties in all regions. Typical examples are encouraged to satisfy Criterion A for agriculture, but average or ordinary examples are not likely to qualify under Criterion C for Design and Construction. A farm or farmstead will not be eligible under Criterion C simply because it has farm buildings that retain integrity.

Under Criterion C, to be eligible as property must exhibit the “distinctive characteristics of a type, period, or method of construction or that represent the work of a master, of that possess high artistic values, or, as a rural historic district, that represent a significant and distinguishable entity whose components lack individual distinction”.<sup>170</sup>

This MPDF follows the evaluation models established by the 1992 MPDF *Farms in Berks County* and the 1994 MPDF *Historic Farming Resources of Lancaster County*, which defines standards for architectural significance of farm buildings as "a rare or intact example of a period, style or type" or as a “noteworthy example of a particular building type ...”.<sup>171</sup> To be eligible under Criterion C for Architecture, a farm building, farmstead, farm, or historic agricultural district must possess physical characteristics that specifically reflect aesthetic, cultural, craftsmanship, or production values associated with regional agriculture and rural life. Farm buildings and structures must exhibit qualities of design, workmanship, and artistic merit that are tied to the period of construction.

This document explains the specific Criterion C issues that apply to farm buildings and structures. Criterion C relates to significance primarily for Architecture, Art, and Engineering. While most farm structures will not be evaluated individually, structures notable for their construction technology or design may factor into the Criterion C significance of a property.

Evaluation conventions for the architectural style of dwellings are well established so they are not covered here. However, what constitutes architectural significance for farm dwellings and agricultural buildings and structures in the area of Agriculture is less widely defined.<sup>172</sup> This section lays out some considerations for how to assess architectural significance for farm buildings and structures based on their engineering and design characteristics related to agriculture.

As with any other architecturally significant building type, resources must conform closely to the seven aspects of integrity. Significance must be demonstrated, not merely asserted.

*What does qualify as a significant design?*

A barn might qualify if its design reflected essential characteristics of specific barn types, such as Pennsylvania bank barn, Stable barn, English Barn etc. (The salient architectural features of each type are defined within the narratives that accompany this MPDF.) The significant elements of barn layout (location of threshing floors, hay mows, stables, granaries; typical interior organization for a given type; vertical work-flow arrangement where relevant) should retain integrity. The same would be true for outbuildings, for example if a granary or spring house retained essential characteristics of its type. A house, barn, or outbuilding that has been altered or modified to accommodate changing maintenance habits, popular taste, or the convenience of the farmer would not be considered significant unless the new features are demonstrably tied to regional patterns in agricultural buildings and the built environment for the period of significance. For instance, a mid-19th century vernacular farmhouse that was Colonial Revitalized in the early 20th century might be significant for its stylistic features outside this MPDF but would not be architecturally significant under this MPDF because the alterations are not associated with the needs and priorities of farm life. But a farmhouse modified to reflect important transitions in the relationships of farm family members to each other, labor, or the market could be considered significant (such as the addition or removal of quarters for hired hands, cooking facilities for feeding threshing crews, social spaces separated from spaces devoted farm matters, etc). Changes reflecting access to modern amenities and willingness to adopt modern amenities could also be considered significant, such as the addition of a bathroom, running water, a heating plant, or electrification. However,

the design features reflecting these changes must be demonstrated to be part of a local or regional pattern of construction; individual, personalized or idiosyncratic alterations that lack design features not adopted elsewhere in the community would not be considered significant under Criterion C, but would support significance under Criterion A for their association with labor and production patterns. In the post-World War 2 era, many farmhouses have undergone dramatic changes in ways that make them indistinguishable from contemporary suburban residences in their materials, styles, amenities, and use. Thus it will be difficult to evaluate the Criterion C significance of post war farmhouses without further study.

Design includes massing, proportion, fenestration, and ornament. Ornamentation will be very important in determining Criterion C eligibility. It could include decorative ironwork (hinges especially); roof-ridge cupolas; gable-end “stars”; painted or trimmed louvers; datestones; painted decorations; cutout designs; cornice detailing; brick-end patterns; and bracketing.

Design could include examples of marked visual relationship of buildings to one another through such qualities as colors (historically), siting, proportions, and materials. Thus significant design can potentially apply to a farmstead or even a historic agricultural district.

Design also includes overall layout of the farmstead or farm, for instance if buildings are arranged in a recognized, regionally typical pattern in orientation and layout, such as linear organization of eastern and central Pennsylvania (as described by Henry Glassie, Joseph Glass, and others); or; farmsteads bisected by a road as is common in the Northern Tier (as described by Trewartha).

#### *What qualifies as significant workmanship?*

Workmanship is evidenced in quality of masonry, timber framing, durable construction, including evidence of skilled workmanship in details such as hardware or even nails. Masonry, for example, might exhibit carefully cut stone rather than fieldstone. Another facet of workmanship would be cases where there is a good quality example of particular

construction method such as log, *blockstanderbau*, plank, timber frame, Shawver Truss, etc. Workmanship applies primarily to individual buildings.

*What qualifies as significant “artistic merit”?*

This is the most hard to define category of the three. It connotes skill in achieving desired aesthetic qualities. For example, careful proportions, sensitive siting, and originality of design are important components of aesthetic merit. Again, ornament is where aesthetic merit shows most clearly, for example in locally characteristic designs for hardware, weathervanes, bracketing, and the like.

## Examples

Example 1: Hodge Barn, Centre County, c. 1870.

This is a double-decker Pennsylvania barn with decorative ornament, double bankside bridges, and struts under the forebay, located in Centre County.

This barn would qualify under Architecture because of its design features (double decker with multiple mows and floors), its workmanship (technical mastery represented in bridges, struts, and interior framing), and its artistic merit (decorative ornament).



Ornament on Hodge Barn, Centre County



Hodge Barn, Centre County, struts under forebay

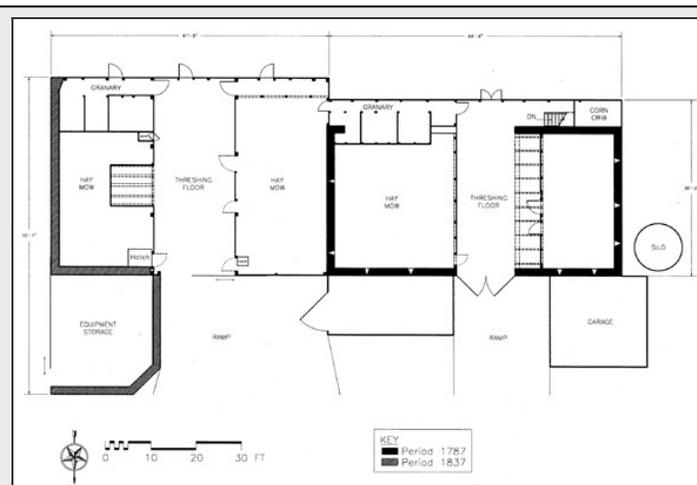


Hodge Barn, Centre County, struts under forebay

Example 2: The Bertolet Barn in the Oley Valley of Berks County, 1787 and 1839. This barn shows the evolution of the Pennsylvania Barn. The 1787, stone portion has a Germanic *liegender stuhl* framing system; forebay granary with bins; two mows flanking a threshing floor; and intact stable level. It is significant because of its design (the multi-level system was worked out to perfection), workmanship (the masonry and the timber framing) and artistic merit (in its proportions, materials, etc). The 1787 date is inscribed over the bankside door. The 1839 portion (also dated, thus affording a rare chronological benchmark) is significant for different reasons: it shows adaptations of framing systems, but still assembled with a high degree of skilled workmanship; it shows continuity of design and artistic merit from the earlier portion.

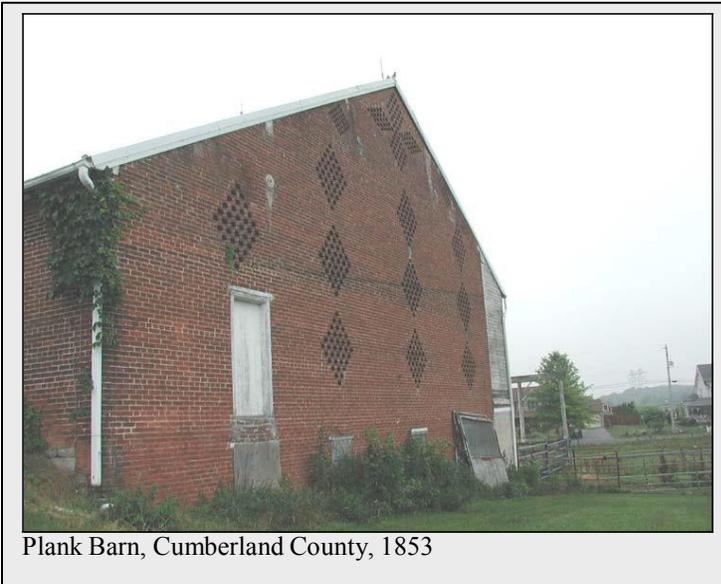


Bertolet Barn, Oley Valley, 1787 and 1839.



Bertolet Barn, Oley Valley, Berks County, floor plan of upper level. University of Delaware Center for Historic Architecture and Design.

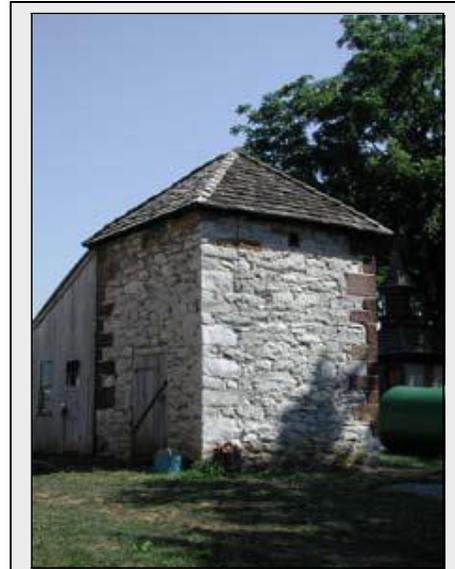
Example 3: the Plank Barn in Cumberland County. This brick-end barn was built in 1853. It is significant for its design, workmanship, and artistic merit. Its significant design features clearly include attention to simple proportions. Its workmanship is important in the significant masonry technique needed to



Plank Barn, Cumberland County, 1853

create the openwork patterns in the gable ends. Its artistic merit is represented in the diamond motifs. The datestone helps to establish chronological frameworks for these barns. The owner manufactured a local plow and the barn is evidence that he was consolidating his wealth.

Example 4. Smokehouse, Tulpehocken Manor, Lebanon County, late 18th century. Most examples of architectural significance will likely be larger buildings such as barns, but this smokehouse (in Lebanon County) is an example of a smaller building which might qualify because of its masonry (which qualifies both under workmanship and design, because its decorative corner quoins are clearly ornamental) and the hand-wrought ironwork, which includes a bar against thieves which is inscribed with the owner's name and date. The building clearly exhibits all the characteristics of its type.



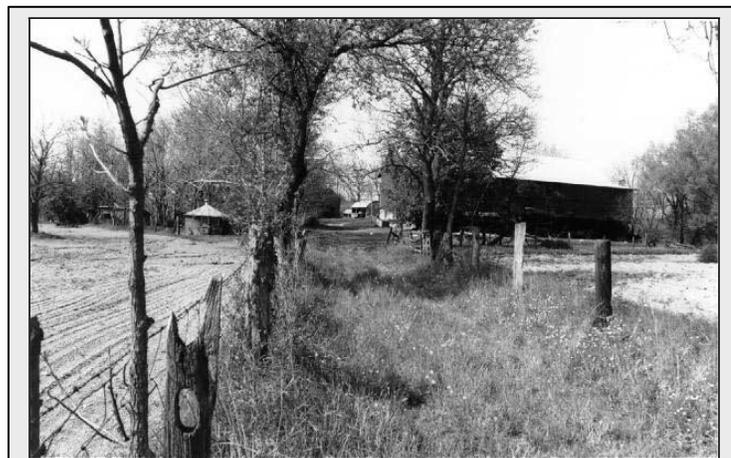
Smokehouse, Tulpehocken Manor, Lebanon County, late 18th century

Example 5: Chicken house at Landis Valley Museum, Lancaster County, early twentieth century. Although in poor condition, this chicken house, located in what is now the Landis Valley Farm Museum, embodies the character-defining features of “modern” housing recommended by the extension services and growers associations for optimum management of large flocks. The massing, proportion, and fenestration, as well as the interior arrangement maximize efficient work flow and healthy stock management.



Chicken house at Landis Valley Museum, Lancaster County, early 20<sup>th</sup> century.

Example 6: Joel Dreibelbis Farm in Berks County. Properties can be significant under Criterion C for reasons other than their architecture. The farm plan with the siting of the buildings in relation to each other and to the surrounding fields make up a carefully planned complex. The spatial organization of the buildings and the land use patterns, which include a wet meadow, reflect traditional German labor and conservation ethics.



Joel Dreibelbis Farm, Berks County, farm lane, fields, outbuildings. Pennsylvania Historic Preservation Bureau file photo.

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## **Property Types and Registration Requirements – Criterion D, Archaeology**

These requirements apply to properties in all regions. The examples below are not meant to be an exhaustive list of ways in which a farm or farmstead site could be eligible under Criterion D in Agriculture; instead, they are meant to provide a limited overview of current research into the archaeology of farms or farmsteads and of data that these excavations have yielded. Other datasets could yield significant information about agriculture. In addition, many of these research topics pertain equally well to both demolished and extant farms or farmsteads. In addition, keep in mind that archaeology can be used to support evaluation under any Criterion or area of significance.

To be eligible under Criterion D, a property must “have yielded or...be likely to yield information important in prehistory or history.” For Agriculture, although farms and farmsteads may contribute other (or various types of) information to the study of Pennsylvania history important information on archaeological farm properties in Pennsylvania is information that contributes to the understanding of the major themes identified in this context either for the state or for the individual agricultural regions or for both. To recap, these themes include representation of agriculture of one time period or representation of agricultural change over time; representation of typical production, in terms of both production and use; and representation of labor patterns, land tenure, mechanization, and cultural traditions. These requirements should not be considered in a vacuum; they must be examined in the context of the cultural milieu of the historic agricultural regions developed elsewhere in this MPDF.

Based on current research in historical archaeology, the registration requirements for archaeological properties that are farmsteads in Pennsylvania are that the site provide important information on changes to landscape and the built environment over time; on the use of agricultural products; on labor and land tenure; and on cultural patterns. To be eligible under these registration requirements, a site must provide important information

on the topics listed below and must also demonstrate integrity. For archaeology, integrity should be measured in light of the current state of archaeological knowledge for that region, the research questions being addressed, and the unit of analysis. For example, the standards of integrity for a region without a robust archaeological record would be less stringent than for an area that is well-documented archaeologically. In addition, a site where the significance lies in its ability to provide information about change over time should have discrete deposits that can be directly associated with different time periods. The above are only two general examples to guide assessments of integrity.

### **Change Over Time**

Agricultural resources may yield important information about modifications to the landscape to accommodate both farming and changes in farming. The creation of a farm obviously involves alteration of the landscape; archaeology can document this alteration. For example, Mary Beaudry (2001-2002: 137-138), working at Milton Farm in Scotland, was able to document how the landscape was altered to accommodate the creation of a farm dedicated to raising sheep. Excavations revealed the massive drainage efforts that were undertaken to turn the land from marsh into productive pastureland. Therefore, important information would document how farmers modified the landscape to begin farming as well as to keep up with changing agricultural practices in their region.

Archaeology can also provide important information on the evolution of the built environment. “The rendering of a farmstead on an atlas dating to the middle of the 19th century does not mean the site sprang from the ground full blown... (Catts 2001-2002: 145).” Often, buildings were moved or reused over time (Beaudry 2001-2002: 130). In some cases, buildings were never even documented in the historical record or the documentation is contradictory (Garrison 1996: 24, 32). These data can provide important information on how farmers responded to the larger movements and innovations in agricultural practice for their regions, documenting both the degree to which farmers followed the latest prescriptions, and the amount of time it took for these ideas to diffuse from other areas (Beaudry 2001-2002: 130; Catts 2001-2002: 145). Archaeology can also provide important information on how changing patterns of refuse disposal illustrate larger changes in farming practice. For example, archaeologists were able to tie modernization theory into their study of South Carolina farmsteads by

examining refuse disposal at these sites (Cabak, Groover, and Inkrot 1999: 35). Comparing the density of artifacts at both “modern” and “traditional” farmsteads, archaeologists were able to document the ways that disposal patterns reflected modernization. In addition, useful features may be filled with refuse later on. Mary Beaudry (1986: 39) documents the filling in of water-related features, pointing out that that process can be related to “...an ongoing series of changes made in response to technological innovations, economic and social pressures...” etc. Catts (2001-2002: 148) also documents a trend of refuse disposal in specific dumping areas away from the farmstead. The timing and reasons for this change could provide important information on the evolution of agricultural practice, as well as on the degree with which innovations diffused from other areas.

### **Agricultural Production**

In terms of production, archaeology can provide important information on agricultural production for a market economy. One of the most fruitful lines of evidence, faunal analysis, has the potential to reveal a great deal of important information regarding how market forces shaped production patterns on farms. By comparing faunal remains from both rural and urban sites in Massachusetts, archaeologists were able to document changes in rural production to meet urban demand (Bowen 1998). The percentage of calves in urban assemblages was much higher than in rural assemblages; therefore, it appears that increased production of milk for urban areas also led to increased production of veal for those same areas. Rather than spend precious resources on animals that were useless for dairying, farmers would sell male calves to urban consumers (Bowen 1998: 143).

Examination of faunal disposal patterns is most profitable when done in conjunction with oral historical or other information (Whittaker 1999: 53-54). In Iowa, for instance, archaeologists found that, in general animals that were slaughtered for farm consumption were generally either burned or discarded; rarely, they were buried. The existence of a large, rapidly filled pit, filled with more remains than would be necessary for a farm family, therefore, pointed out that slaughter for market was taking place at this site (Whittaker 1999: 53-54). These types of data could provide important information on the degree to which individual farms participated in the market system.

## **Labor and Land Tenure**

In terms of labor and land tenure, archaeology can produce important information on the interplay between land tenure and changes over time. For example, archaeologists in Massachusetts were able to correlate changes to the landscape with specific changes in ownership in Estabrook Woods (Garman et al. 1997: 65-66). One owner clearly modified the yard to create better drainage. In addition, as ownership changed, the field layout also changed: earlier field features (mounds for corn cultivation) were incorporated into later field patterns. This type of information could be especially useful if different owners represented different ethnic groups. For example, archaeology could provide important information on the changes wrought when a Welsh family purchased a farm from a Pennsylvania German family, and how those changes are manifested in the archaeological record.

Aside from providing important information on individual farms and individual ownership, archaeology can provide important information on the effects of larger events on the farming culture. For example, during the Napoleonic Wars in Europe, European demand for American goods (including agricultural products) rose dramatically. With this in mind, archaeology can document the effects of this heightened demand on agricultural production and practice in each agricultural region in Pennsylvania (Garman et al. 1985: 73). In addition, the Civil War was another event that had a dramatic impact on agricultural society. Besides raids, forage, and simply the movement of large bodies of troops across the agricultural landscape, this event occasioned a tremendous loss of life and shortage of manpower after the war. In the southern United States, this loss of manpower hastened the mechanization of many farms. Archaeology could demonstrate how this loss of manpower was manifested in the landscape and material culture of Pennsylvania's agricultural regions (Catts 2001-2002: 149).

Labor and land tenure also ties into several major research themes within historical archaeology, including status (e.g. Miller 1980), class (e.g. McGuire and Walker 1999), and ethnicity (e.g. Stine 1990). In terms of status, the archaeology of Pennsylvania farms

can provide important information about the ways in which farmers displayed their status. For instance, investigations in New Jersey suggest that farmers chose to display their status by improving their agricultural holdings, as opposed to participating in the consumer culture (Friedlander 1991: 27). Ceramic and glass artifacts indicated a status position that was not in keeping with the farmer's status as derived from the historic record. Tenant farmers, on the other hand, may have more fully embraced consumer culture since there was little use in improving structures and land that they did not own (Rotman and Nassaney 1997: 56). Archaeology within Pennsylvania's agricultural regions could provide important information on the general applicability of these findings.

Status, in combination with ethnicity and role (owner, tenant, etc.), has the potential to yield important information on the social hierarchy of agriculture. For example, statistical analyses in North Carolina found that the material remains of African American landowners were more similar to those of white tenants than to those of either African American tenants, or white owners (Stine 1990: 40). African American and white tenants, on the other hand, were nearly impossible to distinguish. Overall, ethnicity played a role in the ranking of landholding farmers; however, economics appears to have played a more important role than ethnicity in the rank of tenant farmers. Investigations in Pennsylvania could test this model across regional lines.

Closely related to the above themes of ethnicity, status, and role, is the concept of class. Class has variously been defined as "the relationship of a social group to the means of production" (McGwire and Walker 1999: 160), as a description of a fixed position in society, and as a relative measure of the relationships between different social groups (Wurst and Fitts 1999: 1). According to some archaeologists, however, regardless of the definition of class, its role has not been sufficiently examined in the archaeological record; the historical archaeology of class has been "meager." (Wurst and Fitts, 1999). Therefore, this concept may yield important information for the study of Pennsylvania agriculture. For example, in New York state, archaeologists examined the manifestations of class between servants and their employers in Binghamton and found that artifact types and locations can represent different classes within the same property and that mixed assemblages may be the result of different class structures on the same property (Wurst 1999: 17). In agricultural regions of Pennsylvania where migrant labor was

important, this type of study could produce important information on the differences between the owners and the workers. In addition, Wurst (1999: 13) demonstrated how, at a rural tannery, the owners minimized the material cultural differences between themselves and the workers.

### **Cultural Patterns**

In terms of cultural patterns, archaeology can provide important information about the degree of cultural exchange that took place in agricultural communities (i.e. assimilation and acculturation). In some areas of New Jersey, for example, English and Scottish farmers borrowed certain architectural elements from their Dutch neighbors; archaeology may be able to document this exchange in other areas, such as land use and other material culture. In addition, the historical record indicates that the Dutch maintained many of their ethnic ties, including language; however, other aspects of material culture, such as ceramics, indicate that some cultural exchange was taking place (Scharfenberger and Veit 2001-2002: 68). For Pennsylvania, archaeology can provide important information on assimilation within the cultural milieu of the agricultural regions discussed within this MPDF.

Archaeology can also provide important information about cultural patterns, as manifested in religion and religious practice. For example, in Arkansas, archaeology, in conjunction with the documentary record, was able to document the degree to which one family maintained its Jewish heritage, despite being isolated from any large Jewish congregation. The faunal assemblage demonstrated that this family did not observe kosher law; however, the documentary record points out that the family was active in establishing a synagogue in New Orleans and was still a participant in the larger Jewish world. It appears, therefore, that the family's location in an isolated, non-Jewish area led to certain changes (e.g. not keeping Kosher law), but did not break all of their ties to the Jewish community (Stewart-Abernathy and Ruff 1989: 97 and 105). In Pennsylvania, archaeological investigations at a Quaker-owned farmstead in Chester County were able to provide important information on the interplay (and contradictions) between Quaker belief and Quaker participation in the larger market system (Bailey et al. 2004:131).

### **Faunal Studies**

Although not one of the overarching themes in Pennsylvania agriculture, faunal analyses have the potential to provide a great deal of important information about the above themes. For example, past archaeological studies have used faunal analyses to examine the use of the landscape and change over time, as well as status. By combining oral history with faunal analysis, archaeologists in Missouri were able to provide information on different processing methods and disposal of fauna (Price 1985: 46-47). For example, smaller animals, such as squirrels, would have been processed in the yard, leaving some bones there. Other bones, however, would have been discarded at the margins of the yard after the meal. Larger animals, such as pigs, would have been slaughtered near the smokehouse (Price 1985: 48). In areas without standing remains, or where spatial relationships are not clear, this data could provide important information on the layout of agricultural properties through time. Also, the use of wild animals in the diet can point out the status of the site's inhabitants. Both higher status and lower status farmers would likely have a larger percentage of wild animals in their diet, either through conscious choice, or due to economics (Scharfenberger and Veit 2001-2002: 64).

### **Conclusion**

The registration requirements for archaeological properties that are farmsteads in Pennsylvania are that they must provide important information on the themes developed in this MPDF. It is important that the important information relate not only to the themes, but also to the themes as they are manifested in each agricultural region. Broadly, these themes are change over time, agricultural production, labor and land tenure, and cultural patterns. In addition, a separate category, faunal analysis, has the potential to yield important information on several of the themes identified in the MPDF. Aside from significance, as represented by the potential to yield important information, farmsteads must also display integrity. The assessment of integrity should be based on the archaeological record of a particular region, as well as the research questions and the unit of analysis.

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## Statement of Integrity

This Statement of Integrity discusses the seven categories of integrity as defined by the National Register, for each of the three Property Types (farmstead, farm, historic agricultural district) defined in this context. This statement applies to properties in all regions.

### **Location:**

Integrity of Location refers to the requirement that buildings and landscape elements remain in their original location. Normally, a building loses eligibility if it has been moved. However, where a farmstead is concerned, farm buildings present a challenge to the normally straightforward rule. Historically it has been very common to move and reuse farm buildings. Some, like poultry houses, were actually designed to be easily moved. Other types of smaller farm buildings were frequently rearranged. The New England Connected Farm complex, for example, resulted from moving buildings. Therefore, if an agricultural building has been moved, and the change in location can be interpreted as a reflection of changing agricultural patterns, integrity of location has not been compromised. If a farm building has been moved or reused after the period it is supposed to represent, integrity of location is not present.

Integrity of Location for a farm is well defined by the SR 30 context, which says “an agricultural property must be located either where it was constructed or where important trends or patterns in agriculture occurred.... Siting with respect to natural features and topography, use of local and indigenous materials, relationship to roadways, the presence of native species... and other responses to the natural environment all add to integrity of location.”<sup>173</sup>

Integrity of Location by definition is present in a historic agricultural district, as it is unlikely that an entire area would be relocated.

**Design:**

To quote the Georgia agricultural context, design is the “combination of natural and cultural elements that create the form, plan, style, and spatial organization of a property.”<sup>174</sup>

For individual farmstead buildings, design includes such elements as siting, orientation, form, massing, proportion, fenestration, location of doors, roof types, and ornament. Integrity of Design applies to both exterior and interior elements. For houses, interior integrity is well established elsewhere; for barns and outbuildings, interior integrity of design refers to the presence of significant plan elements characteristic of a given barn type. So, for example, an English Barn should retain the characteristic one-level, three-bay layout with mow, threshing floor, and stables arranged crosswise to the roof ridge. A Pennsylvania Barn should exhibit the characteristic multi-level work-flow arrangement, and the diagnostic features of the type (forebay, banked construction, and so forth.) Another aspect of interior design would be framing systems; while these are covered under Workmanship, they also fall under Design because often they were assembled to permit hay tracks, expand storage space, and delineate spatial divisions both vertically and horizontally. Barn and outbuilding interior alterations that show significant agricultural changes in a region do not compromise integrity, because they can contribute to significance based on change over time. However, if they postdate the period of significance and/or obliterate historical fabric, then integrity is not present. For example, a Pennsylvania Barn whose lower level was cemented and fitted with stanchions for dairy cows in the 1930s could retain integrity because it illustrates changes within a period of significance, but if its entire lower level was gutted, expanded, cemented, with new partitions in the 1980s, it would likely not retain integrity.

Farmstead layout and the relationship of buildings to topography are important elements in Integrity of Design. Farm layout should retain integrity with respect to farm labor patterns for the period of significance in the region where the farmstead is located. In most cases, this means spatial organization to facilitate family and neighborhood labor. So, for most pre-1930 farms, a poultry house, detached dairy house, or hog facility should show a siting relationship to both house and barn, usually being situated between house and barn, or in a clear relationship to the house's dooryard (as in the Yankee Northern Tier) or *vorhof* (more common in German Pennsylvania), or in an arrangement where all

buildings are closely clustered. Integrity of farmstead design also can apply to characteristic cultural or regional patterns. In the Northern Tier, for example, it was common for a road to bisect the farmstead, whereas in German Pennsylvania, a linear or court-yard organization was more prevalent.

For farmstead landscape elements, Integrity of Design applies to whether the farmstead retains traces of the fabric and location of boundaries, lawns, fences, ponds, circulation elements (paths, drives), gardens, farm lanes, orchards, and ornamental plantings. It would be rare for these to survive in their entirety, but some vestiges should be present.

Integrity of Design also applies to the collection of buildings on a farmstead. Most farmsteads will contain a mix of contributing and noncontributing buildings and structures. A determination must be made as to whether there is too high a presence of noncontributing elements. In such cases, it is important that the farmstead adequately reflect the composite patterns of the relevant agricultural region and period. For example, a farmstead might have an early wood-stave silo, a c. 1940 concrete stave silo, and a c. 1975 Harvestore silo all clustered together, next to a barn complex that includes a c. 1900 Northern Basement barn, a milk house, and a c. 1950 cow shed. In this context, the noncontributing Harvestore silo does not detract from Integrity of Design, because its scale and siting relate to the historical fabric. On the other hand, a farmstead may have a Pennsylvania Barn surrounded by a 1990s livestock loafing shed twice its size, and a 1980s manure lagoon. If modern livestock-handling facilities dwarf the historic building in scale, or if they are sited so close as to overshadow the historic fabric, then Integrity of Design is doubtful. However, it should be noted that in many cases, modern livestock handling facilities are sited away from older buildings, and in these cases (especially if the modern facilities are all concentrated in one place), Integrity of Design may still be present. Scale and location should be considered in determining Integrity of Design in cases like these.

At the farm scale, Integrity of Design is present only when a significant proportion of acreage remains. It is desirable, though not an absolute requirement, if continuity of use is present – ie crop production, pasture, livestock raising, and so on. In addition, a farm's Integrity of Design depends on the extent to which it retains traces of field divisions, fields (such as small fields or historic strip cropping) property boundaries, treelines,

hedgerows, fencing, woodlots, circulation paths, and the like. If continuity of use is present, it is unlikely that all historic landscape features will have survived intact, because of the needs of modern farming; but at least some traces should be evident. If large-scale monocropping resulted in the removal of field boundaries, woodlots, treelines, fencing, and circulation paths in the 1990s, Integrity of Design may have been lost.

A historic agricultural district retains Integrity of Design when its constituent farms have an acceptable level of integrity collectively. Since contributing resources are counted individually (so, each resource, even within a farmstead, would be counted), this must be determined with respect to whether and how the sum total of contributing resources creates a coherent whole. For example, there may be cases in which one or two farms are included because they have one outstanding building, even though its other resources are not exceptional. But overall, there should be a consistent presence of contributing resources on farms that make up the district. Also, elements of the historic transportation routes, waterways, etc. that connected the farms in the district should remain.

A historic agricultural district's integrity of design depends very much upon landscape features. Intact historic field patterns, treelines, ponds, disposition of pasture and woodlot, etc. should count heavily in an assessment of integrity in a district. Consider also that since farm fields, waterways, and woodlots are such crucial components of an agricultural district, their integrity should weigh equally with architectural integrity of buildings. So for example, a district might contain buildings where there has been some impairment to integrity, but if many landscape features are clearly intact, the overall district's integrity would still meet National Register standards. Another example would be a situation where small patches of modern development are interspersed within the boundaries of a historic agricultural district. In a case like this, the total number of noncontributing resources might be relatively high, but overall integrity would still meet National Register standards because the land area occupied by the intrusions would be minimal compared with the total area taken up by the district.

**Setting:**

Integrity of Setting with respect to a farmstead has two dimensions. Integrity of Setting can be present with respect to the farmstead's interior organization, for example if it

retains its original relationships among buildings, natural features, and landscape elements that make up the farmstead. Integrity of Setting also applies to the farmstead's surroundings, so at least part of a farmstead (one or two sides at least) should border on open space, woodland, or agricultural land. If a literal spatial buffer is not present, Integrity of Setting may still be present if the farmstead retains visual buffers. For example, what if a farmstead lacks much original acreage, and abuts on a modern subdivision? It may retain Integrity of Setting if it is visually set off from the subdivision through such means as topographical features. However, if not, the farmstead probably does not retain Integrity of Setting.

Integrity of Setting with respect to a farm normally involves continuity of use. There may, however, be cases where continued farming with modern methods has all but wiped out historic farm landscape elements such as patterns of crop rotation and field organization, hedgerows, treelines, shade trees, rock piles, fencelines, fences, and the like. In extreme instances, Integrity of Setting may be compromised by continuous farming. An example would be if 1930s aerial photographs showed all of these features, and a present-day site visit showed that a large monocropped field had supplanted these earlier farm landscape features. Integrity of Setting for a farm is also present if a farm abuts open land, woodland, and/or historic transportation corridors.

Integrity of Setting with respect to a historic agricultural district can be reckoned with respect to internal relationships among buildings, landscapes, natural features, and transportation corridors. So for example a district along a historic canal corridor should include canal features like locks, masonry lining, and the like; a district in a sharecropping region should include a number of farms that were historically and thus architecturally interrelated. A historic agricultural district possesses Integrity of Setting if its external surroundings continue to reflect general historic patterns and use.

**Materials:**

Integrity of Materials refers to the presence of "key exterior materials from the period of significance"<sup>175</sup> Integrity of Materials is well covered for houses elsewhere. For the other buildings of the farmstead, barns and outbuildings often are constructed, or reconstructed, of recycled materials, and integrity of materials is present as long as the recycling can be interpreted as contributing to significance for agriculture. On a farm property, some

materials may be organic – such as a fenceline made of rubble, trees, and spontaneous growth. (However, the original vegetative material of crops, or the original fence, does not need to be present.). A historic agricultural district retains Integrity of Materials if its constituent properties possess Integrity of Materials collectively. As well, in districts Integrity of Materials can refer to the presence of key materials across property boundaries, or along shared property boundaries. Remnants of irrigation systems would be an example.

**Workmanship:**

Integrity of Workmanship refers to the retention of traditional or historic craftsmanship. These include such familiar skills as wood joinery (log, plank, post and beam framing), masonry (stone and brick), but also skills more closely related to agriculture such as fence building, contour plowing, windbreak planting, crop rotation, garden construction, farm pond construction, or farm planning. Workmanship can also refer to the skilled use of technologies that are not necessarily hand-tool derived. For example, the Shawver Truss, a barn framing system popular c. 1900, combined artisan skill with industrial technologies. Evidence of recycling or reuse may contribute, as long as it is part of a pattern or historic trend. Integrity of Workmanship applies mainly to the farmstead buildings and landscape features. However, collectively Workmanship could conceivably have an impact on the overall appearance of a historic agricultural district in some instances, for example, if in a district a group of farms collectively exhibits particularly adroit arrangement of contour strips.

**Feeling:**

Integrity of Feeling refers to the “Ability to evoke the aesthetic sense of a particular time and place.”<sup>176</sup> This is an intangible quality, which depends to some extent on integrity of design, setting, materials, and workmanship. If the farmstead, farm, historic agricultural district, or the general area continues under agricultural use, integrity of feeling is enhanced. Integrity of Feeling also is present if a property retains a sense of scale characteristic for its period; the interrelationship of the human and natural that is so important in agriculture; if there are many vantage points from which agricultural activity or evidence of agricultural activity are vividly apparent.

**Association:**

Integrity of Association refers to the “direct link between the property and the... events and persons that shaped it.”<sup>177</sup> For significance with respect to agriculture, a farmstead or farm must have contributed to a working farm for its period of significance. The presence of historic landscape features related to agriculture is a key aspect of Integrity of Association. Close attention should be paid to identifying intact or remnant features. For example, are crop field size, scale, shape, and patterns are retained from the pre-contour stripping era? Are there remnants of early woodlots or sugar bushes? Is there evidence of land use such as pasturing? A majority of farms in a historic agricultural district should have a continued association with agriculture for the period of significance. To ensure Integrity of Association, the inevitable “intrusions” should be kept to a minimum. However, a historic agricultural district could conceivably have a high percentage of noncontributing properties relative to an urban district. For example, a concentrated 25-acre subdivision with 50 noncontributing houses might be contained within a 1,000-acre historic agricultural district with fifty contributing farms. Even though technically, the subdivision elevates the percentage of noncontributing properties, it does not reduce Integrity of Association, because it is such a small percentage relative to the continuously farmed (and contributing) acreage in the remainder of the district land area.

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<sup>1</sup> Franklin Menges, *Soils of Pennsylvania* (Harrisburg: W.S. Ray, 1914), 48. See also Henry J. Wilder, et al, *A Reconnaissance Soil Survey of Northwestern Pennsylvania*, USDA Bureau of Soils, "Field Operations of the Bureau of Soils, 1908," issued 1911, pp. 197-245.

<sup>2</sup> Jerome Pasto and Pritam S. Dhillon, "Farm Production Trends in Pennsylvania to 1960," *Pennsylvania State Agricultural Experiment Station Bulletin # 693*, 1962, 33.

<sup>3</sup> Zoe Thralls, *The Geography of Pennsylvania* (New York: MacMillan, 1929), 10; E. Willard Miller, *A Geography of Pennsylvania*, (University Park, Pennsylvania: Pennsylvania State University Press, 1995), 53, 72, map page 69.

<sup>4</sup> J. P. Lesley, "Geological Thoughts on Soils," *Annual Report of the Pennsylvania State Board of Agriculture*, 1885, p. 88.

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<sup>6</sup> Wick Wood, *History of Lawrence County Pennsylvania 1887*, page 3. Accessed via Internet at <http://www.rootsweb.com/~usgenweb/pa/lawrence/1887/>, November 18, 2006.

<sup>7</sup> Edward K. Muller, *A Concise Historical Atlas of Pennsylvania* (Philadelphia, 1989), map page 97; Wood, *History of Lawrence County*, p. 3.

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<sup>9</sup> Samuel Penniman Bates, *History of Crawford County, Pennsylvania ...* Chicago: Warner and Beers, 1885, pp. 9, 173. See also Answers to Interrogatories, Treasury Department Records, Pennsylvania State Archives Record Group 28, Box 1, Folder 3. (letter from Alex. Powers of Crawford County)

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<sup>11</sup> *History of Crawford County Pennsylvania*. Chicago: Warner and Beers, 1885, p. 240.

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<sup>13</sup> *Transactions of the Pennsylvania State Agricultural Society*, 1876, p. 311.

<sup>14</sup> Rebecca Eaton, *A Geography of Pennsylvania, for the Use of Schools, and Private Families...* (Philadelphia: Key and Biddle, 1835), 248. See also Sherman Day, *Historical Collections of Pennsylvania* (Philadelphia, 1843), 249, 463, and Answers to Interrogatories, Treasury Department Records, Pennsylvania State Archives Record

Group 28, Box 1, Folder 3 (letter of Mr. Heiderkooper of Crawford County) which notes that livestock were also driven to New York State.

<sup>15</sup> Answers to Interrogatories, Treasury Department Records, Pennsylvania State Archives Record Group 28, Box 2, Folder 4, from Crawford County, a letter dated March 11, 1848 from Hugh Brawley of Randolph Township, a farmer and lumberman.

<sup>16</sup> Robert Leslie Jones, *A History of Agriculture in Ohio* (Kent, Ohio, 1983), 102-3.

<sup>17</sup> According to the 1850 census, 252,000 pounds butter and over 700,000 pounds cheese. See Answers to Interrogatories, Box 2, Folder 3, from Erie county, a letter dated March 1, 1848 from William Campbell, who notes that cheese production has increased greatly in the last three years.

<sup>18</sup> W. J. McKnight, *Pioneer Outline History of Northwestern Pennsylvania*. (Philadelphia, 1905), p. 215-216.

<sup>19</sup> Mrs. S. Kussart, *The Allegheny River* (Pittsburgh, 1938), 41.

<sup>20</sup> Answers to Interrogatories, Treasury Department Records, Pennsylvania State Archives Record Group 28, Box 1, Folder 3 (letter of John Reynolds, Meadville); Answers to Interrogatories, Treasury Department Records, Pennsylvania State Archives Record Group 28, Box 1, Folder 2 (letter of Robert Gray, Erie County). Data on markets from this and from Sherman Day, *Historical Collections of Pennsylvania* (Philadelphia, 1843), 172, 463.

<sup>21</sup> J. A. Nelson, "Notes About Potatoes." *The Cultivator* May 1859, page 153.

<sup>22</sup> Answers to Interrogatories, Treasury Department Records, Pennsylvania State Archives Record Group 28, Box 1, Folder 2.

<sup>23</sup> Wick Wood, *History of Lawrence County Pennsylvania 1887*, profiles of S. M. Young and the Bowman brothers, no page numbers given. Accessed via Internet at <http://www.rootsweb.com/~usgenweb/pa/lawrence/1887/>, November 18, 2006.

<sup>24</sup> As discussed by Thomas Hubka in his *Big House, Little House, Back House, Barn: The Connected Farm Buildings of New England*. 2<sup>nd</sup> ed. (Hanover, New Hampshire: University Press of New England, 2004).

<sup>25</sup> "Farm House, *Genesee Farmer* November 1858, page 344; "Highland Farm Papers, No. 157," *Ohio Farmer (1856-1906)*; Jan 14, 1882; 61, 2; APS Online p. 18.

<sup>26</sup> Visser, *Field Guide to New England Barns and Farm Buildings*, p. 110.

<sup>27</sup> Mrs. E. E. Rockwood, "Locating the Dairy House," *Ohio Farmer* January 17, 1895, page 46.

<sup>28</sup> English Barns identified in fieldwork as of June 2007: Site 039-CON-001; 039-CUS-002; 042-SCO-005; 049-FRNK-003 and two at 049-FRNK-006

<sup>29</sup> New England barns found in fieldwork: Site 039-CON-002, 039-RIC-005; and 039-SPR-008

<sup>30</sup> Visser, *Field Guide to New England Barns and Farm Buildings*, 74-5, and Hubka, *Big House, Little House, Back House, Barn*.

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- <sup>31</sup> *Ohio Cultivator*, May 15, 1851, page 151; Visser, *Field Guide to New England Barns and Farm Buildings*, 111. The site in question was 049-GRN-007.
- <sup>32</sup> Visser, *Field Guide to New England Barns and Farm Buildings*, 71-2
- <sup>33</sup> For an introduction to this type of building, see Keith E. Roe, *Corncribs in History, Folklife, and Architecture*. Ames: Iowa State University Press, 1988.
- <sup>34</sup> *Ohio Cultivator*, September 15, 1857.
- <sup>35</sup> Randall Miller and William Pencak, eds., *Pennsylvania: a History of the Commonwealth* (Harrisburg, 2002), 238.
- <sup>36</sup> Gedeon A. LaCroix, *An economic base survey of the Shenango Valley Area and Mercer County*, (Sharon, PA, 1956) page 1
- <sup>37</sup> *Annual Report of the State Board of Agriculture*, 1877, Plate I, II, III, Series A.
- <sup>38</sup> *Annual Report of the State Board of Agriculture*, 1877, p. 74.
- <sup>39</sup> *Transactions of the Pennsylvania State Agricultural Society*, 1887, p. 217-218.
- <sup>40</sup> Untitled note, *The Friend: a Religious and Literary Journal*, May 23, 1896, p. 348.
- <sup>41</sup> Wick Wood, *History of Lawrence County Pennsylvania*, 1887, page 6. Accessed via Internet at <http://www.rootsweb.com/~usgenweb/pa/lawrence/1887/>, November 18, 2006.
- <sup>42</sup> *Annual Report of the State Board of Agriculture*, 1882, Plate XI
- <sup>43</sup> "Report of the Committee on Grass and Grasses of Pennsylvania," *Annual Report of the Pennsylvania State Board of Agriculture*, 1883, p. 169.
- <sup>44</sup> "Report of the Committee on Grass and Grasses of Pennsylvania," *Annual Report of the Pennsylvania State Board of Agriculture*, 1883, p. 169.
- <sup>45</sup> *Transactions of the Pennsylvania State Agricultural Society* 1877, p. 200.
- <sup>46</sup> *Resources of the Philadelphia and Erie Railroad Region, in Letters to the Erie Daily Dispatch, by its Special Correspondent, John C. Perlins*. Erie, Pa, 1868, p 9.
- <sup>47</sup> *The Industries of Pennsylvania...* Philadelphia, 1882, 54; *Transactions of the Pennsylvania State Agricultural Society*, 1882, 371.
- <sup>48</sup> *Transactions of the Pennsylvania State Agricultural Society* 1876, 311.
- <sup>49</sup> *National Stockman and Farmer* March 5, 1891, 1103.
- <sup>50</sup> *National Stockman and Farmer* July 5, 1888, 223.
- <sup>51</sup> *History of Crawford County Pennsylvania* (Chicago, 1885), 240-242, specifically mentions several leading stock farms in the county.
- <sup>52</sup> *Ohio Farmer*, March 20, 1869 and March 4, 1882; *Pennsylvania State Gazetteer and Business Directory 1882*, 845; *National Stockman and Farmer*, September 11, 1902, 12.
- <sup>53</sup> *Ohio Farmer*, December 15, 1883; H. E. Alvord, "Cheese, Butter and Condensed Milk, Factory Product," US Census, Special Reports on Selected Industries, Volume 9, Manufactures, Part 3, 1900. pp.433-459.
- <sup>54</sup> Alvord, 1900 census report, p 434. Pennsylvania ranked fourth after New York, Wisconsin, and Ohio. *Transactions, Pennsylvania State Agricultural Society*, 1876, p. 312-313 estimated 100 factories in northwestern Pennsylvania. The Dairymen's Board of Trade had 55 associated factories. See the *Pennsylvania State Gazetteer and Business Directory*, 1882, pp. 233, 265, 319, 473, 585, 887, 1774 for mentions of cheese factories.
- <sup>55</sup> *The Industries of Pennsylvania...* Philadelphia, 1882, 54.

- <sup>56</sup> "Causes of Diminished Production of Cheese in North-Western Pennsylvania in Recent Years," *Annual Report, Pennsylvania State Dairymen's Association*, 1883, p. 11. See also 1887, pp. 214-218 and A. M. Fuller, "The Butter and Cheese Interests of Crawford County." In *Centennial Edition Tribune-Republican*, Meadville, Pa, May 12, 1888, p. 60.
- <sup>57</sup> A. M. Fuller, "The Butter and Cheese Interests of Crawford County." In *Centennial Edition Tribune-Republican*, Meadville, Pa, May 12, 1888, p. 60. The 1886 State Board of Agriculture, "Report of Committee on Dairy and Dairy Products," page 223, noted that 40% of Crawford County milk went to creameries.
- <sup>58</sup> Report of the Committee on Dairy Products, Annual Report of the Pennsylvania State Board of Agriculture, 1883, p. 30; A. M. Fuller, "The Butter and Cheese Interests of Crawford County."
- <sup>59</sup> *Transactions of the Pennsylvania State Agricultural Society* 1876, p. 312.
- <sup>60</sup> *Transactions of the Pennsylvania State Agricultural Society*, 1894, p. 19.
- <sup>61</sup> *Transactions of the Pennsylvania State Agricultural Society, Dairymen's Association report*, 1883, p. 15.
- <sup>62</sup> *National Stockman and Farmer* May 3, 1900, p 128.
- <sup>63</sup> Samuel Penniman Bates, *History of Crawford County, Pennsylvania* (Chicago, 1885), pp. 2-3.
- <sup>64</sup> Henry Glassie, "The Variation of Concepts Within Tradition: Barn Building in Otsego County, New York." *Geoscience and Man* V (1974), p. 186.
- <sup>65</sup> So, where hogs were still raised, they would have a purpose built pig sty; sheep would be separately quartered, as would poultry. The barn space could be reorganized for cattle and horses.
- <sup>66</sup> "A Modern Barn," *National Stockman and Farmer* vol. XXIII # 12 (June 29, 1899), cover.
- <sup>67</sup> For a description of the three-gable barn, see Alan Noble, *Wood, Brick, and Stone*, volume II.
- <sup>68</sup> Examples of Three-Gable Barn found in fieldwork: 042-SCO-002 (Lawrence County, Scott Twp); 042-WAS-002 and WAS-005. In Mercer County: 085-GRN-004 and 005, 006; 085-WIL-001 and WIL-004.
- <sup>69</sup> <http://www.munnellrunfarm.org/>
- <sup>70</sup> Visser, *Field Guide to New England Barns and Farm Buildings*, p. 145.
- <sup>71</sup> "Notes from our Experiment Farm -- LXXXVIII." *Ohio Farmer* March 29, 1894, page 241.
- <sup>72</sup> *National Stockman and Farmer* April 11, 1901, page 32.
- <sup>73</sup> Crawford County agricultural extension agent report, 1921, Penn State Archives.
- <sup>74</sup> Pearl Ann Longietti, "The Depression and the Farmer," *Mercer County History* volume 4 (Spring 1974), 16.
- <sup>75</sup> Crawford County agricultural extension agent report, 1921, Penn State Archives.
- <sup>76</sup> Based on George Fiske Johnson's figures, in 1924 Crawford County produced 764,000 pounds of farm-made butter, out of 18.7 million gallons (roughly 165 million pounds @ 8.8 pounds per gallon) of milk. So, using conversion factors of 21 pounds milk to one

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pound of butter, we get 16 million pounds of milk going into farm made butter. So if my figures are correct, 90 percent of Crawford County's milk was marketed as fluid product and only 10 percent was diverted to farm made butter.

<sup>77</sup> Crawford County agricultural extension agent report, 1923, Penn State archives.

<sup>78</sup> Crawford County Agricultural Extension Agent Report, 1919, Penn State Archives

<sup>79</sup> Pennsylvania State College Agricultural Experiment Station Bulletin 208, *Milk Marketing in Pennsylvania*, December 1926, 9, shows that percent of total farm land in pasture in northwest was 43, which was comparable to the rest of the Northern Tier and the southwest.

<sup>80</sup> Crawford County agricultural extension agent report, 1940, Penn State archives.

<sup>81</sup> Pennsylvania Agricultural Experiment Station Bulletin 223, *Farm Adjustments in Market Hay Areas*, December 1926, 8.

<sup>82</sup> *Ohio Stockman and Farmer*, April 17, 1926.

<sup>83</sup> 13<sup>th</sup> census of the United States, Abstract, with supplement for Pennsylvania, no volume number, 1910, page 668.

<sup>84</sup> Pennsylvania Agricultural Experiment Station Bulletin 223, *Farm Adjustments in Market Hay Areas*, December 1926, 8.

<sup>85</sup> Emil Rauchenstein and F. P. Weaver, "Types of Farming in Pennsylvania."

Pennsylvania Agricultural Experiment Station Bulletin # 305, 1934, 51. Agricultural Extension Agent Report, Crawford County 1923, 1934, Penn State Archives. See also *Land Use Patterns, Existing and Proposed, Erie County, Pennsylvania*, (Erie County Planning Commission, 1960), 5-7, 10-12, 15-17.

<sup>86</sup> Crawford County agricultural Extension Agent report, 1927, Penn State Archives

<sup>87</sup> Rural Community Program Studies, Linesville, Crawford County, PA. Penn State Archives, AX/PSUA/02492, Box 11. This includes "write-up of Linesville," dated 1923; "Community Schedules, Surveyed by Irving Lorge, September 1933;" and a loose leaf folder from 1953 describing industries of Linesville. See also Crawford County Agricultural Extension Agent Report, 1945, Penn State Archives, mentions a canning plant at Springboro purchasing "many tons of cabbage and cucumbers."

<sup>88</sup> "Soil Survey of Mercer County, PA." USDA Bureau of Soils, "Field Operations of the Bureau of Soils, 1917." No. 17. By E. B. Deeter et al. , p. 241.

<sup>89</sup> Pearl Ann Longietti, "the Depression and the Farmer," *Mercer County History* volume 4 (Spring 1974), page 16-18

<sup>90</sup> Pearl Ann Longietti, "the Depression and the Farmer," *Mercer County History* volume 4 (Spring 1974), page 16-18. See also *Soil Survey of Mercer County*, p 241.

<sup>91</sup> Lawrence County Agricultural Extension report, 1919 and 1920; *Historical, Industrial, Commercial and Agricultural Review of Pennsylvania*. The George F. Cram Company, 1917, 21.

<sup>92</sup> *Ohio Stockman and Farmer*, March 12, 1928; February 23, 1928.

<sup>93</sup> Crawford County Home Economics Extension Report, 1933.

<sup>94</sup> J. H. Kolb and Edmund de S. Brunner, *A Study of Rural Society, Its Organization and Changes*. New York, 1935, page 563, Figure 43.

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<sup>95</sup> The *Ohio Stockman and Farmer* for September 18, 1926, mentioned that some people were applying for electricity; they complained of red tape but persisted and eventually received service. See also Crawford County Agricultural Extension Agent Report 1938, Penn State Archives.

<sup>96</sup> Alvin E. Heutchy, "The Rural Electrification Administration and Its Work in Pennsylvania," Penn State thesis, MA in political science, 1938, 34-45.

<sup>97</sup> *Pennsylvania Farmer*, December 2, 1939, page 19.

<sup>98</sup> Interrante, Joseph. "'You can't Go to Town in a Bathtub: Automobile Movement and the Reorganization of American Rural Space, 1900-1930.'" *Radical History Review* Fall 1979.

<sup>99</sup> H. B. Josephson, et al, "A Farm Machinery Survey of Selected Districts in Pennsylvania," Pennsylvania Agricultural Experiment Station Bulletin #237, 1929; Crawford County Agricultural Extension Agent Report, 1934, Penn State Archives

<sup>100</sup> Crawford County Home Economics Extension Report, 1941 and 1934 reports respectively

<sup>101</sup> Rural Community Program Studies. Linesville, Crawford County, PA. Penn State University Archives, Department of Agricultural Economics and Rural Sociology, Box 11.

<sup>102</sup> Pennsylvania Agricultural Experiment Station Bulletin 472, Anna T. Wink, "Housing Conditions in Rural Pennsylvania," 1945.

<sup>103</sup> Crawford County Agricultural Extension reports, 1940. There are a few 20<sup>th</sup> century buildings documented. The Pennsylvania Historic Resources survey form for the Hagerty Farmstead shows an early 20<sup>th</sup> century foursquare house. Early 20<sup>th</sup> century foursquares from fieldwork are found at 039-CON-005. There are bungalows at 039-CON-007 and 042-WAS-005. A good example of a gable front house with manufactured brick is at 042-WAS-001. A brick tenant house c 1930 with garden is at 042-WAS-004, and a manufactured brick house is at 085-GRN-001.

<sup>104</sup> I. F. Hall, "An Economic Study of Farm Buildings in New York." Cornell University Agricultural Experiment Station Bulletin # 478, May 1929.

<sup>105</sup> Hall, "An Economic Study of Farm Buildings in New York," pp. 39, 54-5, 75, 42.

<sup>106</sup> "Suggestions for the Improvement of Old Bank Dairy Barns," USDA Circular # 166, June, 1931.

<sup>107</sup> Due to conflicts with the state government, the Bangs program did not get completed at least until 1950. Its first mention in the agricultural extension agent reports is in 1937.

<sup>108</sup> Allen G. Noble and Richard K. Cleek, *The Old Barn Book* (New Brunswick, NJ: Rutgers University Press, 1995), 117-119.

<sup>109</sup> Allen G. Noble and Richard K. Cleek, *The Old Barn Book* (New Brunswick, NJ: Rutgers University Press, 82-3; Foundation Barns were documented at sites 039-CUS-003, 085-GRN-001, 085-GRN-004, and 085-GRN-007.

<sup>110</sup> Visser, *Field Guide to New England Barns and Farm Buildings*, 97-101; Noble and Cleek, *Old Barn Book*, 122-123. Noble suggests that Wisconsin Dairy Barns only have gambrel roofs, but field work does not seem to bear this out.

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<sup>111</sup> Noble and Cleek, *Old Barn Book*, 119-120.

<sup>112</sup> Allen G. Noble and Hubert H. G. Wilhelm, eds., *Barns of the Midwest* (Athens, Ohio: Ohio University Press, 1995) contains several excellent essays about these modern types. See especially chapters 1, 6, 8, and 11.

<sup>113</sup> Sites with 20<sup>th</sup> century granaries: 039-CUS-001, 039-CUS-004, 039-CUS-007, 039-SPR-003, 039-SPR-005, 039-SPR-008. In Lawrence County, 042-SCO-001, 042-SCO-002, 042-SCO-005, 042-SCO-006, and 042-SCO-007. In Mercer County, 085-GRN-005, 085-GRN-003, 085-GRN-007, and 085-WIL-006.

<sup>114</sup> The New York City “Dairy Report Card” is reproduced in I. F. Hall, “An Economic Study of Farm Buildings in New York,” Cornell University Agricultural Experiment Station Bulletin #478, 1929, pp. 29-34.

<sup>115</sup> Stevenson W. Fletcher, *Pennsylvania Agriculture and Country Life*. Two volumes. (Harrisburg: Pennsylvania Historical and Museum Commission, 1950–1955), Volume 2, 217-219.

<sup>116</sup> L. W. Morley, “Building the Farm Dairy House,” Pennsylvania Agricultural Extension Circular 107 (December 25), says an 8 by 8 house would accommodate about ten cows; USDA Office of Cooperative Extension Work and Bureau of Public Roads Cooperation, *Farm Building and Equipment Plans and Information Series*, 1929. Not paginated.

<sup>117</sup> It is possible that organizations like the Dairymen's League or even the railroads provided this information for farmers instead of agents.

<sup>118</sup> 042-WAS-003 and 042-WAS-007 and 085-GRN-003. No summer kitchens were found in Crawford or Erie Counties, probably because kitchen ells served the same function in a different architectural form.

<sup>119</sup> The detached “kitchen” appeared with some frequency in the 1798 Direct Tax, but the term “summer kitchen” seems to be a nineteenth-century development. Eli Bowen mentions a “summer dining kitchen” in his *Pictorial Sketch-Book of Pennsylvania, or, Its Scenery, Internal Improvements, Resources, and Agriculture* (Philadelphia: W.P. Hazard, 1852).

<sup>120</sup> Priscilla Brewer, *From Fireplace to Cookstove: Technology and the Domestic Ideal in America* (Syracuse: Syracuse University Press, 2000).

<sup>121</sup> I.F. Hall, “An Economic Study...” 60.

<sup>122</sup> S. I. Bechdel, “Suggestions for Selecting and Building a Silo.” Pennsylvania State College Agricultural Extension Circular # 72, February 1918.

<sup>123</sup> See Alan Noble, *Wood, Brick, and Stone...* volume 2, 69-81.

<sup>124</sup> Rural Community Program Studies. Linesville, Crawford County, PA. PSU Special Collections. AX/PSUA/02492, Box 11.

<sup>125</sup> Fieldwork examples of silos: Almost every site in Crawford County has one. Good examples include a beveled block one at 039-CUS-005; a wood stave silo at 039-RIC-001, another at 039-RIC-004. For Lawrence County, see 042-WAS-002; WAS-003 has a brick one as does WAS-004 and WAS-006. In Mercer County, silos were documented at 085-GRN-002 and 003 and 005. Ruins of a wood stave silo were found at 085-GRN-

006. A metal silo was documented at 085-GRN-007, and a brick example at 085-WIL-001.

<sup>126</sup>For illustrations, see advertisements, *Farm Journal*, March 1922 and January 1922.

<sup>127</sup>C. S. Platt, "Battery Brooding," *Farm Journal*, January 1930: 22.

<sup>128</sup>D. Kennard, "A New Deal for Chickens," *Farm Journal*, July 1933, 5.

<sup>129</sup>Platt, "Battery Brooding."

<sup>130</sup>C. S. Platt, "Four Weeks in Batteries," *Farm Journal* December 1930, 11; on continuation of free range practice, see ads in *Farm Journal*, September 1951, 92; D. C. Kennard, "Revolution in Hen-Coops," *Farm Journal* March 1932, 14; Nathan Koenig, "Henhouses from Left-Overs," *Farm Journal*, June 1930, 31-32.

<sup>131</sup>On new construction techniques, almost any issue of *Farm Journal* for 1958 and 1959 contains ads illustrating them. See also "New pre-fab poultry houses," Buildings column, *Farm Journal*, May 1957.

<sup>131</sup>The Bradford County Agricultural Extension Agent's Report for 1941 mentions BradCo's role in supplying building plans.

<sup>132</sup>There were a few locales where poultry production was significant according to the 1927 agricultural census. Spartansburg and East Fallowfield in Crawford County would be two of these. Fieldwork was not carried out there. There were two good houses, a brooder and a poultry house, at site 039-CUS-002, early 20<sup>th</sup> c. An anomalous large one was documented at 039-SPR-004, two more typical ones at 039-SPR-006. In Lawrence County, there is one at 042-SCO-005 and a good one at WAS-003 and several at WAS-004 and one at 007. A small one was found at 085-GRN-004 and a good example at 085-WIL-007.

<sup>133</sup>Quite a few sites did have privies but the best photos are at: 039-SPR-006 and 042-WAS-003; 085-WIL-004.

<sup>134</sup>See also 085-GRN-003.

<sup>135</sup>H. B. Josephson, et al, "A Farm Machinery Survey of Selected Districts in Pennsylvania," Pennsylvania Agricultural Experiment Station Bulletin #237, 1929. Many of the surveyed farms were in the fruit belt, so this may have skewed the results. Small fruit farms wouldn't necessarily have a lot of buildings.

<sup>136</sup>Fieldwork example of the 20<sup>th</sup> century: 039-CUS-001, see combo corn crib/machine shed at 039-ROC-003; a corncrib at 042-WAS-001 and 085-GRN-004 and 007. 20<sup>th</sup> century corn cribs identified in fieldwork: 039-CON-005. More metal cylindrical bins: 039-CUS-001

<sup>137</sup>For a pig sty, see 039-CUS-006 and 042-WAS-001; For a combination toolshed/workshop, see 039-RIC-004 and RIC-006. One smoke house was found at 039-SPR-006.

<sup>138</sup>Crawford County Agricultural Extension Agent Report, 1937, Penn State Archives.

<sup>139</sup>See site 039-ROC-006 and 039-SPR-005 and 039-SPR 007 and 042-SCO-004 and 085-GRN-007.

<sup>140</sup>Ivy M. Howard, "Crazy Patch Fields," *Farm Journal*, August 1935, 26.

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<sup>141</sup> Good examples of current contour/strip cropping can be found at site 039-CUS-003, 042-SCO-007, also 042-WAS-001, and 042-WAS-005.

<sup>142</sup> Heutchy, Alvin E. "the Rural Electrification Administration and Its Work in Pennsylvania." PS thesis, MA in political science, 1938. Chapter 2 notes early activity in northwestern Pennsylvania.

<sup>143</sup> Examples of drainage ditches can be found at sites: 042-SCO-002, 085-GRN-007, 085-WIL-001.

<sup>144</sup> Ann Vileisis, *Discovering the Unknown Landscape: a History of America's Wetlands*. (Island Press, 1997), 124-125, 183, 196-201.

<sup>145</sup> The Census of Agriculture published separate treatments of farm drainage starting in 1920; however, these only collected statistics for states that had significant concentrations of farm drainage, and Pennsylvania was not among them.

<sup>146</sup> "Court rules laws on wetlands apply to family's farm," by Don Hopey, Pittsburgh Post-Gazette, Sunday, September 3, 2006. Accessed at <http://www.post-gazette.com/pg/06246/718361-85.stm>. October 26, 2006.

<sup>147</sup> Charles G. Elliott, *Practical Farm Drainage, A manual for Farmer and Student*. (New York, 1908).

<sup>148</sup> See for example the northeast corner of the 1925 Waterford (Erie County) topographic map, accessed at <http://historical.maptech.com/getImage.cfm?fname=cmb25ne.jpg&state=PA> October 26, 2006.

<sup>149</sup> Data Report Seven, Lawrence County Regional Planning Commission, 1963, page 97.

<sup>150</sup> Bacon (no first name given), *Soil Survey of Crawford County Pennsylvania*, 1954, 8.

<sup>151</sup> Crawford County Agricultural Extension Agent Report, 1941, Penn State Archives.

<sup>152</sup> Kathryn Mills, "A study of FSA Record Books from Pennsylvania," MS thesis, Penn State department of Home Economics, 1944, 20, 23.

<sup>153</sup> "Some Postwar Agricultural Problems in Pennsylvania." Committee of the Staff of the School of Agriculture of the Pennsylvania State College, March 1946, page 23. Penn State Archives.

<sup>154</sup> Crawford County Agricultural Extension Agent Report, 1942, Penn State Archives

<sup>155</sup> Crawford County Agricultural Extension Agent Report, 1942, Penn State Archives

<sup>156</sup> Crawford County Agricultural Extension Agent Report, 1944, 1945, 1946 Penn State Archives

<sup>157</sup> Crawford County Agricultural Extension Agent Report, 1943, Penn State Archives

<sup>158</sup> "Some Postwar Agricultural Problems in Pennsylvania." Committee of the Staff of the School of Agriculture of the Pennsylvania State College, March 1946, page 23, 24

<sup>159</sup> H. J. Barre and L. L. Sammet, *Farm Structures* (New York: Wiley, 1950), chapter on "Dairy Buildings;" University of Wisconsin College of Agriculture June 1953 Bulletin titled "Loose Housing or Stanchion Type Barns for Dairy Cattle" noted that while loose housing is relatively new in many areas, its many advantages now make it well worth considering when a new barn must be built or an old barn remodeled. William Gilman,

“A Barn They Drive Miles to See,” *Farm Journal*, July 1952: 32-33, describes a New York State open stall dairy barn setup.

<sup>160</sup> Crawford County Agricultural Extension Agent Report, 1949, Penn State archives.

<sup>161</sup> Roger Grout, “Construction of Pole-Type Buildings,” Penn State Agricultural Extension Circular # 437, 1954.

<sup>162</sup> “Pole-Type Buildings ... From STEEL,” *Farm Journal*, October 1957. See also “New Frameless Building,” *Farm Journal*, April 1959, 76.

<sup>163</sup> Machine sheds were found at most farms visited during fieldwork. A good machine shed example is at Lawrence County 042-SCO-004 and another at SCO-005 and 006. There is a good example in Lawrence County of a machine shed/workshop combo with view of sliding door assembly, 042-SCO-006, and another one at SCO-007. There is a concrete block one at 085-GRN-001 and another at 085-GRN-002, and also at 085-GRN-003. A frame one was documented at 085-GRN-004. A very good example with attached workshop was documented at 085-GRN-005. A machine shed/combo corncrib was found at 085-WIL-002. Two wagon sheds were found: one at 085-WIL-002 and one at 085-WIL-005. Other sites with machine sheds which probably predate 1960 are as follows: 039-CON-005-007; 039-CUS-001-006; 039-RIC-007-008; 039-ROC-002-007; 039-ROC-005-008; 049-GRN-003-006; 049-GRN-006-002; 049-GRN-007-005; 049-frnk-003-003; 049-WAT-005-004; 049-WAT-005-004; 042-SCO-005-007; 042-WAS-001-017; 042-WAS-005-013; 085-GRN-004-013; 085-WIL-001-015.

<sup>164</sup> “Good Storage Makes My Sales,” *Farm Journal* March 1959, p 69.

<sup>165</sup> Crawford County Agricultural Extension Agent report, 1951, Penn State archives

<sup>166</sup> A sample of ponds include those at sites 042-SCO-002, 042-WAS-004, 085-GRN-002 and 007; 039-RIC-003 and RIC-006; 039-ROC-006; 042-WAS-002.

<sup>167</sup> Crawford County Agricultural Extension Report, 1937, 1939, 1946, 1948, 1949; Penn State Archives.

<sup>168</sup> Note that while the *buildings* represent an identifiable cultural tradition, the *owners or occupants* may not have necessarily shared the same cultural heritage over the entire history of the property. People borrowed, reused, and adapted. For example, an “English” farmer in southeastern Pennsylvania may have built a Sweitzer barn because it best suited the diversified farming of the region.

<sup>169</sup> In some places, only some farmers owned machinery, and it was shared around, so some farms would have lots of machinery buildings and others would have few. This was not true in the regions researched for this context.

<sup>170</sup> NR Bulletin 15 *How to Apply the National Register Criteria for Evaluation*, (2002), 2.

<sup>171</sup> *Historic Farming Resources of Lancaster County*, MPDF, 1994.

<sup>172</sup> In addition see the discussion of the regional architecture of farm buildings in the MPDFs *Farms in Berks County* (1992) and *Historic Farming Resources of Lancaster County* (1994).

<sup>173</sup> “Corridor Improvement Study, Reconnaissance Survey and Historic Contexts Report.. SR 0030, Section S01, East Lampeter, Leacock, Strasburg, Paradise, Salisbury, and Sadsbury Townships, Lancaster County, Pennsylvania.” 2 Volumes. Prepared by A.D.

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Marble Company; 2004, Volume I, page 175. The SR 30 study involved an exhaustive survey of all resources in the multi-township area of Lancaster County and preparation of contexts for agriculture, industry, and several other themes. For agriculture the study identified character-defining features for both English and Plain Sect farms.

<sup>174</sup> “Tilling the Earth: Georgia’s Historic Agricultural Heritage, A Context.” Prepared for the Georgia Department of Natural Resources, Historic Preservation Division, by Denise P. Messick, J. W. Joseph, and Natalie P. Adams, New South Associates, Inc. 2001.

[http://hpd.dnr.state.ga.us/assets/documents/tilling\\_the\\_earth.pdf](http://hpd.dnr.state.ga.us/assets/documents/tilling_the_earth.pdf)

<sup>175</sup> Ibid.

<sup>176</sup> Ibid.

<sup>177</sup> Ibid.